SECOND YEAR EXAMS

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يزكر توزيع الدرجات في الفترات الثانية وعدد الساعات والدرجة الإختصاصية لكل مقرر ووسائل الاختبار على النحو التالي:

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التوليد اليد وعلم الاجهزة

الهستولوجيا

الهستولوجيا الطبية

الكيمياء الحيوية

العلوم السلوكية والانسانية
ANATOMY
Anatomy Department
Part I : Essay Question (50 marks)

1. A. Give an account of the origin, insertion and deep relations of the posterior belly of digastric muscle. (5 marks)
   B. Describe the surface anatomy, branches and clinical importance of the middle meningeal artery. (5 marks)

2. A. Give an account of the coverings of the spinal cord. (5 marks)
   B. Define the association fibers of the white matter and give its types. (5 marks)

3. A. Summarize the origin, course, termination and effect of lesion of the pyramidal tract. (5 marks)
   B. Describe the formation and enumerate the contents of the rectus sheath. (5 marks)

4. A. Describe the peritoneal ligaments and the blood supply of the stomach. (5 marks)
   B. Give an account of the boundaries and contents of the ischiorectal fossa. What is meant by anal fistula. (5 marks)

5. A. What are the anomalies of the paramesonephric duct. (5 marks)
   B. Give an account of the development of the kidney and its congenital anomalies. (5 marks)
Part II : (75 marks)

6. M.C.Q.s. (20 marks)

Choose and encircle Only One answer :

1. Regarding the vagus nerve, the following statements are true except :
   a- It arises from medulla oblongata
   b- It passes through the jugular foramen
   c- It gives two cardiac branches
   d- It forms the sensory component of the pharyngeal plexus.
   e. It has superior and inferior ganglia

2. Regarding the pharynx, the following statements are true except :
   a- Its lower narrow end becomes continuous with the esophagus opposite the 6th cervical vertebra.
   b- Its constrictor muscles wall is deficient anteriorly at its different parts.
   c- The constrictor muscles of the pharynx are supplied by the glossopharyngeal nerve.
   d- The oropharyngeal isthmus is bounded by the palatoglossal arches.
   e- The pharyngotympanic tube (auditory) connects its nasal part with the middle ear cavity.

3. Regarding the tympanic membrane, the following statements are true except :
   a- It lies at the medial end of external auditory meatus
   b- It consists of pars tensa and pars flaccida
   c- Its outer surface is supplied by the auriculotemporal nerve
   d- Its inner surface is supplied by typanic plexus
   e- Its outer surface shows a cone of light in its postero superior part.

4. Regarding the midbrain, all the following statements are correct, except :
   a- The cerebral aqueduct of the midbrain connects the 3rd and 4th ventricles.
   b- It occupies the tentorial notch of the tentorium cerebelli.
   c- The oculomotor nerve arises medial to the cerebral peduncle.
   d- The trochlear nerve is attached to the tectum above the inferior colliculus.
   e- The tectum consists of four colliculi.

5. Regarding the cerebellum, all the following statements are correct, except :
   a- The neocerebellum is connected to the cerebral cortex.
   b- The primary fissure is present on its upper surface.
   c - It consists of two lobes.
d- the inferior vermis has nodule, uvula and pyramid.
e- It is connected to the medulla through middle cerebellar peduncle.

6. Regarding the medulla oblongata, all the following statements are correct, except:
   a- The olive is caused by the superior olivary nucleus.
   b- The vagus nerve is attached to the posterolateral fissure.
   c- The pharyngeal nerve is attached to the anterolateral fissure.
   d- The upper part of the medulla does not contain a central canal.
   e- The pyramidal decussation obliterates the lower part of the anterior median fissure.

7. Lesion of the internal capsule results in:
   a- Monoplegia on the same side.
   b- Monoplegia on the opposite side.
   c- Hemiplegia on the same side.
   d- Hemiplegia on the opposite side.
   e- Quadriplegia.

8. Stimulation of left area 8 results in turning of:
   a- Left eye to the right.
   b- Right eye to the right.
   c- Both eyes to the right.
   d- Both eyes to the left.
   e- None of the above.

9. Regarding lesions of cerebral cortical areas, the following statements are true, except:
   a- Lesion of Broca's area in the dominant hemisphere produces motor aphasia.
   b- Lesion in Wernicke's area in the dominant hemisphere produces sensory aphasia.
   c- Lesion of the auditory area produces partial deafness in both ears.
   d- Lesion of its motor area produces ipsilateral paralysis.
   e- Lesion in prefrontal cortex leads to personality changes.

10. When removing the spleen, a surgeon must be careful not to cut one of the following arteries as it passes in the gastropsoptic ligament:
    a- superior mesenteric
    b- left gastric
    c- left gastroepiploic
    d- superior pancreaticoduodenal
    e- left renal
11. Regarding the diaphragm and its major openings, mark ONE correct statement:
   a- Its motor supply comes from the phrenic nerve.
   b- Its aortic opening is at the level of the 10th thoracic vertebra.
   c- Its esophageal opening is at the level of 8th thoracic vertebra.
   d- Its inferior vena caval opening lies at 12th thoracic vertebra.
   e- Its right crus arises from the upper two lumbar vertebra.

12. Regarding branches of abdominal aorta, the following statements are correct, except:
   a- It gives a pair of inferior phrenic arteries soon after entering the abdomen.
   b- It gives three pairs of lumbar arteries.
   c- Its testicular branch passes through the inguinal canal.
   d- Its inferior mesenteric branch arises from its ventral aspect.
   d- Its median sacral branch arises from its dorsal aspect.

13. Each of the following veins belongs to the portal system, except:
   a- Left gastric vein.
   b- Left suprarenal vein.
   c- Superior mesenteric vein.
   d- Superior rectal vein.
   e- Splenic vein.

14. On tapping a hydrocele to aspirate the fluid, the needle will pass through the following structures, except:
   a- Skin and Dartos muscle.
   b- Left suprarenal vein.
   c- Internal spermatic fascia.
   d- Tunica albuginea of the testis.
   e- External spermatic fascia.

15. Lymphatic drainage of the transverse colon would involve all of the following structures, except:
   a- Superior mesenteric L.Ns.
   b- Inferior mesenteric L.Ns.
   c- Para aortic lymph nodes.
   d- Intestinal lymph trunk.
   e- Cisterna chilii.
16. When a surgeon removes the uterus and cuts the uterine artery, he must be careful not to injure the:
   a- ovarian artery
   b- ureter
   c- urethra
   d- internal pudendal artery
   e- vagina

17. The deep perineal pouch in the male contains the following, except:
   a- Sphincter urethrae muscle
   b- Ischiocavernosus muscle.
   c- Deep transverse perineal muscle.
   d- Bulbourethral glands.
   e- Dorsal nerve of the penis.

18. The main pancreatic duct is formed by:
   a- The dorsal pancreatic duct only.
   b- The ventral pancreatic duct only.
   c- The whole dorsal pancreatic duct and the whole ventral pancreatic duct.
   d- The distal part of the dorsal pancreatic duct and the duct of the ventral pancreatic bud.
   e- The proximal part of the dorsal pancreatic duct and the duct of ventral pancreas.

19. Regarding the development of the atria, following statements are true, except:
   a- The right horn of sinus venosus is absorbed into the right atrium.
   b- The rough part of the definitive right atrium is derived from primitive right atrium.
   c- The smooth part of the definitive right atrium is derived from the absorbed pulmonary veins.
   d- Foramen secundum is located in the upper part of the septum primum.
   e- Foramen ovale allows passage of blood from right to the left atrium.

20. Regarding the development of the hypophysis cerebri, the following statements are correct, except:
   a- Its infundibulum gives rise to the posterior lobe.
   b- Rathke's pouch is a downward extension of the diencephalon.
   c- Pars intermedia is derived from the posterior wall of Rathke's pouch.
   d- Its anterior lobe is derived from the anterior wall of Rathke's pouch.
   e- Pars tuberalis is a small extension of adenohypophysis.
### 7. Cross Matching: (15 marks)

#### I. Match the branch in column (A) with the main artery in column (B):

<table>
<thead>
<tr>
<th>(A) Branch</th>
<th>(B) Main artery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Verterbal</td>
<td>a- Aortic arch</td>
</tr>
<tr>
<td>2. Middle meningeal</td>
<td>b- Internal carotid</td>
</tr>
<tr>
<td>3. Ophthalmic</td>
<td>c- Facial</td>
</tr>
<tr>
<td>4. Superior thyroid</td>
<td>d- First part Maxillary</td>
</tr>
<tr>
<td>5. Inferior thyroid</td>
<td>e- First part Subclavian</td>
</tr>
<tr>
<td></td>
<td>f- External carotid</td>
</tr>
<tr>
<td></td>
<td>g- Thyrocervical trunk</td>
</tr>
</tbody>
</table>

#### II. Match the parts in column (A) with the functions in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Medial geniculate body</td>
<td>a- Autonomic visceral activity</td>
</tr>
<tr>
<td>2. Lateral geniculate body</td>
<td>b- Center for smell sensation</td>
</tr>
<tr>
<td>3. Uncus</td>
<td>c- Center for hearing reflexes</td>
</tr>
<tr>
<td>4. Limbic lobe</td>
<td>d- Center for visual reflexes</td>
</tr>
<tr>
<td>5. Postcentral gyrus</td>
<td>e- Visceral sensory function</td>
</tr>
<tr>
<td></td>
<td>f- Somatic sensory area</td>
</tr>
</tbody>
</table>

#### III. Match each of the following organs in column (A) with the corresponding site of referred pain in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stomach</td>
<td>a- Right hypochondrium, Rt., shoulder</td>
</tr>
<tr>
<td>2. Gall bladder</td>
<td>b- Hypogastrum</td>
</tr>
<tr>
<td>3. Appendix</td>
<td>c- Peri-umbilical</td>
</tr>
<tr>
<td>4. Small intestine</td>
<td>d- Epigastrium and left hypochondrium</td>
</tr>
<tr>
<td>5. Pelvic colon\</td>
<td>e- Lumbar regions</td>
</tr>
<tr>
<td></td>
<td>f- Umbilicus then right iliac fossa</td>
</tr>
</tbody>
</table>
8. Fill in the blanks (15 marks)

1. The internal jugular vein is the continuation of ............... sinus and it ends by joining the ............... vein to form the innominate vein.

2. The deep part of submandibular gland lies on the hyoglossus muscle with ............... nerve above it, and ............... nerve below it.

3. Nervus intermedius part of the facial nerve gives ............... nerve and ............... nerve.

4. Nerves at the pontocerebellar angle are ............... and ............... 

5. Insula is a part of the cerebral cortex hidden within the depth of ............... and it is ............... in shape.

6. Internal carotid artery divides at the anterior perforated substance into two terminal branches which are ............... and ............... 

7. Area 41 and 42 is the ............... while area 22 is the ............... 

8. Nerves behind the caecum are ............... and ............... 

9. The common bile duct unites with ............... to form ............... 

10. One structure running along the superior border of the body of pancreas is ............... and one structure attached to its anterior border is ............... 

11. Two sites of constriction of the ureter are ............... and ............... 

12. Two visceral branches of internal iliac artery are ............... and ............... 

13. Ovarian artery is a branch of ............... and lymph from the ovary is drained into ............... 

14. The oxygenated blood coming from the placenta is carried to the fetus by the ............... , while the deoxygenated blood from the fetus is carried to the placenta by the ............... 

15. The urinary bladder develops from the ............... canal except the trigone which develops from the absorbed parts of ............... ducts.
9. Problem Solving Questions : (15 marks)

Problem (1) :
A man after exposure to cold, he noticed dribbling of saliva and accumulation of food in the vestibule of mouth cavity:
A. Mention which nerve was affected.
B. Explain the condition.
C. Why there was accumulation of food in the vestibule of mouth cavity.
D. What type of neuron affection?
E. What are other signs of affection?

Problem (2) :
A 55 years old man was admitted to the hospital with paralysis and loss of sensation of the left lower limb. The case was diagnosed as a thrombotic vascular cortical lesion of the brain.
A. Which cortical area was affected?
B. Name the artery supplying this area.
C. On which cerebral surface this area lies?
D. Name the type of motor lesion?
E. Name the side of the brain which was affected.

Problem (3) :
A 20-year-old girl was admitted to the hospital complaining of severe pain which starts around the umbilicus, then settled in the right iliac fossa and vomiting then patient keeps the right hip flexed. Condition was diagnosed as acute appendicitis.
A. Mention two common positions of the appendix.
B. Give the surface anatomy of it base.
C. How does a surgeon identify the base of appendix during surgery?
D. Name its artery and give its origin.
E. Why does the patient flex her right hip?
11. Label The following diagrams (10 marks)
A : Identify : 1, 2, 3, 4, 5, 6, a, b., c, d, (5 marks)

B. Identify 1, 2, 3, 4, 5: (5 marks)
Second year
Anatomy Final Exam

IMPORTANT INSTRUCTIONS:
- The exam is composed of 7 pages.
- Please answer sections A&B in the colored answer sheet
- Please answer sections C, D, E and F in the answer sheet
- Answer each question in a separate page.
- Answers are preferred to be in the same order of the questions.

Section A:
M. CO.Q. S (20 marks)
Choose and encircle only one answer:

1- Regarding carotid triangle, mark ONE true statement:
A- It is bounded posteriorly by the upper part of the anterior border of sternocleidomastoid muscle.
B- Its floor is formed by hyoglossus, and geniohyoid muscles.
C- It contains all branches of the external carotid artery.
D- It contains the facial nerve.
E- It contains the external jugular vein.

2- Which one of the following muscles can abduct the vocal cords?
A- Cricothyroid.
B- Posterior cricoarytenoid muscle.
C- Lateral cricoarytenoid muscle.
D- Aryepiglottic muscle.
E- Transverse interarytenoid muscle.

3- Regarding the tongue, the following statements are true except:
A- All its muscles are supplied by hypoglossa nerve, except palatoglossus.
B- Inferior alveolar nerve carries general sensations from anterior 2/3 of the tongue.
C- Taste fibres form the anterior 2/3 of the tongue are contained in chorda tympani nerve.
D- Taste fibres from the posterior 1/3 of the tongue are carried by glossopharyngeal nerve.
E- Carries general sensations from posterior 1/3 the tongue.
4- This cortical area is present in the frontal lobe of the cerebral hemisphere:
A- Gustatory (taste) area (area 43).
B- Primary auditory area (areas 41 and 42)
C- Primary visual area (area 17).
D- Somatosenory association area (area 5 and 7)
E- Broca's area (motor speech area)

5- The midbrain contains all of the following EXCEPT:
A- Crus cerebri.                                        B- Substantia nigra.
C- Third ventricle.                                    D- Oculomotor nerve nuclei.
E- Trochlear nerve nucleus.

6- The anterior cerebral artery supplies all of the following EXCEPT:
A- Upper on inch of the parietal lobe.       B- Medial surface of the frontal lobe.
C- Anterior limb of the internal capsule. E- Occipital lobe.

7- The fourth ventricle is the cavity of the:
A- Rhombencephalon                                 B- Mesencephalon.
C- Diencephalon.                                        D- Telencephalon.
E- None of the above.

8- Concerning the lateral fissures of the cerebral hemisphere:
A- Is the deepest fissure on the lateral surface.
B- Called the fissure of sylvius.
C- Begins on the inferior surface lateral to the anterior perforated substance.
D- A and B only.                                          E- All of the above.

9- The paracentral lobule contains motor and sensory areas for one of the following parts:
A- Head and neck                                          B- Trunk
C- Upper part of lower limb.                         D- Lower part of lower limb.
E- None of the above.

10- The superficial inguinal ring shows the following features except:
A- Is triangular in shape.
B- Lies in external oblique aponeurosis
C- Lies just above and medial to pubic tubercle.
D- Lies just above and lateral to pubic tubercle.
E- Allows passage of spermatic cord in male

11- The rectus sheath contains the following structures except:
A- Rectus abdominis muscle.
B- Lower six thoracic nerves.
C- Pyrmidalis muscle
D- Superior and inferior epigastric vessels.  E- llio - inguinal nerve.

12- Lymphatic drainage of the transverse folon would all of the following structures, except:
A- Superio mesneric lymph nodes.
B- Inferior mesenteric lymph nodes.
C- Para aortic lymph nodes.
D- Intestinal lymph trunk.
E- Cisterna chili.

13- The following arteris are branches of the superior mesenteric, except:
A- Superio pancreatico - duodenal
B- Inferior pancreatico - duodenal
C- Middle colic.
D- Right colic.
E- Ileo - colic.

14- Regarding the abdominal part of the esophagus choose the incorrect statement:
A- Enters the abdomen through an opening in the left crus of diaphragm.
B- Left and right vagi lie on its anterior and posterior surface receptively.
C- Its anterior surface is related to the left lobe of liver.
D- Is supplied by branches of left gastric artery.
E- Is a main site for porto - systemic anastomosis.

15- During an operation on the duodenum, a surgeon can expecf to find the following structures behind first part of duodenum except:
C- gastro duodenal artery.                            D- Common bil duct.
E- Inferior vena cava.

16- Regarding the vas deferens: choose the incorrect statement:
A- It passes through the inguinal canal.
B- It is lateral to inferior epigastric artery at the deep inguinal ring.
C- Crosses the ureter in the region of Ischial spine.
D- Lies lateral to th seminal vesicles on the back of urinary bladder.
E- Its terminal part dilates to form the ampulla of vas deferens.

17- The following structures could be palpated by rectal examination in the female except:
18. Regarding the levator ani muscle, all the following statements are correct except:
A. In the female, the anterior part of the muscle forms a sphincter around the vagina.
B. The puborectalis part of the muscle acts as an additional anal sphincter.
C. It is supplied by the inferior rectal nerve through its pelvic surface.
D. It shares in the medial wall of the ischiorectal fossa.
E. Its posterior border is related to the coccygeus muscle.

19. The diaphragm arises from the following mesodermal structures, except:
A. The septum transversum.
B. The pleuroperitoneal membranes.
C. The dorsal mesocarkium.
D. The dorsal mesentery of the oesophagus.
E. Some cervical and thoracic myotomes.

20. Regarding the fetal circulation and circulatory changes after birth, the following statements are true, except:
A. Oxygented blood returns to the fetus by the umbilical vein.
B. In the fetus, blood from the pulmonary vein enters the aorta via the ductus arteriosus.
C. After birth, obliteration of the distal parts of the umbilical arteries form lateral umbilical ligaments.
D. After birth, the left umbilical vein obliterates soon after birth to form ligamentum venosum.
E. After birth, the septum primum and septum secundum fuse with each other.

Section B:
Cross Matching: (15 marks)

1. Match the structure in column (A) with appropriate lymph node in column (B):

<table>
<thead>
<tr>
<th>(A) Branch</th>
<th>(B) Main artery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Palatine tonsil</td>
<td>A- Retropharyngeal</td>
</tr>
<tr>
<td>2- Thyroid gland</td>
<td>B- Mastoid</td>
</tr>
<tr>
<td>3- Tip of tongue</td>
<td>C- Paratracheal</td>
</tr>
<tr>
<td>4- Back of scalp</td>
<td>D- P aortal</td>
</tr>
<tr>
<td>5- Pharynx</td>
<td>E- Jugulodigastric</td>
</tr>
<tr>
<td></td>
<td>F- Submental</td>
</tr>
</tbody>
</table>
II- Match the structure in column (A) with its level in column (B):

<table>
<thead>
<tr>
<th>(A) Branch</th>
<th>(B) Main artery</th>
</tr>
</thead>
<tbody>
<tr>
<td>6- Pylorus of stomach</td>
<td>A- 9, 10, 11 Ribs</td>
</tr>
<tr>
<td>7-3 Part of duodenum</td>
<td>B- L5 vertebra</td>
</tr>
<tr>
<td>8- Appendix</td>
<td>C- L1 VERTEBRA</td>
</tr>
<tr>
<td>9- Beginning of I.V.C</td>
<td>D- Mcburney's point</td>
</tr>
<tr>
<td>10- Spleen</td>
<td>E- L3 VERTEBRA</td>
</tr>
</tbody>
</table>

III- Match the organ in column (A) with its related ligament in column (B)

<table>
<thead>
<tr>
<th>(A) Branch</th>
<th>(B) Main artery</th>
</tr>
</thead>
<tbody>
<tr>
<td>11- Ovary</td>
<td>A- Median umbilical</td>
</tr>
<tr>
<td>12- Cervix</td>
<td>B- Mesosalpinx</td>
</tr>
<tr>
<td>13- Prostate</td>
<td>C- Utero - sacral</td>
</tr>
<tr>
<td>14- Uterine tube</td>
<td>D- Pubo - prostatic</td>
</tr>
<tr>
<td>15- Urinary bladder</td>
<td>E- Mesovarium</td>
</tr>
</tbody>
</table>

Section C:

Essay Question (50 Marks)

1- A. Give an account of the origin insertion and anterior relations of the scalenus anterior muscle. (5 marks)
B- Describe the relations of the surfaces, and ends of the parotid gland. Write a short note on its nerve supply.

2- A. Give an account of the parts and external features of the oblongata. (5 marks)
B- Describe the sulci and gyri on the lateral surface of the temporal lobe of the brain. Mention the important functional areas related to them. (5 marks)

3- A. Give an account of the parts and nerve fibers (afferent and efferent) passing through the internal capsule. (5 marks)
B- Give an short the beginning, end course of the abdominal aorta. Enumerate its branches. (5 marks)

4- A. Give the anterior and posterior relations of the cecum. Mention its surface anatomy.
B- Give the anterior and posterior relations of the uterus. (5 marks)
5- A. Give account of the development of the interatrial septum and its congenital anomalies.

B- Give account of the development of the pancreas and its congenital anomalies. (5 marks).

Section D:
6- Fill in the blanks (15 marks)
1- The outer surface of the pharyngeal muscles is covered by -------- fascia while its inner surface is covered by ------ fascia.
2- The anterior wall of maxillary air sinus is related to ....... nerve and vessels while its posterior wall is related to ... nerve and vessels.
3- Among the tributaries of internal jugular vein are..... and
4- Regarding corpus callosum, it connects ........ of the two hemispheres and it is supplied by .............
5- The epithalamus is formed of all of the following....
6- Regarding the corticospinal tract, it takes origin from ............ and in the brainstem and the spinal cord, the cervical fibers are the......... in location.
7- Language areas are located in the....
8- Two peritoneal ligaments related to the liver ar ............ and ...........
9- Susurface area of fundus of the gall bladder is ..... and the artery supplying it is ...........
10 - Anterior wal of inguinal canal is formed of .......... and .........
11- Right crus of diaphragm arises from ....... wohile its crus arises from.....
12- The artries supplying the vagina forms the anterior and posterior ...... while the vaginal vein ends in the.............
13- Muscles in the bed of the rectum are .......... and ...........
14- Among the congenital anomalies of the testis are ...... and ....
15- The endodermal cloaca is divde by the urorectal septum into ........ anteriorly and ........ posteriorly

Section E:
7- Problem Solving questions: (15 Marks)

Problem I:
A young male with neck rigidity. the doctor advised him to do a lumbar
puncture to examine the CSF.
A- Mention the best site for puncture? why?
B- Give the level of spinal cord termination in the adult.
C- Give the level where the spinal dura ends.
D- What is the cauda equina.
E- Give the level where the spinal arachnoid ends.

A 30-year-old woman presented with sustained hypertension of unknown cause. A CT scan was carried out and a mass was shown indenting I. V. C and pushing the right kidney inferiorly. The case was diagnosed as a tumor.
A- What is the organ of origin of the tumor?
B- What is the cause of sustained hypertension?
C- Mention the arteries supplying this organ.
D- Mention its venous drainage.
E- Mention its lymphatic drainage.

Problem III:
A 53-year-old man complained of blood-stained stools, his bowel protruded from the anus after defecation with considerable discomfort. On proctoscopic examination, the mucous membrane at level of anal valves bulge down on examination, the mucous membrane at level of anal valves bulge down on straining and congested veins could be seen beneath the surface.
A- What is the diagnosis of the condition?
B- What is the cause of the condition?
C- What are the anal valves?
D- What is the lining of upper part of anal canal?
E- What is the lining of lower part of anal canal

Section F:
Anatomy Examination (Second Year)

N.B.
The exam is composed of 8 pages.

Please answer Part I (sections A&B) in the answer sheet.
Please answer Part II (sections C,D&E) in the answer book.
Answer each question in a separate page.
Answers are preferred to be in the same order of the question.

PART I

Section (A) : M. C. Os. (30 marks)

Choose Only One Answer

1- The secretomotor fibers (parasympathetic) of the parotid gland are derived from which one of the following nerves '?
   A- Chorda tympani branch of facial nerve
   B- Tympanic branch of the glossopharyngeal nerve
   C- Lingual branch of mandibular nerve
   D- Nasociliary branch of ophthalmic nerve
   E- Greater petrosal branch of facial nerve

2- Regarding the transverse venous sinus, the following statements are true EXCEPT:
   A. The right sinus is usually the continuation of the superior sagittal sinus.
   B. The left sinus is usually the continuation of the straight sinus.
   C. It lies in the attached border of tentorium cerebelli.
   D. It receives the inferior petrosal sinus.
   E. It ends as the sigmoid sinus

3- Regarding the action of muscles of mastication, the following statements are true EXCEPT:
   A- Temporalis retracts the mandible.
   b- Lateral pterygoid depresses the mandible. "
   C- Masseter depresses the mandible.
   d- Medial pterygoid elevates the mandible.
   E- The pterygoid muscles protrude the mandible when they act together.
4- A patient with acute dental pain. The dentist found dental caries affecting one of the mandibular molar teeth. Which one of the following nerves should be anesthetized to remove the caries in that tooth?

A- Lingual  
B- Inferior alveolar  
C- Buccal  
D- Mental  
E- Mylohyoid

5- Regarding the thyroid gland, the following statements are true EXCEPT:

A. It is enclosed by pretracheal fascia. 
B. It moves up and down with swallowing. 
C. Its lobes extend to the oblique line of thyroid cartilage. 
D. External carotid artery is the only source of its arterial supply. 
E. Its enlargement can cause pressure on the trachea.

6- The lingual artery shows the following anatomical features EXCEPT:

A- It arises from the external carotid artery  
B- It begins opposite tip of greater horn of hyoid bone  
C- It forms a loop which is crossed by the hypoglossal nerve  
D- It passes superficial to hyoglossus muscle  
E- It gives dorsal lingual branches

7- A 18- years- 01,1 male has an infection by the side of his nose, the doctor advised him not to squeeLe it as the infection may be transmitted first to:

A- Superior petrosal sinus.  
B- Sigmoid sinus.  
C- Inferior sagittal sinus.  
D- Superior sagittal sinus.  
E- Cavernous sinus

8- A patient has a problem in stopping his tinger to touch the tip of his nose after touching the tinger of the examiner, a condition known as dysmetria, this would be a lesion in:

A- thalamus  
B- cerebellum  
C- motor area  
D- Broca's area  
E- medulla oblongata

9- The following structures are contents of interpeduncilar fossa EXCEPT:

A- Mammillarv bodies  
B- Tuber cinereurn  
C- Infundibulum  
D- Posterior perforated substance  
E- Optic tract
10- A patient having a tumor at the cerebello-pontine angle, which of the following nerves is most likely affected '!
A- Vagus  
B- Hypoglossal  
C- Vestibulocochlear  
D- Glossopharyngeal  
E- Trigeminal

11_ Regarding the cortical areas of the cerebral hemisphere, all the following statements are correct, except:
A- The premotor area programs the activity of the primary motor area.  
B- Astereognosis occurs due to injury of the primary auditory area.  
C- Broca's area is the motor speech area.  
D- Sensory aphasia occurs due to injury of 2nd speech area of Wernicke.  
E- In the primary motor the body is represented upside-down.

12- One of the following, does not belong to the long association fibers:
A- Fornix.  
B- Superior longitudinal bundle.  
C- Uncinate fasciculus.  
D- Cingulum.  
E- Inferior longitudinal bundle.

13- Which one of the following sensations does not pass through the thalamus before entering the cerebral cortex?
A- pain &temperature  
B- touch  
C- proprioception  
D- taste  
E- smell

14- A lesion of the internal capsule would result in which one of the following conditions:
A- Monoplegia on the same side.  
B- Monoplegia on the opposite side.  
C- Hemiplegia on the same side.  
D- Hemiplegia on the opposite side.  
E- Quadriplegia.

15- Each of the following structures forms a boundary of the lesser sac EXCEPT:
A- gastroepiploic  
B- lesser omentum  
C- greater omentum  
E- lineo-renalligament

16- When removing the spleen, a surgeon must be careful not to cut one of the following arteries as it passes in the gastroepiploic ligament:
A- superior mesenteric  
B- left gastric  
C- left gastroepiploic  
D- superior pancreaticoduodenal  
E- left renal
17-Regarding the suprarenal glands, the following statements are correct, EXCEPT:
   A- They are retroperitoneal organs.
   B- They are surrounded by renal fascia.
   C- each one is supplied by three suprarenal arteries.
   D- Suprarenal cortical hyperplasia results in Cushing's syndrome.
   E- The right supra renal vein drains into the right renal vein.

18-Regarding the pancreas, the following statements are correct, EXCEPT:
   A- It receives arterial supply from both celiac trunk and superior mesenteric artery.
   B- The common bile duct lies deep to its head.
   C- Its tail passes through the lienorenalligament.
   D- The splenic vein lies along the upper border of its body.
   E- It is a retroperitoneal organ.

19-Referred pain from an inflamed gall bladder, will be felt in which one of the following regions? ....
   A- Hypogastric region.                                    B- Right shoulder region.
   C- Umbilical region.                                      D- Right iliac region.
   E- Right lumbar region.

20-Hemorrhage from perforated ulcer in the posterior wall of first part of duodenum is due to erosion of which one of the following:
   C- Gastro-duodenal artery.                              D- Right hepatic artery.
   E- None of the above.

21- The following arteries are branches of the superior mesenteric artery, EXCEPT:
   A- Inferior pancreatico-duodenal.
   B- Middle colic.
   C- Right colic.
   D- Superior pancreatico-duodenal.
   E- Ileo-colic.

22- The caecum shows the following anatomical features, EXCEPT:
   A- Has no taenia coli.
   B- Is completely surrounded by peritoneum.
   C- Has a blood supply from ileocolic artery.
   D- Lies in the right iliac fossa.
   E- Appendix in its posteromedial aspect.
23- Gastroscopy in a patient with severe upper abdominal pain reveals a tumor in the antrum of the stomach. Which one of the following lymph nodes is most likely to be involved in malignancy of the stomach?
A- Celiac                                        B- Superior mesenteric
C- Inferior mesenteric                    D- Lumbar E- Hepatic

24- Which one of the following nerves gives motor innervation to the diaphragm?
A- vagus nerve                                B- thoracic splanchnic nerve
C- 3\textsuperscript{rd}, 4\textsuperscript{th} an 5\textsuperscript{th} thoracic nerves D- phrenic nerve
E- recurrent laryngeal nerve

25- All the following arteries are branches of the internal pudendal artery EXCEPT:
C-Perineal artery.                  D-Inferior rectal artery.
E-Superior rectal artery.

26- The portion of the male urethra that passes through the urogenital diaphragm is called the:
A-penile urethra                        B-spongy urethra
C-membranous urethra             D-prostatic urethra
E-external urethral sphincter

27- The following structures could be palpated by rectal examination in the female EXCEPT:
A-Recto-uterine pouch.           B-Urinary bladder. ....
C-vagina.                                 D-Cervix.
E-Sacroili.

28- The midgut gives rise to the following, EXCEPT:
C- Cecum.                               D- Ascending colon.
E- Descending Colon.

29- The common carotid artery develops from:
A- The umbilical artery.       B- The seventh cervical intersegmental artery.
C- The third aortic arch.     D- The first aortic arch.
E- The vitelline artery.

30- Regarding the development of the kidney, the following statements are corrected, EXCEPT:
A- The pronephros is formed at the beginning of the 4th week in the cervical region.
B- The mesonephric ducts open caudally in the cloaca.
C- The kidney is lobulated in its early stages of development.
D- The renal artery from the abdominal aorta supplies the kidney in all stages of its development.
E- In early stages of development of the kidney, its hilum is directed ventrally.

Section :Cross matching: (15 marks)

1- Match the muscle in column (A) with its nerve supply in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - Masseter</td>
<td>a- S pinal accessory</td>
</tr>
<tr>
<td>2- Genioglossus</td>
<td>b- Glossopharyngeal -</td>
</tr>
<tr>
<td>3- Omohyoid</td>
<td>c- Hypoglossal</td>
</tr>
<tr>
<td>4- Sternomastoid</td>
<td>d- Facial</td>
</tr>
<tr>
<td>5- Buccinator</td>
<td>e- Mandibular</td>
</tr>
<tr>
<td></td>
<td>f- Vagus</td>
</tr>
<tr>
<td></td>
<td>g- Ansa cervical is</td>
</tr>
</tbody>
</table>

II- Match each of the following peritoneal folds in column (A) with its suitable content in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-Mesentery of small intestine</td>
<td>a- superior rectal vessels</td>
</tr>
<tr>
<td>7- Lesser omentum</td>
<td>b- short gastric vessels</td>
</tr>
<tr>
<td>8- Lieno-renalligament</td>
<td>c- ileum</td>
</tr>
<tr>
<td>9- Gastro-splenic ligament</td>
<td>d- Right gastro-epiploic vessels</td>
</tr>
<tr>
<td>10- Greater omentum</td>
<td>e- tail of pancreas</td>
</tr>
<tr>
<td></td>
<td>f- right gastric vessels</td>
</tr>
</tbody>
</table>

III- Match each of the following structures in column (A) with its suitable lymphatic drainage in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11- Rectum</td>
<td>a-para-aortic lymph nodes</td>
</tr>
<tr>
<td>12- Lower part of anal canal</td>
<td>b- internal iliac lymph nodes</td>
</tr>
<tr>
<td>13- Testis</td>
<td>c- inferior mesenteric &amp; internal iliac I lymph nodes</td>
</tr>
<tr>
<td>14- Prostate</td>
<td>d- external iliac lymph nodes</td>
</tr>
<tr>
<td>15- Body of uterus ( lower part )</td>
<td>e- superficial inguinal lymph nodes</td>
</tr>
<tr>
<td></td>
<td>f- celiac lymph nodes</td>
</tr>
</tbody>
</table>
Part II:

Section C : Essay Questions: (50 Marks)

I-A) Describe the beginning, course and termination of the internal jugular vein. Enumerate its tributaries. (5 marks)

B) Give the motor and sensory nerve supply of the tongue. (5 marks)

2-A) Give the boundaries of the 4th ventricle of the brain. (5 marks)

B) Describe the origin, course and distribution of the middle cerebral artery. (5 marks)

3-A) Describe the boundaries of the inguinal canal. Enumerate its contents. (5 marks)

B) Give the relations of the left kidney. (5 marks)

4-A) Give the relations and blood supply of the prostate. (5 marks)

B) Give the origin, insertion, nerve supply and action of the levator ani muscle. (5 marks)

5-A) Describe the development and congenital anomalies of the interatrial septum. (5 marks)

B) Enumerate the derivatives of the mesonephric ducts in the male and female. (5 marks)

Section D : fill in the blanks (15 marks)

1. Among the tributaries of external jugular vein are --------- and ---------

2. The mucous membrane of the larynx above the vocal cords is supplied by the --------- nerve, and below the vocal cords is supplied by the --------- nerve.

3. The deep part of submandibular gland lies on the hyoglossus muscle with --------- nerve above it, and --------- nerve below it.

4. The CSF is produced by -------- and is drained by --------------.

5. The -------- connects 3rd with 4th ventricles while -------- connects 3rd with lateral ventricle.

6. The basal ganglia include --------- and ---------

7. Arteries behind Rectus abdominis are --------- and ---------

8. Two arteries supplying the caecum are --------- and ---------

9. Commonest positions of the appendix are --------- and ----

10. Two organs related to the spleen are --------- and ---------

11. Two sites of constriction of the ureter are --------- and ----

12. Two parietal branches of internal iliac artery are....... ..and.........

13. The right ovarian vein ends in ------------ while the left ovarian vein ends in -------- ------ ------ "a....

14. Primordial germ cells of the developing testes arise from the wall of--------- and they give rise to --------------

15. The hepatic bud divides into -------------- and- -----------------
Section E: Problem Solving Question (15 marks):

Problem (1):
A 55 years old man was admitted to the hospital with paralysis and loss of sensation of the left lower limb. The case was diagnosed as a thrombotic vascular cortical lesion of the brain.
1 - Which cortical area was affected?
2 - Name the artery supplying this area.
3 - On which cerebral surface this area lies?
4 - Name the type of motor lesion?
5 - Name the side of the brain which was affected.

Problem (2):
A multiparous 57-year-old woman presented with bearing-down feeling in the pelvis with low back pain. The condition became worse on straining. Vaginal examination showed the external os of the cervix appearing within the vaginal orifice.
1 - What is the diagnosis of the condition?
2 - Name the ligaments which support the uterus.
3 - What is the possible cause of this condition?
4 - Name L.N. draining the uterine cervix.
5 - Name the parts of the uterine cervix.

Problem (3):
A 35-year-old man was admitted to the hospital with vomiting of blood (hematemesis). He had a history of liver cirrhosis and enlarged spleen. A biopsy from the liver was indicated.
1 - What is the cause of hematemesis?
2 - Mention another site of expected bleeding in this patient.
3 - Where was the needle for liver biopsy inserted?
4 - Why was the spleen enlarged?
5 - Give the surface anatomy of the spleen.
Anatomy Examination (Second Year)

N.B.:
* The exam consists of 8 pages.
* Please answer part I (Sections A & B) in the answer sheet.
* Please answer part II (Sections C.D & E) in the answer book.
* Answer each question on a separate page.
* Answers are preferred to be in the same order of the questions.
* Oral exams start at 8 O'clock in the morning.

Part I

Section (A): MCQs (30 Marks) Choose only one answer:

1. The following nerves are related to the mandible except:
   a. Nerve to mylohyoid
   b. Lingual nerve
   c. Inferior alveolar nerve
   d. Mental nerve
   e. Glossopharyngeal nerve

2. The following structures pass through the foramen magnum except:
   a. Lower end of the medulla oblongata
   b. Tonsils of the cerebellum
   c. The cranial root of accessory nerve
   d. Vertebral arteries
   e. Apical ligament

3. Regarding the buccinators muscle, the following statements are correct except:
   a. It occupies the gap between the mandible and maxilla
   b. It receive nerve supply from the buccal branch of the mandibular nerve
   c. It prevents the accumulation of food into the vestibule of the mouth
   d. It is covered by the buccopharyngeal fascia and buccal pad of fat
   e. It is pierced by the parotid duct opposite the 2nd upper molar tooth

4. Regarding the facial nerve, the following statements are correct except:
   a. It leaves the skull through stylomastoid foramen
   b. It curves forwards around the lateral side of the styloid process
   c. It pierces the posteromedial surface of the parotid gland
   d. It ends inside the gland by dividing into terminal branches
   e. It gives a branch to the anterior belly of digastric muscle
5. Regarding the otic ganglion, the following statements are correct except:
   a. It is a small parasympathetic ganglion
   b. It serves to relay the secretomotor fibres to submandibular gland
   c. It is related medially to the tensor palatii muscle
   d. It is related laterally to the main trunk of the mandibular nerve
   e. It is related posteriorly to middle meningeal artery

6. The following structures are related to the anterior horn of the lateral ventricle except:
   a. Anteriorly: the genu of corpus callosum
   b. Superiorly: the body of corpus callosum
   c. Laterally: the thalamus
   d. Inferiorly: the rostrum of corpus callosum
   e. Medially: the septum pellucidum

7. In which part of the internal capsule does the auditory radiation pass?
   a. Anterior limb
   b. Genu
   c. Posterior limb
   d. Sublenticular part
   e. Retrolenticular part

8. The thalamic center for hearing is:
   a. Superior colliculus
   b. Inferior colliculus
   c. Subthalamus
   d. Medial geniculate body
   e. Lateral geniculate body

9. Ligamentum teres is:
   a. Obliterated left umbilical vein
   b. Obliterated right umbilical vein
   c. Obliterated left umbilical artery
   d. Obliterated right umbilical artery
   e. Rt vitelline vein

10. Urorectal septum develops between:
   a. Urogenital sinus and cloaca
   b. Anal canal and cloaca
   c. Allantois and cloaca
   d. Primitive urogenital sinus and rectum
   e. Vitelline duct and rectum

11. Neural derivatives of neural crest are:
   a. Sympathetic ganglia
   b. Dorsal root ganglia of peripheral nervous system:
   c. Schwann cells
   d. Pia mater
   e. All of the above.

12. The external abdominal oblique muscle and its fascia contribute to the following except:
   a. Lacunar ligament.
   b. External spermatic fascia.
   c. Inguinal ligament.
   d. Anterior wall of the sheath of the rectus abdominis muscle.
   e. Conjoint tendon.
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   e. Lateral geniculate body

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    a. Lacunar ligament.
    b. External spermatic fascia.
    c. Inguinal ligament.
    d. Anterior wall of the sheath of the rectus abdominis muscle.
    e. Conjoint tendon.
21. A 34-Year-old man is admitted to the hospital with severe headache, dizziness, and vomiting. Imaging studies reveal a tumor at the hypoglossal canal. Which of the following muscles will most likely be affected?
   a. Geniohyoid.
   b. Mylohyoid.
   c. Palatoglossus.
   d. Genioglossus
   e. Thyrohyoid.

22. A 22-year-old male is admitted to the emergency department and intubated. An endotracheal tube is passed through an opening between the vocal folds. What is the name of this opening?
   a. Piriform recess.
   b. Vestibule
   c. Ventricle
   d. Vallecula.
   e. Rima glottidis.

23. A 45-year-old woman is admitted to the hospital for severe ear pain. Physical examination reveals chronic infection of the mastoid air cells (mastoiditis). The infection can erode the thin layer of the bone between the mastoid air cells and the posterior cranial fossa and spread most commonly into which of the following venous structures:
   a. Superior sagittal sinus.
   b. Inferior sagittal sinus.
   c. Straight sinus.
   d. Cavernous sinus
   e. Sigmoid sinus.

24. The arachnoid villi allow cerebrospinal fluid to pass between which two of the following spaces:
   a. Choroid plexus and subdural space.
   b. Subarachnoid space and superior sagittal sinus.
   c. Subdural space and cavernous sinus
   d. Superior sagittal sinus and jugular vein.
   e. Epidural and subdural space.

25. The arterial circle (of Willis) contributes greatly to cerebral arterial circulation when one primary artery becomes occluded by atherosclerotic disease. Which of the following vessels does not contribute to the circle:
   a. Anterior communicating artery.
   b. Posterior communicating artery.
   c. Middle cerebral artery.
   d. Internal carotid artery.
   e. Posterior cerebral artery.

26. A 55-year-old man was admitted to the hospital with severe abdominal pain. Gastroscopy and CT scan examinations revealed a perforating ulcer in the posterior wall of the stomach. Where would peritonitis most likely develop initially?
   a. Right subhepatic space.
   b. Hepatorenal space (of Morison)
   c. Omental bursa (lesser sac)
   d. Right subphrenic space
   e. Greater sac.
27. A 45-year-old male entered the emergency department with a complaint of severe abdominal pain. During physical examination it is observed that his cremasteric reflex is absent. Which of the following nerves is responsible for the cremasteric reflex:
   a. Ilioinguinal
   b. Iliohypogastric
   c. Genitofemoral
   d. Pudendal
   e. Ventral ramus of T 12.

28. A 61-year-old woman had been scheduled for a cholecystectomy. During the operation the scissors of the surgical resident accidentally entered the tissues immediately posterior to the epiploic (omentum) foramen (its posterior boundary). The surgical field was filled immediately by profuse bleeding. Which of the following vessels was the most likely source of bleeding:
   a. Aorta.
   b. Inferior vena cava.
   c. Portal vein.
   d. Right renal artery.
   e. Superior mesenteric vein.

29. A 42-year-old woman is admitted to the hospital with severe uterine bleeding. Radiographic examination reveals uterine fibroids. A uterine artery embolization is performed. Which of the following arteries will supply collateral supply to the uterus:
   a. External iliac.
   b. Inferior mesenteric.
   c. Ovarian.
   d. Internal pudendal.
   e. Superior mesenteric.

30. A 68-year-old man complains of pain upon urination. A CT scan and a biopsy provide evidence of an enlarged, cancerous prostate gland. Subsequently, he undergoes a radical prostatectomy. Postoperatively, he suffers from urinary incontinence because of paralysis of the external urethral sphincter. Which of the following nerves was injured during the operation:
   a. Pelvic splanchnic.
   b. Sacral splanchnic.
   c. Pudendal.
   d. Superior gluteal.
   e. Inferior gluteal.
Section (B): Cross Matching (15 Marks):

I-Match the branch in column (A) with the main artery in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)Vertebral</td>
<td>a-Aortic arch</td>
</tr>
<tr>
<td>2) Middle meningeal</td>
<td>b-Internal carotid</td>
</tr>
<tr>
<td>3) Ophthalmic</td>
<td>c-Facial</td>
</tr>
<tr>
<td>4) Superior thyroid</td>
<td>d-Maxillary</td>
</tr>
<tr>
<td>5) Inferior thyroid</td>
<td>e-Subclavian</td>
</tr>
<tr>
<td></td>
<td>f-External carotid</td>
</tr>
<tr>
<td></td>
<td>g-Thyrocervical trunk.</td>
</tr>
</tbody>
</table>

II-Match the structure in column (A) with its level in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Pylorus of stomach</td>
<td>a-9,10,11 ribs.</td>
</tr>
<tr>
<td>2) 3rd part of duodenum</td>
<td>b-L5 vertebra</td>
</tr>
<tr>
<td>3) Appendix</td>
<td>c-L1 vertebra</td>
</tr>
<tr>
<td>4) Beginning of I.V.C</td>
<td>d-McBurney's point</td>
</tr>
<tr>
<td>5) Spleen</td>
<td>e-L3 vertebra</td>
</tr>
<tr>
<td></td>
<td>f-L4 vertebra</td>
</tr>
</tbody>
</table>

III-Match each of the following nerves in column (A) to its site of exit from the brain in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Vagus nerve</td>
<td>a-Interpeduncular fossa</td>
</tr>
<tr>
<td>2) Trochlear nerve</td>
<td>b-Anterolateral sulcus of medulla</td>
</tr>
<tr>
<td>3) Oculomotor nerve</td>
<td>c-Back of midbrain</td>
</tr>
<tr>
<td>4) Hypoglossal nerve</td>
<td>d-Junction between medulla &amp; pons</td>
</tr>
<tr>
<td>5) Abducent nerve</td>
<td>e-Posterolateral sulcus of medulla</td>
</tr>
<tr>
<td></td>
<td>f-Back of medulla oblongata</td>
</tr>
</tbody>
</table>

Section (C): Essay questions (50 marks)

Give an account of each of the following: (5 marks each)

1) Medial relations of thyroid lobe. Knowing these relations can you guess the symptoms a patient with thyroid tumor may complain of.

2) Relations of cavernous sinus (structures outside, embedded in its wall and inside it. Enumerate two of its communications and their clinical significance.

3) Corpus callosum: (shape, parts, type of fibers, relations and arterial supply)

4) Basilar artery and its branches.

5) Portosystemic anastomoses. Discuss the clinical importance of the main three anastomoses in diagnosing portal hypertension.
(6) Surface anatomy of the liver. Can you palpate (feel) the inferior border of a normal liver? why?
(7) Formation of the rectus sheath. Enumerate its contents.
(8) Anal sphincters (internal and external) and their nerve supply.
(9) Derivatives of the pharyngeal arches. Mention the nerve supply of each arch.
(10) Fate of paramesonephric (Mullerian tube) in female and male.

Section (D): Fill in the blanks (15 marks)

(1) Injury of right hypoglossal nerve makes the tongue deviate to the ............ side when protruded, while injury of the right facial nerve makes the angle of mouth deviate to the ............. side on smiling.
(2) Postganglionic secretomotor supply of the parotid gland comes from .................. ganglion, while that of the lacrimal gland comes from ..................
Ganglion
(3) Taste sensation from the mucosa of the posterior third of the tongue is carried by ............. nerve, while that from the mucosa of the epiglottis is carried by ............. nerve.
(4) As regard the action of pterygoid muscles, the muscles of both sides acting together at the same time produce ......................... of the mandible, while acting alternatingly they produce ......................... of the mandible.
(5) Cerebrovascular accidents of the branches of the middle cerebral artery, at different levels, may produce contralateral monoplegia if its ............ branches are affected and may produce contralateral hemiplegia if its ................. branches are affected.
(6) The smallest cranial nerve is ...................... , while the largest cranial nerve is ..................
(7) The circle of Willis lies in the ..................... cistern of the subarachnoid space, while CSF drains from the fourth ventricle into a subarachnoid cistern called ......................
(8) Parts of the foregut in the abdomen are supplied by ...................... artery, while the midgut is supplied by ...................... artery.
(9) The ..................... and ..................... cushions share in the formation of the membranous part of the interventricular septum.
(10) The duodenum is the only fixed retroperitoneal part of the small intestine as it receives the ..................... and the ...................... ducts.
(11) The liver receives double BLOOD supply from the ..................... and the .................
(12) The most dependent parts of the peritoneal cavity (in which we insert drains after operation for acute peritonitis) are ..................... in the semisitting position and ..................... in the recumbent position.
(13) The appendix receives a single arterial supply which is the ................. artery, while the gall bladder receives double arterial supply from the ................. artery and many small arteries from right lobe of the liver.
(14) The pudendal canal runs in the ......................... wall of the ischiorectal fossa and is formed by splitting of ......................... Fascia.
(15) The ......................... urethera is the most dilatable part, while the ......................... urethera is the widest part of the male urethera.

Section (E) Problem Solving Questions (15 Marks):

Problem (1)
A 45-year-old man complained of a tender swelling on the right side of the neck just below the mandible. The swelling enlarged during and just after meals and was reduced between meals. Clinical examination revealed a stone in submandibular duct?
   a-How can the duct be palpated.
   b-Where does it open?
   c-What is the nerve closely related to this duct?
   d-Mention the parasympathetic supply to the submandibular salivary gland.
   e-Mention the lymph nodes draining the submandibular gland.

Problem (2)
A 35 years-old farmer came to the clinic complaining of a mass in his left hypochondrium. On examination it was found to be an enlarged spleen which descended downwards and medially.
   a-Why does not the enlarged spleen descend directly downwards?
   b-Mention its surface anatomy?
   c-Name its visceral impressions.
   d-Name the contents of its lienorenal ligament
   e-Mention its blood supply.

Problem (3)
A young male with neck rigidity. The doctor advised him to do a lumbar puncture to examine the CSF:
   a-Mention the best site for puncture? Why?
   b-Give the level of spinal cord termination in the adult.
   c-Give the level where the spinal dura ends.
   d-What is the cauda equina?
   e-What is the conus medullaris?
Anatomy Examination  
(Second Year)

N.B.
The exam is composed of 9 pages.
Please answer Part I (sections A&B) in the answer sheet.
Please answer Part II (sections C, D&E) in the answer book.
Answer each question in a separate page.
Answers are preferred to be in the same order of the question.

PART I

Section (A): M. C. Qs.  (30 marks)
Choose Only One Answer

1- Regarding the foramen spinosum, one of the following structures passes through it:
   A-Mandibular nerve
   B-Middle meningeal artery
   C-Greater superficial petrosal nerve
   D-Maxillary nerve
   E-Facial nerve

2- Which of the following nerves gives parasympathetic supply to the submandibular gland?
   A-Auriculo-temporal
   B-Greater superficial petrosal
   C-Lesser superficial petrosal
   D-Buccal
   E-Chorda tympani

3- Regarding the subclavian artery, one of the following branches arises from its second part:
   A-Vertebral artery
   B-Internal thoracic artery
   C-Transverse cervical artery
   D-Inferior thyroid artery
   E-Costo-cervical trunk

4- Regarding the spinal accessory nerve, choose the correct statement:
   A-It is a purely sensory nerve
   B-It carries preganglionic parasympathetic fibers to the lacrimal gland
   C-It supplies the sternomastoid muscle
   D-It supplies general sensations to the anterior 2/3 of the tongue
   E- It unites with the vagus nerve below the jugular foramen
5-Which of the following nuclei is common to the ninth, tenth and eleventh cranial nerves?
   A-Nucleus solitarius
   B-Nucleus ambiguus
   C-Dentate nucleus
   D-Red nucleus
   E-Olivary nucleus

6- Dysesthesia (inability to stop one's finger to touch the tip of his nose after touching the finger of the examiner) is due to a lesion of which of the following?
   A-The thalamus
   B-The motor area
   C-The Broca's area
   D-The cerebellum
   E-The medulla oblongata

7-Which one of the following nerves will be affected by a tumour at the cerebello-pontine angle?
   A-Vestibulocochlear
   B-Trigeminal
   C-Hypoglossal
   D-Glossopharyngeal
   E-Vagus

8- Regarding the abdominal muscles, choose the correct statement:
   A-The fibers of the external oblique pass downward and backward
   B-The fibers of the internal oblique pass upward and backward
   C-The rectus abdominus is supplied by the ilioinguinal nerve
   D-The pyramidalis is a content of the rectus sheath
   E-The conjoint tendon is the fused arched fibers of the external and internal oblique

9- Regarding the diaphragm, choose the correct statement:
   A-Its right crus arises from the upper two lumbar vertebrae
   B-Its esophageal opening lies at the level of T8
   C-Its aortic opening lies at the level of T10
   D-Its vena caval opening lies at the level of T12
   E-Its motor nerve supply is derived from the phrenic nerve

10- Regarding the liver, choose the correct statement:
    A-The caudate lobe lies on the inferior surface
    B-The right lobe lies anterior to the stomach
    C-The quadrate lobe is related to the transverse colon
    D-The porta hepatis lies between the right and the left lobes
    E-The falciform ligament is attached only to the anterior surface

11- Regarding the stomach, choose the correct statement:
    A-The cardiac orifice is guarded by an anatomical sphincter
    B-The gall bladder lies posterior to it
    C-All its veins drain directly into the portal vein
    D-It receives all its arterial supply from the celiac trunk
    E-The right and left gastric arteries lie along its greater curvature
12- Regarding the kidneys, choose the correct statement:
   A-The right kidney is slightly higher than the left one
   B-At the hilum the renal vein lies anterior to the renal artery
   C-The left kidney is related anteriorly to the second part of the duodenum
   D-The right kidney is related anteriorly to the stomach
   E-The iliacus muscle is among the posterior relations

13-Regarding the pancreas, choose the correct statement:
   A-The splenic vein runs along the upper border of its body
   B-The tail passes through the gastrosplenic ligament
   C-The portal vein is formed behind its neck
   D-The superior mesenteric artery runs behind the uncinate process
   E-The splenic artery runs behind its body

14- Which of the following arteries must be clamped to remove the gall bladder safely?
   A-Cystic
   B-Common hepatic
   C-Proper hepatic
   D-Right hepatic
   E-Left hepatic

15- Regarding the inferior vena cava, choose the correct statement:
   A-It begins at the level of L4
   B-It lies on the left side of the abdominal aorta
   C-It drains right and left renal veins
   D-It drains right and left testicular veins
   E-It ends in the left atrium of the heart

16- One of the following nerves is a branch of the sacral plexus:
   A-Femoral
   B-Obturator
   C-Genitofemoral
   D-Pudendal
   E-Lumbo-sacral trunk

17- One of the following arteries is a branch of the anterior division of the internal iliac artery:
   A-Lateral sacral
   B-Iliolumbar
   C-Inferior rectal artery
   D-Superior gluteal artery
   E-Inferior gluteal artery

18- In complete uterine prolapse, which of the following ligaments provides direct support to the uterus?
   A-The cardinal (lateral cervical) ligament
   B-The broad ligament
   C-The infundibulopelvic ligament
   D-The round ligament of the uterus
   E-The mesosalpinx and mesometrium
19-Regarding the congenital anomalies of the limbs, lobster claw hand deformity consists of an abnormal cleft between:
   A-The first and second metacarpal bones
   B-The second and third metacarpal bones
   C-The second and fourth metacarpal bones
   D-The third and fourth metacarpal bones
   E-The fourth and fifth metacarpal bones

20-One of the following is a derivative of the foregut:
   A-First part of the duodenum
   B-Jejunum
   C-Ileum
   D-Cecum
   E-Ascending colon

21-Which one of the following structures is a derivative of the mesonephric duct?
   A-Bowman’s capsule
   B-Loop of Henle
   C-Ureter
   D-Prostate
   E-Prostatic urethra

22- The arterial circle of Willis contributes greatly to cerebral arterial circulation when one primary artery becomes occluded by atherosclerotic disease. Which of the following vessels does not contribute to the circle?
   A-Anterior communicating artery
   B-Posterior communicating artery
   C-Middle cerebral artery
   D-Internal carotid artery
   E-Posterior cerebral artery

23-A 59-year-old woman is suffering from excruciating, sudden bouts of pain over the area of her midface. Laboratory studies indicate that she has tic douloureux (trigeminal neuralgia). Which ganglion is the location of the neural cell bodies of the nerve mediating the pain?
   A-Geniculate
   B-Trigeminal (semilunar or Gasserian)
   C-Inferior glossopharyngeal
   D-Otic
   E-Pterygopalatine

24- A 28-year-old man complains of hyperacusis (sensitivity to loud sounds). Injury to which of the following cranial nerve is responsible?
   A-Trigeminal
   B-Accessory
   C-Facial
   D-Vestibulochoclear
   E-Vagus
25- A 29-year-old woman underwent a thyroidectomy. Postoperatively, the patient was presented with hoarseness of voice. Which nerve was injured during the operation? 
A- Recurrent laryngeal 
B- Internal laryngeal 
C- External laryngeal 
D- Superior laryngeal 
E- Glossopharyngeal 

26- An ophthalmologist used a blue dye into the right eye of a patient to assess the patency of the tear duct system. Where should he look to the eventual flow of the dye, assuming the lacrimal duct system is patent? 
A- Superior nasal meatus 
B- Middle nasal meatus 
C- Inferior nasal meatus 
D- Oral cavity 
E- Subclavian vein 

27- A 60-year-old man is admitted to the hospital with severe abdominal pain. An abdominal CT scan shows a thrombus in the intestinal artery supplying the ileum. Which of the following layers of peritoneum will have to be entered by the surgeon to access the affected vessel? 
A- Parietal peritoneum and the greater omentum 
B- Greater and lesser omentum 
C- Lesser omentum and the gastroplenic ligament 
D- Parietal peritoneum and the mesentery 
E- Greater omentum and the transverse mesocolon 

28- A 45-year-old man is admitted to the hospital with an inguinal hernia. Which of the following structures is used to distinguish between direct and indirect inguinal hernia? 
A- Inguinal ligament 
B- Femoral canal 
C- Pectineal ligament 
D- Lateral border of rectus abdominus muscle 
E- Inferior epigastric vessels 

29- A 70-year-old man is admitted to the hospital with severe diarrhea. An arteriogram reveals 90% blockage at the origin of the inferior mesenteric artery from the aorta. Which of the following arteries would provide collateral supply to the descending colon? 
A- Left gastroepiploic artery 
B- Middle colic artery 
C- Sigmoid artery 
D- Splenic artery 
E- Superior rectal artery 

30- A 34-year-old woman is complaining of urinary incontinence. MRI examination reveals that one of the skeletal muscles of the pelvis has a significant tear. Which of the following muscles is the most significant in terms of maintaining continence? 
A- Pubococcygeus 
B- Obturator internus 
C- Pyriformis 
D- Coccygeus 
E- Iliococcygeus
**Section (B): Cross matching (15 marks)**

I- Match the muscle in column (A) with its nerve supply in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Superior oblique of the eye</td>
<td>a-Hypoglossal</td>
</tr>
<tr>
<td>2- Orbicularis oris</td>
<td>b-Glossopharyngeal</td>
</tr>
<tr>
<td>3- Stylopharyngeus</td>
<td>c-Mandibular</td>
</tr>
<tr>
<td>4- Genioglossus</td>
<td>d-Facial</td>
</tr>
<tr>
<td>5- Temporalis</td>
<td>e-Abducent</td>
</tr>
<tr>
<td></td>
<td>f-Trochlear</td>
</tr>
</tbody>
</table>

II- Match the structure in column (A) with its corresponding level in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6- Cardiac end of stomach</td>
<td>a-Tip of 9th costal cartilage at L1</td>
</tr>
<tr>
<td>7- Duodeno-jejunal flexure</td>
<td>b- McBurney's point</td>
</tr>
<tr>
<td>8- Appendix</td>
<td>c- Left side of pelvic brim</td>
</tr>
<tr>
<td>9- Fundus of gall bladder</td>
<td>d- At the level of L1</td>
</tr>
<tr>
<td>10- Beginning of pelvic colon</td>
<td>e- One inch to the left of middle line at L2</td>
</tr>
<tr>
<td></td>
<td>f- At 7th costal cartilage, one inch to the left of median plane</td>
</tr>
</tbody>
</table>
III- Match the organ in column (A) with its lymphatic drainage in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-Ovary</td>
<td>a- Superficial inguinal L.N</td>
</tr>
<tr>
<td>12- Upper1/of anal canal</td>
<td>b- Inferior mesenteric L.N</td>
</tr>
<tr>
<td>13- Lower1/ 3 of vagina</td>
<td>c- Para-aortic L.N</td>
</tr>
<tr>
<td>14- Upper1/ 2 of rectum</td>
<td>d- External iliac L.N</td>
</tr>
<tr>
<td>15- Urinary bladder</td>
<td>e- External and internal iliac L.N</td>
</tr>
<tr>
<td></td>
<td>f- Internal iliac L.N</td>
</tr>
</tbody>
</table>

Part II
Section C: Short Answer Questions: (50 Marks: 5 marks each)

1- Describe the course of the facial artery in the face and give its branches. Explain why this course is tortuous.

2 – Give the attachments and the nerve supply of the infrahyoid muscles.

3- Name the parts of the internal capsule, give their relations and their fibers content.

4- Describe the course of the anterior cerebral artery. Give its distribution.

5- Describe the beginning, course and end of the abdominal aorta. Enumerate its branches.

6- Give the surface anatomy and the relations of the spleen. Is the spleen palpable under normal condition? Why?

7- Describe the course of the pelvic part of the ureter. Mention the sites of stone impaction throughout the ureter and differentiate between referred pain of renal and ureteric stones.

8- Enumerate the boundaries and contents of the ischiorectal fossa. Mention its clinical importance.

9- Describe the development of the interatrial septum.

10- Enumerate the congenital anomalies of the face and palate.
Section D: Fill in the blanks (15 marks)

1-The muscle of mastication that depresses the mandible is------ and it is supplied by the -------nerve.
2-The mucous membrane of the anterior 2/3 of the tongue is supplied by the-----nerve while that of the posterior 1/3 is supplied by the-----nerve.
3-Two branches of the external carotid artery are--------and--------.
4-The gap between the superior and middle constrictors of the pharynx contains --------and--------.
5-The posterior triangle of the neck is bounded anteriorly by--------and posteriorly by--------.
6-The right suprarenal vein drains into------while the left suprarenal vein drains into--------.
7-The--------nerve runs along the medial border of the psoas major muscle while the --------nerve runs along its lateral border.
8-Bare areas of the liver are--------and--------.
9-Two tributaries of the portal vein are--------and--------.
10-Two structures in the free border of the lesser omentum are--------and--------.
11- Two contents of the pudendal canal are--------and--------.
12- Two contents of the broad ligament are--------and--------.
13- The male urethra measures------cm while that of the female measures--------cm.
14-The nerve of the first pharyngeal arch is------ and that of the second arch is------.
15-Two congenital anomalies of the kidneys are--------and--------.
Section E : Problem Solving Questions ( 15 marks:5marks each ) :

Problem (1):
* A 12-year-old boy complained of a painful swelling anterior to the lobule of the ear. The pain increased during mastication. *
A- According to your opinion, what is the affected structure? (1mark)
B- Where does its duct open? (1mark)
C- Mention two structures passing within it. (1mark)
D- Mention its arterial supply and its venous drainage. (1mark)
E- Give its lymphatic drainage. (1mark)

Problem (2):
* A 65-year-old man, who had a history of chronic duodenal ulcer, was admitted to the hospital with signs of severe internal haemorrhage due to perforated duodenal ulcer *
A- Mention the most common site of duodenal ulcer. (1mark)
B- Which artery is responsible for such severe haemorrhage? Why? (1mark)
C- Name two arteries related to the third part of the duodenum. (1mark)
D- Enumerate two veins draining the duodenum. (1mark)
E- In which part of the duodenum does the common bile duct open? (1mark)

Problem (3):
* A 55-year-old man was admitted to the hospital complaining of severe difficulty of micturation. The condition was diagnosed as benign (senile) hypertrophy of the prostate. *
A- What is the cause of this difficult micturation? (1mark)
B- Name the lobes of the prostate. (1mark)
C- Name two structures within the prostate. (1mark)
D- Give the lymphatic drainage of the prostate. (1mark)
E- Explain why cancer prostate spread commonly to the vertebral column. (1mark)
Anatomy Examination
(Second Year)

N.B.
The exam is composed of 9 pages.
Please answer Part I (sections A&B) in the answer sheet.
Please answer Part II (sections C, D&E) in the answer book.
Answer each question in a separate page.
Answers are preferred to be in the same order of the question.

PART I
Section (A): M. C. Qs. (30 marks)
Choose one answer for each of the following questions (one mark each)

1- Loss of sensation from the skin over the angle of the lower jaw is due to the injury of which of the following nerves?
   a. Supraclavicular
   b. Transverse cervical
   c. Lesser occipital
   d. Greater occipital
   e. Great auricular

2- The muscle which will most likely be affected by the inflammatory process of the temporomandibular joint is:
   a. The lateral pterygoid
   b. The medial pterygoid
   c. The temporalis
   d. The masseter
   e. The buccinator

3- The mucous membrane of the larynx below the vocal fold is supplied by:
   a. The pharyngeal plexus of nerves
   b. The glossopharyngeal nerve
   c. The internal laryngeal nerve
   d. The external laryngeal nerve
   e. The recurrent laryngeal nerve

4- Which of the following arteries is a branch of the external carotid artery?
   a. Posterior superior alveolar
   b. Superficial temporal
   c. Inferior alveolar
   d. Middle meningeal
   e. Deep temporal
5- At which level of the following vertebrae does the arachnoid mater of the spinal cord end?
   a. L₁
   b. L₂
   c. L₃
   d. S₁
   e. S₂

6- The superior cerebellar peduncle connects the cerebellum with the:
   a. Restiform body
   b. Inferior olive
   c. Midbrain
   d. Pons
   e. Medulla

7- In which of the following parts of the internal capsule descend the corticobulbar fibers?
   a. Anterior limb
   b. Genu
   c. Posterior limb
   d. Retrolenticular part
   e. Sublenticular part

8- The lower border of the posterior wall of the rectus sheath is called:
   a. Arcuate line
   b. Linea alba
   c. Linea semilunaris
   d. White line
   e. Pectineal line

9- Which of the following organs is completely covered by peritoneum?
   a. Third part of duodenum
   b. Kidneys
   c. Transverse colon
   d. Ascending and descending colon
   e. Body of pancreas

10- The point at the junction of the transpyloric plane with the tip of the ninth costal cartilage represents the surface anatomy of:
    a. The fundus of the gall bladder
    b. The neck of the gall bladder
    c. The body of the gall bladder
    d. The cardiac end of the stomach
    e. The pyloric end of the stomach
11- McBurney's point lies opposite the:
   a. Ileocecal valve
   b. Tip of the vermiform appendix
   c. Base of the vermiform appendix
   d. Origin of the appendicular artery
   e. Memel's diverticulum

12- Which of the following is related to the posterior surface of the liver?
   a. Abdominal part of oesophagus
   b. Right kidney
   c. Gall bladder
   d. Transverse colon
   e. Second part of duodenum

13- Which of the following lies posterior to the head of the pancreas?
   a. The superior mesenteric artery
   b. The gastroduodenal artery
   c. The portal vein
   d. The pyloric end of the stomach
   e. The common bile duct

14- One of the following structures is related to the anterior surface of the right kidney:
   a. First part of duodenum
   b. Second part of duodenum
   c. Third part of duodenum
   d. Fourth part of duodenum
   e. Diaphragm

15- Which of the following arteries arise from the posterior aspect of abdominal aorta?
   a. Coeliac trunk
   b. Superior mesenteric artery
   c. Inferior mesenteric artery
   d. Inferior phrenic arteries
   e. Median sacral artery

16- During ligation of the uterine artery, in hysterectomy operation, which of the following structures adjacent to the artery is most likely injured?
   a. The ureter
   b. The internal iliac artery
   c. The internal iliac lymph nodes
   d. The obturator nerve
   e. The lumbosacral trunk
17- The penile urethra measures:
   a. 11 centimeters
   b. 12 centimeters
   c. 13 centimeters
   d. 14 centimeters
   e. 15 centimeters

18- The lobe of the prostate gland situated between the ejaculatory duct and the urethra is:
   a. The anterior
   b. The posterior
   c. The median
   d. The right lateral
   e. The left lateral

19- Meckel's diverticulum is the congenital anomaly resulting from persistence of the proximal part of the:
   a. Allantois
   b. Hepatic diverticulum
   c. Dorsal pancreatic duct
   d. Vitelline duct
   e. Pars cystica

20- One of the following is a derivative of the paramesonephric (Mullerian) duct:
   a. Ureter
   b. Uterine tube
   c. Renal calyces
   d. Collecting tubules
   e. Vas deferens

21- The testis descends to the scrotum during which of the following months of intrauterine life?
   a. The third
   b. The fourth
   c. The seventh
   d. The eighth
   e. The ninth

22- A 58-year-old man is admitted to the emergency department with progressive unilateral hearing loss and ringing in the affected ear (tinnitus) of 4 months duration. Radiographic examination reveals a tumour at the cerebellopontine angle. Which of the following nerves is most likely affected?
   a. Trigeminal
   b. Vestibulocochlear
   c. Glossopharyngeal
   d. Vagus
   e. Hypoglossal
23-A 55-year-old woman is diagnosed with a tumour at the base of the skull, resulting in a decrease in tear production. Which of the following nerves is most likely injured?
   a. Chorda tympani
   b. Deep petrosal
   c. Greater petrosal
   d. Lesser petrosal
   e. Nasociliary

24-A 7-year-old boy with a high fever is brought to the pediatrician. During physical examination the patient complains of pain in his ear. His throat appears red and inflamed, confirming the diagnosis of pharyngitis. Which of the following structures provided a pathway for the infection to spread to the tympanic cavity (middle ear)?
   a. Choanae
   b. Internal acoustic meatus
   c. External acoustic meatus
   d. Pharyngotympanic tube
   e. Pharyngeal recess

25-A 54-year-old man is admitted to the hospital due to severe headaches. A CT examination reveals an internal carotid artery aneurysm inside the cavernous sinus. Which of the following nerves would be typically affected first?
   a. Abducent
   b. Occulomotor
   c. Ophthalmic
   d. Maxillary
   e. Trochlear

26-A 21-year-old man was brought to the emergency department because of severe epistaxis (nosebleed) from the nasal septum. This area, known as Kiesselbach's (or Little's) area, involves mostly anastomoses between which of the following arteries?
   a. Ascending palatine and ascending pharyngeal
   b. Posterior superior alveolar and accessory meningeal
   c. Lateral branches of posterior ethmoidal and middle meningeal
   d. Septal branches of the sphenopalatine and superior labial
   e. Descending palatine and tonsillar branches of the pharyngeal

27-A 48-year-old man was admitted to the hospital with severe abdominal pain. Radiographic examination reveals a tumour in the tail of the pancreas. A diagnostic arteriogram shows that the tumour has affected the blood supply to another organ. Which of the following organs is most likely to have its blood supply affected by the tumour?
   a. Duodenum
   b. Gallbladder
   c. Kidney
   d. Liver
   e. Spleen
28-A 54-year-old man is admitted to the emergency department with severe upper abdominal pain. Gastroscopy reveals a tumour in the antrum of the stomach. A CT scan is ordered to evaluate lymphatic drainage of the stomach. Which of the following lymph nodes is most likely to be involved in a malignancy of the stomach?
   a. Coeliac
   b. Superior mesenteric
   c. Inferior mesenteric
   d. Lumbar
   e. Hepatic

29-A 70-year-old man is admitted to the emergency department with severe diarrhea. An arteriogram reveals 90% blockage at the origin of the inferior mesenteric artery from the aorta. Which of the following arteries would most likely provide collateral supply to the descending colon?
   a. Left gastroepiploic
   b. Middle colic
   c. Sigmoid
   d. Splenic
   e. Superior rectal

30-A 34-year-old woman is admitted to the hospital due to severe lower abdominal pain. Radiographic examination reveals an ovarian tumour. Which of the following lymph nodes will most likely become invaded by cancerous cells?
   a. Superficial inguinal
   b. External iliac
   c. Lateral aortic
   d. Deep inguinal
   e. Internal iliac

Section (B): Cross Matching: (15 marks)

1- Match the muscles in column (A) with their nerve supply in column (B)

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Platysma</td>
<td>a- Descendens cervicallis</td>
</tr>
<tr>
<td>2- Tensor palati</td>
<td>b- C4.5.6 nerve</td>
</tr>
<tr>
<td>3- Scaleneus anterior</td>
<td>c- Anterior primary ramus of C1</td>
</tr>
<tr>
<td>4- Thyrohyoid</td>
<td>d- Hypoglossal nerve</td>
</tr>
<tr>
<td>5- Hyoglossus</td>
<td>E- Facial nerve</td>
</tr>
<tr>
<td></td>
<td>f- Mandibular nerve</td>
</tr>
</tbody>
</table>
II- Match each of the peritoneal folds in column (A) with its suitable content in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6- Mesentry of small intestine</td>
<td>a- Superior rectal vessels</td>
</tr>
<tr>
<td>7- Pelvic mesocolon</td>
<td>b- Short gastric vessels</td>
</tr>
<tr>
<td>8- Lieno-renal ligament</td>
<td>c- Ileum</td>
</tr>
<tr>
<td>9- Gastro-splenic ligament</td>
<td>d- Right gastro-epiploic vessels</td>
</tr>
<tr>
<td>10- Lesser omentum</td>
<td>e- Splenic vessels</td>
</tr>
<tr>
<td></td>
<td>f- Right gastric vessels</td>
</tr>
</tbody>
</table>

III- Match the structure in column (A) with its level in column (B):

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11- Beginning of internal iliac artery</td>
<td>a. Bifurcation of common iliac artery</td>
</tr>
<tr>
<td>12- Beginning of anal canal</td>
<td>b. Third sacral piece</td>
</tr>
<tr>
<td>13- End of internal iliac artery</td>
<td>c. Fourth sacral piece</td>
</tr>
<tr>
<td>14- Beginning of rectum</td>
<td>d. Sacro-iliac joint</td>
</tr>
<tr>
<td>15- Beginning of pelvic part of ureter</td>
<td>e. One inch below the tip of coccyx</td>
</tr>
<tr>
<td></td>
<td>f. Greater sciatic foramen</td>
</tr>
</tbody>
</table>

**PART II**

**Section (C): Short Answer Questions: (50 marks: 5 Marks each)**

1- Describe the beginning, course, end and surface anatomy of the internal jugular vein. Name its tributaries.
2- Mention the site of the otic ganglion. Describe its roots and branches.
3- Describe the branches and distribution of the middle cerebral artery.
4- Define the association fibers and describe their types.
5- Describe the boundaries of the inguinal canal and enumerate its contents.
6- Compare between the right and left suprarenal glands.
7- Enumerate the branches of the anterior and posterior divisions of the internal iliac artery.
8- Compare between the internal and external anal sphincters.
9- Give the mesodermal derivatives of the 2nd pharyngeal arch.
10- Describe the development of the diaphragm.

Section D: Fill in the blanks (15 marks):

1. The two venous sinuses present in the attached border of the tentorium cerebelli are the _________ in front and the _________ behind.
2. The medial rectus muscle of the eye is supplied by the _________ nerve while the lateral rectus is supplied by the _________ nerve.
3. Two contents of the carotid sheath are _________ and _________.
4. Two nerves closely related to the superior and inferior thyroid arteries are the _________ and the _________ nerves respectively.
5. The tip of the tongue is drained into the _________ lymph nodes while its sides are drained into the _________ lymph nodes.
6. The conjoint tendon is the lower part of the fused aponeuroses of the _________ and _________-muscles.
7. Two arteries related of the third part of the duodenum are the _________ in front and the _________ behind.
8. Two special features of the large intestine are _________ and _________.
9. Two contents of the porta hepatis are _________ and _________.
10. Two tributaries of the inferior vena cava are _________ and _________.
11. Two branches of the internal pudendal artery are _________ and _________.
12. Two ligaments attached to the body of the uterus are _________ and _________.
13. The prostatic venous plexus drains into _________ vein and is connected to the _________-venous plexus.
14. Two congenital anomalies of the ureter are _________ and _________.
15. Two congenital anomalies of the face are _________ and _________.
Section E: Problem Solving Questions (15 marks; 5 marks each):

Problem (1): A 45-year-old man complained of a tender swelling on the right side of the neck just below the mandible. The swelling enlarged during and just after meals and was reduced between meals. Clinical examination revealed a stone in the submandibular duct.

   a. Is the formation of a stone in the submandibular duct common? Why? (1 mark)
   b. From which part of the submandibular gland does the duct arise? (1 mark)
   c. Give the length of this duct and mention where does it open. (1 mark)
   d. Name two nerves related to this duct. (1 mark)
   e. Mention the parasympathetic supply of the submandibular gland. (1 mark)

Problem (2): A 50-year-old man presented to the hospital with vomiting of blood (hematemesis). He had a history of liver cirrhosis with enlarged spleen.

   a. Mention the cause of hematemesis. (1 mark)
   b. Name two sites of portosystemic anastomosis. (1 mark)
   c. How does the portal vein begin? (1 mark)
   d. Name four organs drained by the portal vein. (1 mark)
   e. Give the surface anatomy of the spleen. (1 mark)

Problem (3): A 57-years-old man with a history of chronic anal fissure visited the physician complaining of a painful swelling beside the anal orifice. A diagnosis of ischiorectal abscess was made.

   a. What is the cause of the abscess? (1 mark)
   b. Why is the anal fissure painful? (1 mark)
   c. Name the contents of the ischiorectal fossa. (1 mark)
   d. Describe the medial wall of the ischiorectal fossa. (1 mark)
   e. Name the canal present in the lateral wall of the ischiorectal fossa and mention its content. (1 mark)
PHYSIOLOGY
Physiology
Essay Questions

Answer the following questions

Start each question in a new page

1. Explain in details the pain control systems. (8 marks)
2. Describe auditory pathway and auditory encoding for frequency and Intensity. (8 marks)
3. Explain the mechanisms involved in the production of concentrated urine by the kidney. (8 marks)
4. Describe in details the endocrinal functions of the placenta. (7 marks)
5. Summarise the mechanisms of glucose transport across the body cells. How insulin helps glucose uptake in different cells. (7 marks)
6. Summarize the overall functions of the stomach, what are the effects of total gastrectomy. (7 marks)
7. Describe the thermoregulatory system, what are body reactions on exposure to cold environment. (5 marks)
SECOND YEAR
PHYSIOLOGY

SECTION A. (MCQS) (60 Q) 60 MARKS

Put the correct single answer in capital letter as (a, b, c, d or e) in the provided computer answer sheet.

1- Sodium reabsorption in the reanal tubules:
   a- In descending limb of the loop of Henle is active and is not accompanied with water reabsorption
   b- From the tubule fluid to inside the cells of the proximal convoluted tubule occurs through facilitated diffusion
   c- At the basal border of the cell is along both concentration and electric gradients
   d- In ascending loop of Henle is associated with k+ excretion

2- The tubular fluid is iso-osmotic at the end of:
   a- Proximal tubule
   b- Descending limb of loop of Henle
   c- Ascending limb of loop of Henle
   d- Distal tubule
   e- Medullary collecting tubule

3- Reabsorption of filtered HCO3
   a- can occur normally in the presence of carbonic anhydrase inhibitor
   b- is inhibited by a decrease in arterial pCO2
   c- acidifies tubular fluid to pH 4.6
   d- represents 60% of the filtered load when plasma concentration is 25 mEq/L

4- Use the values given to answer the question that follows:
   Glomerular hydrostatic presence = 47 mmhg.
   Bowman's capsule hydrostatic pressure = 10 mmHg.
   At what value of glomerular capillary oncotic pressure, would glomerular filtration stop?
   a- 57 mmHg
   b- 37 mmHg
c- 10 mmHg
d- 30 mmHg

5- The tubulo - glomerular feedback
a- adjust GFR by constriction or dilatation of the afferent arteriole
b- is affected by angiotensin II released from the macula densa
c- is the increase in solute reabsorption by an increase of GFR
d- is dependent on intact sympathetic innervations

6- The juxtamedullary nephrons:
a- constitute about 30% of nephrons in the human kidney.
b- have vasa recta that acts as a counter-current multiplier system.
c- are responsible for creating the hyperosmolarit of the medullary interstitium.
d- have proximal convoluted tubules which extend into the renal medulla.

7- A semi-comatose 15-years-old girl is brought to emergency room with hyperventilation, rapid pulse and dry skin. Blood sample was sent to the laboratory. The following data were obtained:

> PH = 7.16
> (Na+) = 142 mEq/L
> (K+) = 4.5 Meq/
> (HCO₃⁻) = 13 mEq/L
> (HCO₃⁻) = 13 mEq/L
> PCO₂ = 28 mmHg

The most likely diagnosis is:
a- metabolic alkalosis.
b- respiratory alkalosis.
c- metabolic acidosis.
d- respiratory acidosis.

8- It is correct to say that:
a- HCI converts pepsin into pepsinogen
b- cck is essential for vitamin K absorption
c- Saliva contains alpha amylae
d- Myenteric plexus controls GIT secretion
e- Sympathetic system causes an increase in gastric secretion

9- Regardin pancreatic secretion:
a- Enzymatic juice secretion is stimulated by secretih
b- CCK stimulates release of juice rich in bicarbonate
c- Presence of fat in duodenum stimulates release of enzymatic juice
e- Gastrin stimulates pancreatic secretion

10- Which of the following statements about gastric functions is correct?
a- Solids empty more rapidly than liquids.
b- Vagotomy accelerates the emptying of solids
c- Indigestible food empties during the digestive period
d- Acidification of the antrum decreases gastric emptying
e- Vagotomy decreases accommodation of the proximal stomach

11- Gastric:
a- Acid secretion in response to hypoglycemia is mediated by the hormone gastrin
b- Acid secretion decreases when histamine H2 receptos are blocked
c- Emptying is enhanced by sympathetic nerve stimulation
d- Contraction waves pass over the stomach at a rate of about 12/minute

12- The porenayme pepsinogen is secreted mainly from which of the following - structures?
a- Epithelial cells of the duodenum
b- Acinar cells of the pancreas
c- Gastric glands of the stomach
d- Ductal cells of the pancreas

13- As regards gastric motility:
a- BER, originating on the superior curvature, can be increased in frequency by the vagus.
b- Intradaudalen lipids inhibit gastric emptying partly by releasing CCK which contracts the pyloric sphincter.
c- Hypertonic chyme leaves the stomach more rapidly than chyme which is isotonic to plasma.
d- The intragastric pressure rises and remains elevated following a enjoyable moderately large meal.

14- Congenital absence of the myenteric plexus would most likely lead to which of the following effects in gastrointestinal function?
a- Sluggish peristalsis in the segment of the gastrointestinal tract involved
b- Hypersecretion of acid by the stomach.
c- Chronic diarrhea

15- During a voluntary movement, the Golgl tendon organ provides the central nervous system with information about which of the following?
a- The length of the muscle being moved
b- The velocity of the movement.
c- The blood flow to the muscle being moved
d- The tension developed by the muscle being moved
e- The change in joint angle produced by the movement.

16- EPSPs
a- result from release of GABA from presynaptic neurone.
b- can be summated
c- result from increase permeability of the postsynaptic membrane to k+
d- Obey the all or none rule.

17- Action potentials recorded after stimulation of thermal receptors show that:
a- The maximal rate of discharge of action potentials in the cold nerve fibres is at 25°C
b- Action potentials are recorded in warm nerve fibres between 10-35°C
c- Action potentials are recorded in cold pain fibres at 0°C.
d- The maximum rate of discharge from warm pain and cold pain fibres occurs at 40°C

18- The precentral gyrus and corticospinal tract are essential for which of the following
a- vision b- olfaction c- auditory identification
d- kinesthesia e- voluntary moment

19- Concerning the functions of the cerebellum the following statements are true EXCEPT:
a- The cerebellum co-ordinates the muscle contractions required to execute a movement.
b- The cerebellum directly stimulates motor neurons required to make a movement.
c- The cerebellum receives feedback from muscles that execute the movement.
d- The cerebellum is involved in the planning of a movement.

20- An interneuron in which region uses enkephalin to inhibit pain transmission?
a- Post-central gyrus b- Raphe magnus nucleus
c- Dorsal horn of spinal cord
d- Periaqueductal gray matter

21- Regarding the cortical motor areas, all are the EXCEPT:
a- Contrateral side of the body is represented in the motor cortex
b- Upper part of the face has bilateral representation.
c- Supplementary motor area is involved in programming motor sequences
d- Area of representation in cerebral cortex is proportional to the size of the organ
22- The gamma motor neurons:
a- Supplies the extrafusal muscle fibers.
b- When stimulated cause less discharge from the muscle spindle.
c- Can control spinal motor neuron's discharge during voluntary movements.
d- Cause relaxation of intrafusal fibers when stimulated.

23- Golgi tendon organ:
a- has a threshold of stimulation equal to the muscle spindil.
b- Lies in parallel with the extra-fusal muscle fibers.
c- when stimulated reflexely cause the contraction of the muscle in the tendon of which it is situated.
d- when stimulated, reflexely relaxes the muscle in the tendon of which it is situated.

24- In the lengthening reaction:
a- The muscle is contracted further as the tendon is elongated.
b- The contracting muscle suddenly relaxes through inhibiton of alpha stimu-
late further the alpha motor neurons.
c- Golgi tendon receptors stimulate and tendon in response to supra spinal in-
hibition of gamma motor neurons.
d- there is a lengthening of the muscle and tendon in response to supra spinal 
inhibition of gamma motor neurons.

25- Concerning the stretch reflex, the following are true statements. EX-
CEPT:
a- Is the only monosynaptic reflex
b- Ts receptors are two types: annulo - spiral and flower spray endings.
c- The alpha motor neuron is the efferent motor supply to the muscle spindle.
d- The dynamic respons occurs whith the muscle is being stretched.

26- Concerning the the functions of the basal ganglia:
a- Ccaudate nucleus in association with motor cortex achieve complex movements.
b- putamen circuit helps corticospinal system to execute conscious learned 
complex patterns of movements.
c- Is mainly stimulatory to muscle tone.
d- Plays a very important role in sensory perception.

27- Which of the following is not characteristic of a reflex action?
a- Modification by impulses from various parts of the central nervous system
b- May involve simultaneous contraction of some muscles and relaxation of others
c- May involve ether somatic or visceral responses but never both simultaeouly.
d- Always involves tranmission across at least one synapse
e- Frequently occurs without conscious perception
28- Spinal shock
a- Is due to drop of CSF pressure
b- Is related to the method of transection
c- Is due to withdrawal of the supraspinal facilitatory impulses
d- Manifestation is more apparent the lower is the transaction

29- Which of the following statements is correct?

a- Pyramidal tract is a motor descending pathway which from the cerebellum.
b- Fine touch sensation is carried through the pyramidal tract
c- Fine touch sensation is carried through the gracile and cuneate tracts
d- Extra-pyramidal tract controls mainly fine skilled movements
e- Hyperalgesia is defined as an increase in heat sensitivity

30- Interruption of the motor pathways in the internal capsule on one side of the body causes:

a- Spastic paralysis on the same side of the body
b- Spastic paralysis on the opposite side of the body
c- Loss of touch and pressure sensation on the opposite side of the body
d- Flaccid paralysis on the same side of the body
e- Flaccid paralysis on the opposite side of the body

31- Parkinsonism is characterized by:

a- Shuffling gait
b- Hypotonia
c- Nystagmus
d- Kinetic tremors
e- Staccato speech

32- Inability of a person to understand the meaning of spoken words

a- Results from lesion in primary visual area
b- Results from lesion in Exner's area
c- Is a type of motor aphasia
d- Results from lesion in Broca's area
e- Is a type of sensory aphasia
d- Intolerance to fatty foods

33- Vasopressin secretion is increased by:

a- Increased pressure in the right ventricle
b- Decreased pressure in the right ventricle
c- Increased pressure in the right atrium
d- Decreased pressure in the right atrium
e- Increased pressure in the aorta
34- Regarding the thyroid hormones:
   a- T3 is more abundant the at T4
   b- They decrease the BMR
   c- They decrease the GIT motility
   d- T3 is more active than t4
   e- Excess iodide intake stimulates T3 and T4 synthesis and release

35- A young woman has puffy skin and a hoarse voice Her plasma TSH concentration is low but increases markedly when she is given TRH. she probably has:
   a- Hyperthyroidism due to a thyroid tumor
   b- Hyperthyroidism due to a primary abnormality in the thyroid gland
   c- Hyperthyroidism due to a primary abnormality in the thyroid gland
   d- Hyperthyroidism due to a primary abnormality in the hypothalamus
   e- Hyperthyroidism due to a primary abnormality in the hypothalamus

44- Cortisol:
   a- Inhibits the release of adrenocorticotropic hormone (ACTH) from anterior pituitary.
   b- Is released with a circadian rhythm so that its blood levels peak at midnight.
   c- In normal physiological blood levels has an anti-inflammatory effect.
   d- increases bone strength.

45- Estrogens produce the following effects, except:
   a- Union of apiphysis of long bones
   b- Formation of mammary glands
   c- The proliferative phase of menstrual cycle
   d- Development of secondary sex characters is female

46- Progesterone causes all the following, except:
   a- Relaxation of myometrium
   b- Growth of lobules and alveoli in the breast
   c- Development of secretory phase of endometrium
   d- Increased excitability of the uterine muscles
   e- Inhibits the secretion of LH from the anterior pituitary

47- Suppression of lactation during pregnancy is caused by:
   a- Low levels of plasma prolactin that can stimulate milk synthesis
   b- High levels of estrogen and progesterone
   c- The mammary tissue is not prepared for action of prolactin
   d- High levels of inhibin

49- The corpus luteum
a- development is controlled by the posterior pituitary
b- begins to atrophy in the second month of pregnancy
c- Stimulate the secretory phase of the menstrual cycle
d- Secretes human chorionic gonadotropin in early pregnancy

50- **Human placental lactogen (hpl):**
- Can be detected in the mother's blood as early as 14 days after conception.
- Increases insulin sensitivity and glucose utilization by the mother.
- Increases release of fatty acids from fat stores.
- Stimulates secretion of testosterone from male fetal testes.

51- **Human chorionic gonadotrophic hormone:**
- Increases the secretion of the female sex hormones from the growing corpus luteum during early pregnancy.
- Decreases the growth of the endometrium.
- Inhibits the growth of the male fetal testicles.
- Its peak level occurs 1-2 weeks from the start of the ovum fertilization.

52- **Which of the reactions in the retinal rods is caused directly by the absorption of light energy?**
- Dissociation of scotopsin and metarhodopsin
- Dissociation of scotopsin
- Transformation of 11-cis retinal to all-trans retinal
- Transformation of metarhodopsin to lumirhodopsin
- Transformation of vitamin A to retinene

53- **The fovea of the eye**
- Contains only rods
- Is situated over the exit of the optic nerve
- Is the region of highest visual acuity
- Is the thickest part of the retina

54- **When rods are stimulated, the following occurs:**
- CGMP levels increase.
- Rods depolarize.
- Metarhodopsin II activates G protein
- Increased Na conductance of the segment of the receptors

55- **Concerning color vision:**
- Green is perceived when only green cones are stimulated.
- The stimulation ratio of the 3 types of cones allows specific color perception.
- When there is no stimulation of red, green, or blue cones there is sensation of seeing white.
- A person with protanopia can see green color properly.
56- Which of The following is correct?
   a- In Argyl Robertson pupil accommodation reflex is lost and pupillary reflex is intact
   b- Astigmatism occurs because the lens elasticity is decreased.
   c- Visual aphasia Occurs due to lesion in the cortical areas 18 and 19.
   d- Hypermetropia is corrected by biconcave lenses.

57- A58 - Years - old woman goes to her physician because she is having difficulty threading needies. after a thorough physical examination she is diagnosed with.
   presbyopia (old eyes) her condition is caused by which of the following?
   a- Clouding of the vitreous.
   b- Retinal detachment
   c- Ciliary muscle paralysis
   d- Stiffening of the lens
   e- Degeneration of the macula

58 - Depolarization of the hair cochlea is caused primarily by the flow of which of the following
   a- K+ into the hair cell
   b- Na+ into the hair cell
   c- Cl- out of the hair cell
   d- Ca2+ out of the hair cell
   e- Mg2+ into the hair cell

59- The following are functions of the middle ear, except:
   a- The Eustachian tube equalizes pressure on both sides of the oval window.
   b- Impedance matching to trarster effectively sounds from the air filled middle ear to the fluid filled cochlea.
   c- The constant contraction of the middle ear muscles, keeps the tympanic membrane optimally tense for the middle ear muscles, keeps the tympanic membrane optimally tense for vibration by sounds.
   d- Attenuation of sound by the reflex contraction of middle ear muscles.

60 - The basilar By membrane of the cochlea:
   a- Is unaffected movement of fluid in the scala vestibule
   b- Covers the oval window and the round window
   c- Vibrates in a pattern determined by the form of the traveling wave in the fluids in the cochlea
   d- Is under tension
   e- Vibrates when the body is subjected to linear acceleration
SECTION B: CASE STUDY  5 MARKS

A child was diagnosed as cryptorchidism at the age of 6 years and a surgical operation was performed to replace the testes in scrotal sac. However, after marriage he was infertile. Physical examination showed normal male hair distribution, deep voice, and all other male characters. Semen analysis revealed azospermia. Lab tests showed normal testosterone and Gn levels.

1- What is meant by cryptorchidism?

2- Explain the observed testosterone and Gn levels.

4- Testicular biopsy revealed.

5- The age of this child seems to be old to protect his testicular function. Suggest what he did an operation?

6- What are the complications of exogenous androgens?

7- If this patient had also Leydig cell deficiency in childhood, what physical changes could be observed?

Section C: CASE STUDY  5 MARKS

A man returns from a trip with traveler's diarrhea. He has weakness, weight loss, orthostatic hypotension, increased pulse, and respiratory rates, pale skin, serum Na+ 132 meq/L, k+ 2.3 meq/L.

Arterial blood gases: PH 7.25 PCO2 24 mmhg; HCO3 10.2 meq/L

1- What type of acid base imbalance occurred?

2- Explain the observed increase in respiratory rate?

3- Explain the observed orthostatic hypotension?

4- Explain the observed tachycardia and pale skin?

5- Explain the cause hypokalemia?
6- Suggest a treatment for this patient?

7- How does vibrio cholera cause diarrhea?

SECTION D  Matching Items Question
5 MARKS
Theme: EAR STRUCTURES
a- Foot plate of the stapes
b- Stapedius muscle
c- Round window
d- Tensor tympani muscle
e- Tympanic membrane
f- Tectorial membrane
g- The basilar membrane
h- The Eustachian tube
i- The auditory ossicles
For each of the descriptions below choose the most appropriate option from the list above. Each option may be used once, more than once or not at all.
1- Equalizes the pressure on both sides of the tympanic membrane ( )
2- Bulges out when the oval window bulges in ( )
3- Dampens the vibrations of the tympanic membrane ( )
4- Dampens the vibrations of the oval window membrane ( )
5- The membrane overlying the receptor cells in the organ of cort ( )
6- Separates scala in the inner ear ( )
SECONd YEAR PHYSIOLOGY

This examination paper consists of 2 parts (to be answered in the provided answering copybook)

Part I: Short Essay Questions Total marks: (50 Marks)
Answer the following:
1- Discuss the postsynaptic potentials as regards types, ionic basis and effect of their summation (7marks)
2- Describe ovulation and its hormonal regulation (7marks)
3- Describe the primary visual cortex explaining its different types of cells, columns and its function (6marks)
4- Explain the response of semicircular canals to head rotation to the left side (7marks)
5- Discuss the mechanism of formation of thyroid hormones (7marks)
6- What are the major passive and active mechanisms for sodium reabsorption in the proximal convoluted tubules and loop of Henle (7marks)
7- Give an account on:
   a- The types of small intestinal movements.
   b. Two of the hypotheses that control food intake (5marks) (4marks)

Part II: Case studies total marks: 10 marks
8- Case study 1 : (5 marks: each guesfum. 1 mark
A-49-year-old man sees his physician to renew his prescription. As -he sits in the waiting room, he is observed to have a tremor in his hands and fingers. His face is inexpressive, and he makes few movements. When he is invited to enter the physician's office, he shows rigidity and has difficulty in standing up. He walks slowly into the office, and his arms do not swing while walking. When he talks to the physician, his speech is monotonous, but he shows no .. intellectual deficit. The physician fully examined him and he was diagnosed as Parkinson's disease.
Questions:
1- What is Parkinsonism, and why he was diagnosed by it?
2- What is the type and cause of this patient's tremors?
3- The patient shows rigidity, what is the type and cause of this rigidity?
4- What is the possible cause of losing the swinging of arms during walking?
5- What is the mechanism of this disease and how can you treat this patient?

9- Case 2: (5marks: each question 1 mark)
A-25-year old woman enters the hospital with abdominal pain. An upper gastrointestinal radiologic series suggests the presence of a duodenal ulcer, which is confirmed by endoscopy. The patient's basal rate of secretion of gastric HCl is about 12mmole/hr (the normal range is 1-5mmole/hr). The patient's serum gastrin is 1145 pg/ml (the normal range 50-150pg/ml). Histological examination of gastric mucosa showed that the gastric glands are more numerous than normal with large number of parietal cells. The doctor suspected a gastrin-secreting tumour, and while waiting for full investigations, this patient was treated with the histamine H2 blocker cimetidine. Administration of a cholinergic antagonist enhanced the therapeutic effect of cimetidine.

Questions:
1- What is the cause of elevated basal rate of HCl secretion in this patient?
2- Why does the patient have duodenal ulcer and not gastric ulcer?
3- In this patient can you explain the cause of the increased number of gastric glands?
4- Explain why Cimetidine is effective in decreasing HCl secretion
5- How can the cholinergic antagonist enhance the effect of Cimetidine, Can you suggest another medical (not surgical) treatment more effective in this case?
SECOND YEAR
PHYSIOLOGY

This examination paper consists of 2 parts (to be answered in the provided answering copybook)

Part I: Short Essay Questions (Total marks: 50 Marks)
Answer the following questions:
1- Discuss the factors affecting synaptic transmission (6marks)

2- Explain the auditory encoding of sound frequency and intensity (6marks)

3- What is meant by the basal ganglia? Discuss their functions and give an account on chorea (characteristics and mechanism) (7marks)

4- Discuss the actions of parathyroid hormone (7marks)

5- Compare between the glomerulo-tubular balance and tubulo-glomerular feedback (mechanism –importance) (7marks)

6- Discuss anovulatory cycles (causes and results). Describe how ovulation can be diagnosed (7marks)

7- Give an account on:
   a-The functions of gall bladder and control of its emptying (6marks)
   b- Fever and heat stroke (4marks)

Part II: Case studies (Total marks: 10 marks)
Please read the following cases and answer the questions below

8- Case study 1: (5marks: each question 1 mark)

A 21-year-old brother of a person with insulin-dependent diabetes mellitus experienced increased urination and thirst for 6 weeks, along
with weight loss, despite increased appetite. He ignored medical attention for some time. However, when he was found to be semiconscious, breathing deeply at a rate 30/min, he was admitted to the hospital. His urine sample contained a glucose concentration of 5% and tested strongly positive for acetoacetic acid. Plasma glucose was 800mg/dl. Blood pH was 7.1 and PCO₂ was 17mmHg

**Questions:**
1- Explain the causes of this patient’s very high plasma glucose level
2- Does glucose appear normally in urine? What is the cause of glucosuria in this patient?
3- Mention 2 symptoms present in this patient as a result of glucosuria, explaining your answer
4- What is the cause of loss of weight and increased appetite?
5- Comment on the pH status of this patient and explain why he is breathing rapidly

**9- Case study 2:** (5_marks: each question 1mark)

A 19-year-old man hyperextended his neck in a car accident. By examination, it was found that he could not move any of his limbs, nor could he feel any sensation in his trunk and limbs. Also, all the reflexes were absent. A spinal cord injury was suggested. **After a month** he could move his shoulder to some extent, but the four limbs remained paralyzed and he developed increased muscle tone and hyperactive stretch reflexes in both arms and legs. When either foot was sharply dorsiflexed, sustained clonus of the ankle occurred. Also, Babinski sign is present bilaterally. He had to be catheterized to drain urinary bladder

**Questions:**
1- In your opinion, what is the extent of spinal cord injury and at which level the injury occurred? Why is the patient unable to move his limbs and why he lost all sensations?
2- During the 1st month after injury why were all reflexes absent?
3- After one month, what is the cause of hyperactive stretch reflexes? What causes clonus?
4- What is meant by Babinski sign? Why is it present in this patient?
5- How did the function of the urinary bladder change? (At the beginning of injury and after one month)
SECOND YEAR
PHYSIOLOGY

This examination paper consists of 2 parts (to be answered in the provided answering copybook)

Part I: Short Essay Questions (Total marks: 55 Marks)
Answer the following questions:
1- Compare between presynaptic inhibition and presynaptic facilitation (7marks)
2- Discuss functions of the different parts of the middle ear (7marks)
3- Explain the excitation of muscle spindle under different conditions of stimulation (7marks)
4- Describe the actions, regulation and disturbance of secretion of prolactin hormone (7marks)
5- Discuss the site and mechanism of glucose reabsorption by renal tubules. Enumerate causes of glucosuria (7marks)
6- Describe the proliferative and secretory phases of the menstrual cycle (7marks)
7- What is the mechanism of gastric acid secretion? Enumerate the stimuli of HCl secretion explaining their mechanism of action (7marks)
8- Discuss the Intermediate and long- term regulation of food intake (6marks)

Part II: Case studies (Total marks: 10 marks)
Please read the following cases and answer the questions below
9- Case study [1]: (5marks)
A 49-year-old woman sees her physician because of weakness, easy fatigability, and loss of appetite. During the past month she has lost 5Kg. On physical examination she is found to have hyperpigmentation,
especially of the oral mucosa and gums. She is hypotensive, and her 
blood pressure falls when she stands up (100/60mmHg supine, and 
80/50 mmHg erect). She has the following laboratory data: Serum [Na⁺]: 
130mEq/L (normal: 135 to 147mEq/L); Serum [K⁺]: 6.5mEq/L (normal: 
3.5 to 5mEq/L); Serum [HCO₃⁻]: 20 mEq/L (normal: 22 to 28 mEq/L)

Questions:
1- The serum level of which hormone(s) would be expected to be below 
normal in this woman? (1mark)
2- In this patient explain what is the cause of hypotension, 
hyponatremia, and hyperkalemia? (2marks)
3- What is her acid-base disturbance, and what is the cause? (1mark)
4- What is the role of the kidney in correcting this acid-base 
disturbance? (1mark)

10- Case study [2]: (5marks: Each question 1mark)
A 26-year woman presented to the physician with imbalance while 
walking, with tendency to fall in an unpredictable direction, along with in-
coordination of both hands, causing difficulty in writing, eating, and 
operating appliances. The above symptoms were progressive in nature. 
She has ataxia of gait, slurred speech, and nystagmus. Examination 
revealed that she had intention tremors in her arms when she was asked 
to touch her nose, and she had difficulty in making pronation and 
supination movements

Questions:
1- The motor problems of this patient are due to lesion in which part?
2- If her stretch reflexes (static-dynamic) in lower limbs were tested, 
what are their likely characteristics?
3- What is the cause of slurred speech and nystagmus?
4- What is the meaning of intention tremors? Explain
5- Describe the gait of this patient. What do you expect the result of the 
finger-nose test is?
Cairo University  
Faculty of Medicine  
Physiology Department  

Date: 22/6/2015  
Time: 105 minutes  
Total Marks: 65 marks

SECOND YEAR  
PHYSIOLOGY

This examination paper consists of 2 parts (to be answered in the provided answering copybook)

Part I: Short Essay Questions  
(Total marks: 55 Marks)

Answer the following questions:

1- Enumerate types of opioid peptides. Discuss the supraspinal analgesia system  
   (7marks)

2- Describe the excitation cascade mechanism during stimulation of photoreceptors  
   (7marks)

3- Explain the response of the semicircular canals to head rotation to the right side  
   (7marks)

4- Discuss the metabolic actions of the thyroid hormones. Explain the cellular mechanisms of their actions  
   (7marks)

5- Give an account on the hormonal control of Na⁺ reabsorption  
   (7marks)

6- Discuss the composition and function of the blood-testis barrier. Explain functions of Sertoli cells  
   (7marks)

7- Describe the mechanism of bicarbonate ion secretion by pancreatic ducts illustrating its hormonal regulation  
   (7marks)

8- Discuss causes and complications of obesity  
   (6marks)

Part II: Case studies  
(Total marks: 10 marks)

Please read the following cases and answer the questions below

9- Case study [1]:  
   (5marks: Each question 1mark)

An 18-year-old man with type I diabetes mellitus is seen in the emergency room. He did not take his insulin during the previous 24 hours. He now complains of
weakness, nausea, thirst and frequent urination. On physical examination he was found to have deep and rapid respirations. Laboratory data were: Serum [Na⁺] = 135mEq/L (Normal (N): 135 to 147), serum [K⁺] = 8mEq/L (N: 3.5 to 5), serum [HCO₃⁻] = 7mEq/L (N: 22-28), blood pH=6.99 (N: 7.35-7.45), Arterial PCO₂ = 30mmHg (N: 35-45) and serum glucose = 1200mg/dl (N: 70-110). He was admitted to hospital and the physician started insulin therapy.

Questions:
1- Guided by the patient findings, which type of acid-base disorder does this man have? Explain the cause of this disorder
2- What is the cause of this type of diabetes? Why did this patient develop hyperkalemia?
3- What is the cause of rapid deep breathing? Explain its significance
4- Explain the mechanism of polyuria in this patient? What is the type of this diuresis?
5- The patient has hyperglycemia, explain how the prolonged high glucose levels produce tissue injury?

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10- Case study [2]: 
(5marks: Each question 1mark)
A 58-year-old woman, who was known to be hypertensive, was brought to the hospital. She awake paralyzed on the right side and unable to talk. Her BP was 230/120. She could not move her right arm and leg voluntarily. When asked to move her arm, she picked it up with the left one. When she tried to smile, the facial muscles on the left side of her face contracted, but those on right side did not. She has hypertonia, the tendon jerks were increased on right extremities, and the Babinisiki sign was present on the right side. Sensory tests were difficult to perform because of speech problems

Questions:
1- In this patient what problem is most probably responsible for her neurological disorder and which part of CNS did the lesion affect and on which side?
2- Which motor pathways were interrupted? What is the type of the paralysis?
3- What kind of speech problem did she have? What is the speech area affected?
4- What is the cause of hypertonia and exaggerated tendon jerks? What is meant by Babinisiki sign?
5- What sensory loss might she have, if these could be tested?
Cairo University  
Faculty of Medicine  
Physiology Department  

Final Exam  
Second Year  
Physiology  

Instructions  
- Please read the instructions before answering the questions.  
- Please write the Model letter (A, B and C) in your answer sheet  
- You should count the number of pages that include the MCQs and Matching questions.  
- No questions are allowed.  
- Number of pages: 11 (from 1-11)  
- Questions include:  
  1- Part (I): 55 MCQs (Select single best answer): 55 marks  
  2- Part (II): Matching question: 5 marks  

Part I: MCQs (55 Questions 1 mark each)  
Answer part (I) in section A of the provided computer answer sheet  

Mark only the single best answer (Please fill the circle completely):  

1- Metabotropic receptors:  
a- Affect neuronal activity directly by opening ion channels  
b- Cause short term intracellular effects  
c- Inhibit gene transcription of G-proteins  
d- Action does not involve intracellular cAMP levels  
e- Are involved in the production of synaptic plasticity  

2- Presynaptic inhibition:  
a- Depends on stimulation of GABA receptors in presynaptic neuron  
b- Increases release of neurotransmitter from presynaptic terminals  
c- Is characterized by increased Ca²⁺ influx to synaptic knob  
d- Develops rapidly and lasts for only few milliseconds  
e- Produces hyperpolarization of postsynaptic neuron membrane
3- Synaptic transmission:
   a. Is one way direction as neurotransmitters are formed only by postsynaptic neurons
   b. Shows prolonged facilitation in the hippocampus if AMPA receptors are decreased
   c. Is sensitized by applying a benign stimulus to the presynaptic neuron for a long time
   d. In immediate memory is due to accumulation of Ca^{2+} in the presynaptic neuron
   e. Is depressed by hyperventilation due to the resulting acidosis and decrease in Ca^{2+}

4- Slowly adapting receptors differ from rapidly adapting receptors in:
   a. Activating the Na^{+} channels in the 1st node of Ranvier more slowly
   b. Detecting the dynamic properties of stimuli
   c. Keeping the brain continuously informed about body status
   d. Showing an ON and an OFF responses to the stimulus
   e. Being a phasic type to detect velocities of stimuli

5- Visceral pain is:
   a. Well localized and shows relatively rapid adaptation
   b. Produced mainly by a sharp cut in the viscera
   c. Due to deficiency of bradykinin at site of diseased viscus
   d. Changed to the diffuse parietal pain if the disease spreads to the viscus wall
   e. Accompanied by reflex spasm of the skeletal muscles overlying affected area

6- A patient suffers from left hemisection of the spinal cord shows:
   a. Upper motor neuron paralysis at the level of the lesion
   b. Loss of pain and temperature on the right side below level of the section
   c. Complete loss of crude touch on both right and left sides below level of lesion
   d. Exaggerated reflex movements on the left side at the level of the lesion
   e. Dissociated sensory loss because the dorsal column is not affected

7- The tympanic membrane:
   a. Modifies the frequencies of sound waves reaching external ear
   b. Stops vibrating almost immediately after the sound stops
   c. Bulges outwards when the Eustachian tube is blocked
   d. Transmits sound more effectively when middle ear muscles contract
   e. Have an area about twice that of the oval window

8- The endolymph:
   a. Is found in the space between membranous and bony labyrinth
   b. Has a K^{+} concentration similar to the extracellular fluid
   c. Composition is mainly determined by the activity of stria vascularis
   d. Is electrically negative with respect to perilymph
   e. Is prevented from reaching tips of hair cells by light junctions
9-Regarding hair cells (HC) of the organ of Corti:
   a- Outer HC are affected only by downward movement of basilar membrane
   b- Stimulation of outer HC helps cortex to interpret a sound as loud
   c- Low frequency sounds stimulate inner HC at the base of cochlea
   d- Moving basilar membrane up closes K⁺ channels and hyperpolarizes HC
   e- Movement of stereocilia towards limbus causes opening of K⁺ channels

10-In myopia:
   a- The curvature of the cornea is unequal in different planes
   b- A far object is focused on the retina by using accommodation
   c- The near point is less than 10 cm but near vision is not impaired
   d- The images from the two eyes are not fused within the cortex
   e- There is increased intraocular pressure due to abnormal long eyeball

11-Regarding visual cortex:
   a- Simple cells respond best to moving bars without change in their directions
   b- Orientation columns give information about response of cortex to both eyes
   c- Blobs are concerned with detection and localization of objects in space
   d- The visual cortex of one side receives fibers from temporal side of ipsilateral retina
   e- Complex cells present in dominance columns interpret complicated movements

12-Stimulation of photoreceptors by light produces:
   a- Increased activity of phosphodiesterase by activated transducin
   b- Light-dependent conversion of all-trans retinal to 11-cis retinal
   c- Depolarization with increased release of neurotransmitter
   d- Increased activity of the Na⁺ pump at the inner segment
   e- Increased levels of cGMP in the outer segment

13-Which of the following hormones is both synthesized and stored in the pituitary gland?
   a- Growth hormone
   b- GH releasing hormone
   c- Antidiuretic hormone (ADH)
   d- Somatostatin
   e- Somatomedin

14-Triodothyronine (T₃):
   a- Is the only biologically active form of thyroid hormones
   b- Has less affinity to receptors than T₄
   c- Is liberated from thyroglobulin by the action of proteinase enzyme
   d- Binds to plasma membrane receptors
   e- Stimulates the secretion of TSH by the anterior pituitary
Model A

15. An individual presents with hyperglycemia, hypertension, muscle weakness and backaches. His x-ray revealed marked osteoporosis. Which of the following cannot also be observed in the same patient?
   a. Hyperpigmentation
   b. Decreased plasma ACTH
   c. Decreased T-lymphocytes
   d. Decreased plasma cortisol
   e. Decreased collagen synthesis

16. Which of the following would most likely occur in the earliest stages of type II diabetes?
   a. High circulating levels of C-peptide
   b. Increased insulin sensitivity
   c. Decreased hepatic glucose output
   d. Metabolic acidosis
   e. Impaired insulin secretion

17. The rate of urinary excretion of Ca\(^{2+}\) by the kidney is decreased by:
   a. Increased calcitonin concentration in the plasma
   b. Decreased phosphate ions concentration in the plasma
   c. Increased plasma level of parathyroid hormone (PTH)
   d. Increased Ca\(^{2+}\) concentration in the plasma
   e. Increased secretion of PTH-releasing hormone

18. Glucagon hormone:
   a. In large doses has a negative inotropic effect on the heart
   b. Secretion is inversely proportional to blood glucose level
   c. Increases the breakdown of muscle glycogen
   d. Secretion is inhibited by high protein meal and exercise
   e. Feedback mechanism is very important under normal conditions

19. A patient has hyperthyroidism due to a pituitary tumor. Which of the following changes is expected to occur?
   a. Increased thyroglobulin synthesis, increased heart rate and exophthalmos
   b. Decreased thyroglobulin synthesis, increased heart rate and no exophthalmos
   c. Increased thyroglobulin synthesis, decreased heart rate and exophthalmos
   d. Decreased thyroglobulin synthesis, decreased heart rate and exophthalmos
   e. Increased thyroglobulin synthesis, increased heart rate and no exophthalmos

20. A 14-year-old boy with an autoimmune disease that destroyed his pancreatic β-cells is most likely to have which of the following signs and symptoms:
   a. Enhanced glucose uptake by adipocytes
   b. Enhanced protein synthesis and storage in muscles
   c. Decreased circulating fatty acid levels
   d. Increased circulating levels of HbAlc above 6.4%
   e. Increased transcription of insulin-like growth factor (IGF-1) gene
21. Growth hormone secretion is increased by:
   a. Hyperglycemia
   b. Exercise
   c. Somatotedin
   d. Somatostatin
   e. Aging

22. A 30-year-old man has Conn's syndrome. Which of the following changes is most likely to occur in this patient?
   a. Unchanged arterial pressure - Unchanged blood pH - Unchanged Na⁺ excretion
   b. Increased arterial pressure - Decreased blood pH - Unchanged Na⁺ excretion
   c. Increased arterial pressure - Increased blood pH - Unchanged Na⁺ excretion
   d. Unchanged arterial pressure - Increased blood pH - Decreased Na⁺ excretion
   e. Increased arterial pressure - Increased blood pH - Decreased Na⁺ excretion

23. Which statement best describes the major difference between the control of luteinizing hormone (LH) secretion and the control of ACTH secretion?
   a. Hypothalamic hormonal controller of LH is mainly inhibitory
   b. LH is not controlled by negative feedback
   c. LH is primarily controlled by the non-steroid inhibitor
   d. LH can be stimulated by a steroid hormone
   e. LH is a peptide while ACTH is a glycoprotein

24. As menstruation ends estrogen levels in the blood rise rapidly. The main source of this rising estrogen is:
   a. Corpus luteum
   b. Developing follicles
   c. Endometrium
   d. Stromal cells of the ovaries
   e. Anterior pituitary gland

25. The endometrium of the 7th day of the menstrual cycle differs from that of 21st day in the following:
   a. Development of progesterone receptors
   b. Appearance of necrotic foci
   c. Formation of prostaglandins
   d. Presence of coiled secretory glands
   e. Increased glycogen deposition

26. During the 12-hr period preceding ovulation:
   a. The 2nd meiotic division is completed
   b. A surge of LH is secreted from pituitary
   c. The surge occurs immediately after the formation of corpus luteum
   d. The surge is followed immediately by a fall in progesterone plasma levels
   e. The number of developing follicles is increasing
27- During the menstrual cycle, the curve below represents the normal secretory pattern of which the following hormones:

![Graph showing hormone levels with peak at ovulation]

a- Follicle stimulating hormone (FSH)
b- Luteinizing hormone (LH)
c- Estrogen hormone
d- Progesterone hormone
e- Inhibin hormone

28- Estrogen hormone:
   a- Stimulates the secretion of thick acidic cervical mucus
   b- Decreases the amount of contractile proteins in the myometrium
   c- Secretion shows maximum peak just before menstruation
   d- Deficiency after menopause stimulates osteoclastic apoptosis
   e- Increases local production of nitric oxide causing vasodilation

29- During a normal ovarian cycle:
   a- The dominant follicle has lower LH and FSH receptors than the other follicles
   b- Ovulation occurs due to rapid drop in estrogen and progesterone levels
   c- Corpus luteum depends on anaerobic metabolism due to mitochondrial lack
   d- FSH and estrogen stimulate the appearance of LH receptors on granulosa cells
   e- The luteal phase is characterized by high levels of gonadotrophic hormones

30- Concerning spermatogenesis:
   a- Androgens are needed to facilitate early stages of spermatid maturation
   b- Luteinizing hormone (LH) stimulates production of androgen-binding protein
   c- Scrotal sac contains thick isolating subcutaneous fat layer to keep temperature 32°C
   d- Irradiation produces failure of both spermatogenesis and testosterone secretion
   e- Estrogens are needed in small amounts to mediate the action of FSH

31- Testosterone:
   a- In small amounts is formed from estrogen by the action of aromatase enzyme
   b- Forms more stable hormone-receptor complexes if reduced to dihydrotestosterone
   c- Secretion is increased all through the pre-pubertal period due to LH stimulation
   d- Deficiency causes moderate sodium, potassium and water retention
   e- Higher levels increase the risk of Alzheimer disease
32- During a voluntary movement, the Golgi tendon organ provides the central nervous system with information about:
   a- The length of the muscle being moved
   b- The velocity of the movement
   c- The blood flow to the muscle being moved
   d- The tension developed by the muscle being moved
   e- The change joint angle produced by the movement

33- The most important role of the gamma motor neurons is to:
   a- Stimulate central contractile part of extrafusal muscle fibers
   b- Maintain la afferent activity during contraction of muscle
   c- Generate activity in lb afferent fibers
   d- Detect the length of resting skeletal muscle
   e- Prevent muscles from producing too much force

34- During non-rapid eye movement sleep there is:
   a- Increased muscle tone
   b- Decreased arterial PCO₂
   c- Increased heart rate
   d- Decreased metabolic rate
   e- Increased blood pressure

35- Damage to Broca’s area produces:
   a- Spastic paralysis of the contralateral hand
   b- Paralysis of the muscles of the larynx and pharynx
   c- Limitation of vocabulary to very few words
   d- Inability to direct the two eyes to the contralateral side
   e- Inability to use the two hands to grasp an object

36- The cerebellum:
   a- Directly stimulates motor neurons required to make a movement
   b- Plays an active role in the coordination of muscles required to make a movement
   c- Does not receive feedback from the muscles that execute the actual movement
   d- Is not involved in the planning of a movement, only its execution
   e- Is unable to make corrective adjustments to the movement once it is performed

37- Regarding the basal ganglia:
   a- The dentate nucleus and the putamen are called striatum
   b- Chorea is associated with hypertonia and dancing movements
   c- Structures of basal ganglia have very low O₂ consumption
   d- Putamen circuit is involved in execution of conscious learned patterns of movement
   e- Parkinsonism is produced due to loss of dopaminergic inhibition of the putamen
38- In a healthy, alert adult sitting with the eyes closed, the dominant EEG rhythm observed with electrodes over the occipital lobes is:
   a- Delta (0.5–4 Hz)
   b- Theta (4–7 Hz)
   c- Alpha (8–13 Hz)
   d- Beta (18–30 Hz)
   e- Fast, irregular low-voltage activity

39- In a muscle spindle receptor, which type of muscle fiber is responsible for the tendon jerk?
   a- Extrafusal muscle fiber
   b- Static nuclear bag fiber
   c- Nuclear chain fiber
   d- Dynamic nuclear bag fiber
   e- Smooth muscle fibers

40- Glomerular filtration rate (GFR) is increased by:
   a- increased colloidal osmotic pressure
   b- Increased proximal convoluted tubule pressure
   c- Increased delivered solute load to macula densa
   d- Increased diameter of the afferent arteriole
   e- Contraction of mesangial cells by histamine

41- Na⁺ reabsorption by the renal tubules:
   a- Obeys the tubular maximum (Tm) in proximal convoluted tubules
   b- Is increased by marked expansion of extracellular fluid
   c- Involves a constant percentage of the filtered load
   d- Is increased by aldactone in distal convoluted tubules
   e- Is a passive process in the thin descending limb of Loop of Henle

42- An individual has a P_inulin concentration of 1.2 mg/ml, a urine volume of 120 ml obtained over a 2-hour period, a U_inulin concentration of 120 mg/ml. What is this individual's GFR?
   a- 400 ml/min
   b- 120 ml/min
   c- 100 ml/min
   d- 50 ml/min
   e- 40 ml/min

43- In a 25-year-old male if the plasma glucose concentration is 100 mg% and the GFR is 125 ml/min, his filtered load of glucose is:
   a- 100 ml/min
   b- 12500 ml/min
   c- 50 ml/min
   d- 125 ml/min
   e- 1.25 ml/min
44- Glucose reabsorption by kidney:
   a- Is controlled mainly by insulin hormone
   b- In distal tubules is Na⁺-dependent and is blocked by Oubain
   c- Becomes constant above plasma glucose concentration of 180 mg/dl
   d- Is equal in all nephrons as their amount of carriers is the same
   e- Is complete for all filtered amounts below the renal threshold

45- Concerning the acidification of urine:
   a- H⁺ secretion stops if pH of distal tubule fluid decreases below 4.5
   b- K⁺ is normally reabsorbed from the tubular fluid in exchange for H⁺
   c- The H⁺ reacts with the Na₂HPO₄ in the tubular fluid to give Na₂H₂PO₄
   d- NH₄ which is formed only in proximal tubules combines with H⁺ to form NH₃
   e- H⁺ secretion is inhibited in patients with respiratory acidosis

46- Concerning diuresis:
   a- Osmotic diuresis inhibits ADH and decreases facultative H₂O reabsorption
   b- Hypokalemia is one of the undesirable effects of the diuretic furosemide (Lasix)
   c- Ingestion of large amounts of water produces diuresis of hyperosmotic urine
   d- Carbonic anhydrase inhibitors increase the loss of H⁺, Na⁺, K⁺ and water
   e- Pressure diuresis is mainly controlled by nervous mechanisms

47- Concerning renal water reabsorption:
   a- The fluid leaving the proximal tubules is hypotonic than plasma
   b- The ascending limb of loop of Henle is highly permeable to H₂O
   c- Obligatory H₂O reabsorption is responsible for production of concentrated urine
   d- In absence of ADH little water is reabsorbed from proximal convoluted tubules
   e- The medullary interstitium is created mainly by the loop of Henle

48- The interaction of histamine with its H₂ receptor in the parietal cell results in:
   a- An increase in intracellular sodium concentration
   b- An increase in intracellular cAMP production
   c- An increase in intracellular cGMP production
   d- A decrease in intracellular calcium concentration
   e- An increase in intracellular H⁺/K⁺ ATPase vesicles

49- Concerning Swallowing:
   a- Secondary peristaltic waves are dependent on both vagus and enteric plexus
   b- Contraction of upper esophageal sphincter is the initial step of pharyngeal phase
   c- During pharyngeal phase the vocal cords relax and separate from each other
   d- The lower esophageal sphincter tone is increased by NO-secreting interneurons
   e- Both Oral and esophageal stages are involuntary reflexes
50. Zollinger-Ellison syndrome is a disease manifested by:
   a. Decreased tone of lower esophageal sphincter leading to reflux of gastric contents
   b. Excessive secretion of CCK, causing continuous contraction of the gallbladder
   c. A gastrin-secreting tumor of pancreas, causing increased acid secretion and ulcers
   d. Low plasma lipid levels, due to failure of the liver to secrete VLDLs
   e. Inadequate secretion of bicarbonate by the pancreas

51. Salivary secretion:
   a. Has a higher chloride concentration than plasma under resting conditions
   b. Is controlled primarily by the hormone secretin
   c. Has a lower bicarbonate concentration than plasma during maximal salivation
   d. Under resting conditions contains higher K⁺ concentrations than plasma
   e. Is isotonic at all rates of salivary secretion

52. Concerning HCl secretion in the stomach:
   a. Acetylcholine stimulates acid secretion by increasing intracellular Na⁺ concentration
   b. Hydrogen ions are supplied by a basolateral hydrogen/sodium pump.
   c. Parietal cell Na⁺/K⁺ pump is important for normal function of H⁺/K⁺ ATPase
   d. The gastric acid stimuli transfers H⁺/K⁺ ATPase to be inserted in basolateral border
   e. Acid tide formed in gastric venous blood stimulates secretin secretion to restore pH

53. The bile salt “Sodium taurocholate”:
   a. Amount excreted in stools per day is decreased after ileal resection
   b. Functions as a cholangogue that causes contraction of gall bladder
   c. Is a secondary bile salt formed in the colon by action of bacteria
   d. Is absorbed by a Na⁺-coupled 2ry active transport mechanism in ileal mucosa
   e. Forms micelles only at concentrations below the critical micellar concentration

54. The metabolic rate is:
   a. Decreased during pregnancy as nutrients are taken by the fetus
   b. Increased by age to provide energy for tissue regeneration
   c. Considered basal if measured during sleep at comfortable temperature
   d. Markedly increased by carbohydrate food intake more than fats and proteins
   e. Indirectly proportional to the environmental temperature

55. As regards food intake:
   a. Peptide YY inhibits feeding center by activating the melanocortin pathway
   b. Glucagon-like peptide and insulin decrease appetite and food intake
   c. Ghrelin is secreted from oxyntic cells to prevent overfeeding at each meal
   d. The feeding center is located in the ventromedial nuclei of the hypothalamus
   e. Leptin secreted from the adipocytes acts by increasing appetite stimulators
Part II: Extended Matching Question  Total marks: 5 marks

Answer in section B of your provided computer answer sheet

Match each gastrointestinal hormone below (A-H) with its functional description (1-5). Each option may be used once

(Each statement 1 mark)

A- Secretin
B- Gastrin
C- Gastrin releasing peptide
D- Gastric inhibitory peptide
E- Motilin
F- Somatostatin
G- Vasoactive intestinal peptide
H- Cholecystokinin

1- Relaxes the gastrointestinal smooth muscles and stimulates intestinal secretion of water and electrolytes

2- Is the major stimulus for gallbladder contraction and sphincter of Oddi relaxation

3- Decreased secretion of this hormone; as in heavy smokers, leads to marked drop of duodenal pH and produces ulcers

4- Produces stimulation of duodenal peristalsis and increases tone of lower esophageal sphincter

5- Has trophic action as it stimulates the growth of the mucosa of stomach, small intestine and colon
BIOCHEMISTRY
All the following questions must be attempted:

I. Metabolism of red blood cells has certain characteristic features. Give a detailed account of these features and the importance of each (details of the pathways are not required). Mention two metabolic errors that may occur in the red blood cells and their causes (10 marks)

II. Read the following cases and then answer the questions following each one: (5 marks each)

1. A breast-fed infant has an enlarged liver. His doctor noticed eye lens opacity. Laboratory tests revealed postprandial hypoglycemia and the presence of reducing sugar in the urine. Test for glucose in the urine was negative. Mention:
   a) The most probable diagnosis
   b) The deficient enzyme(s) responsible for the disorder.
   c) The cause of the hypoglycemia
   d) The cause of lens opacity
   e) Why some children recover from this disorder later in their life?

2. A three-week-old breast-fed baby started to suffer from brain toxicity manifesting as lethargy and drowsiness progressing to coma. Blood examination showed elevated serum ammonia. The condition was attributed to urea cycle disorder. Mention:
   a) Two deficient enzymes that lead to the above condition
   b) The mechanism of brain toxicity
   c) The treatment of this condition
   d) The different fates of ammonia in normal persons.

3. A fifty-year-old man had undergone partial gastrectomy for treatment of peptic ulcer. Later on, he started to suffer from megaloblastic anemia, hyperhomocysteinemia, and peripheral neuritis. The doctor started treatment by large doses of folic acid. The hematological manifestations were cured but the neurological manifestations worsened. Mention:
a) The most probable deficient vitamin and the cause of the deficiency.
b) The cause of hyperhomocysteinemia
c) The cause of the peripheral neuritis
d) Why the hematological manifestations but not the neurological condition were cured after supplying folic acid.

4. A forty-year-old obese female is complaining of yellowish discoloration of the skin, pain in the right side of the abdomen and severe itching. Her stools are gradually becoming pale in color while the urine is dark brown. Mention:
a) The possible diagnosis of this condition
b) The cause of the pale stools and dark urine
c) Three laboratory tests to confirm your diagnosis and your expectations for the results of the tests.
d) The possibility of development of kernicterus as a complications, and why?

III. Comment on the following (20 marks):
1. The development of hyperuricemia in Von Gierke's disease.
2. Excessive iron injections may lead to harmful effects.
4. An Intermediate in TCA cycle may inhibit the rate limiting step in glycolysis while activating the rate limiting step in fatty acid synthesis.
5. Both oligomycin and 2, 4-dinitrophenol inhibit ATP synthesis but by two different mechanism.
6. Diagnosis of myocardial infarction by measuring specific plasma enzymes.
7. Muscles can utilize glucose, fatty acids and during fasting ketone bodies for ATP production. However, each of the liver and the brain cannot utilize all these substrates. Explain what substrate(s) is (are) used by each and under what circumstances.
8. The development of lactate aciduria in chronic alcoholism and the improvement by multivitamin supply.
9. In abetalipoproteinemia, some lipoproteins are deficient. What is the defect in this disease and what are the lipoproteins affected.
10. Sources and fates of NADPH.
I- Read the following cases and then answer questions following each  

(24 marks)

1- Children with urea cycle disorders usually present with brain toxicity progressive to coma as they are exposed to protein in breast milk. The diagnosis is confirmed by finding of hyperammonemia with elevated levels of glutamine. (5 marks)

a- What is the cause of brain toxicity (2 marks), and elevated levels of glutamine (1 mark)
b- How these patients are treated (2 marks)

2- A 40 - year old woman admitted with recurrent pain in the abdomen, developed jaundice two days after admission. History revealed that the pain is often aggravated after intake of fatty meal. The patient was also complaining of itching. A routine urine examination showed the presence of bile pigments and bile salts, but urobilinogen was absent. (5 marks)

a- What is the type and cause of jaundice? (1 mark)
b- Explain the findings in the urine? (2 marks)
c- What are the expected color changes of the urine and feces, What are the causes of these color changes? (2 marks)

3- A six - year old boy was brought to the hospital. He had mental retardation, Osteoporosis, dislocated lenses and thrombosis. The patient was treated with pyridoxine, when the condition was improved. (6 marks)

a- What is your diagnosis? (1 mark)
b- Mention three amino acids which may show changes in their blood levels in this condition. (1 mark).
c- Which enzyme is defect in this patient? (1 mark).
d- Why pyridoxine may be effective in this case? (1 mark)
e- Similar condition may develop with other vitamin deficiencies. Mention what are these vitamins and what is their role in this condition, (2 marks).
4- A 45 year old woman is brought suffering from neurological symptoms (dementia, irregular gait and numbness in her hands and feet). Laboratory investigations revealed macrocytic anemia. (8 marks)

a- What is your diagnosis? (1 mark)
b - What metabolite you expect to find in the urine in large quantities? Give reason(s) for your answer. (2 marks)
c- What is the cause of anemia? (3 marks)
d- What is the cause of neurological manifestations? (2 marks)

II- Mention the name of the defective enzyme in the following inborn errors of metabolism (5 marks)
a- congenital arthropoietic porphyria
b- primary hyperoxaluria
c- Albinism
e- Lesch-Nyhan syndrome

III- Give an account of (13 marks)
a- Two functions of glutathione. (2 marks)
b- Sources of energy for the brain in the well fed condition, 4-24 hours after the last meal and during extended fasting for few days. (3 marks)
c- Changes in serum enzyme levels in myocardial infarction. Mention the time at which each enzyme reaches peak level. (3 marks)
d- Causes, biochemical and clinical changes in cases of orotic aciduria. How these patients are treated? (5 marks)

IV- On biochemical basis explain (8 marks)
a- PLP is an important coenzyme in carbohydrate metabolism. (1 mark)
b- The yield of ATP from glycolysis in red blood cells is about 20% lower than in other cells (2 marks)
c- Pellagra manifestation may accompany Hartnup disease. (2 marks)
d- Ethanol consumption may lead to hypo or hyperglycemia. (3 marks)
1- Which of the following statements is correct?
a- Urea is produced directly from hydrolysis of ornithine.
b- ATP is required for the reaction in which argininosuccinate is cleaved to form arginine.
c- The urea cycle occurs exclusively in the cytosol.
d- In humans, the major rate of nitrogen metabolism from amino acids is catalyzed by the combined actions of transaminase and glutamate dehydrogenase.

2- Liver transaminases catalyze the transfer of an -amino group from many different amino acids to a-ketoglutarate forming an intermediate which is deaminated back to a-ketoglutarate with the formation of ammonium ion. What is the intermediate produced?
   a- Aspartate.
   b- Alanine.
   c- Oxaloacetate.
   d- Glutamate.

3- Nitric oxide and urea have in common the fact that they both have as an intermediate precursor, the amino acid:
   a- aspartate.
   b- arginine.
   c- phenylalanine.
   d- Glutamate.

4- Carbamoyl phosphate synthetase:
   a- Is a flavoprotein.
   b- Is controlled by feedback inhibition.
   c- Is unresponsive to changes in arginine.
   d- Requires acetylglutamate as an allosteric effector.

5- Concerning glutamic acid, one of the following is NOT true:
   a- It is component of folic acid synthesis.
   b- It is a non-essential amino acid.
   c- It is a direct source of nitrogen for urea synthesis.
   d- It is a component of glutathione.

6- Carcinoid tumor is a metabolic disorder of
   a- Tyrosine.
   b- Tryptophan.
   c- histidine.
   d- Glycine.
7- Tyrosine would be an essential amino acid in the diet of a child with:
   a- Lesch - Nyhan syndrome.
   b- defective tyrosine aminotransferase.
   c- deficiency of thiamine.
   d- classical phenylketonuria.

8- Which amino acid serves as a carrier of ammonia from skeletal muscles to the liver?
   a- Alanine.
   b- Methionine.
   c- Arginine.
   d- Glutamine.

9- Excess lysine in the diet may impair the absorption of
   a- Arginine.
   b- Phenylalanine.
   c- Tyrosine.
   d- Tryptophan.

10- Which of the following amino acids is ketogenic but not glucogenic?
    a- Glutamate.
    b- Phenylalanine.
    c- Tyrosine.
    d- Leucine.

11- The inherited disease cystinuria is caused by defect in:
    a- Amino acid synthesis.
    b- Amino acid transport.
    c- Amino acid degradation.
    d- Disulfide bond formation.

12- Melanin synthesis decreased in
    a- Exposure to sun.
    b- Alkaptonuria.
    c- Vitamin B6 deficiency.
    d- Phenylketonuria.

13- The creatinine content of urine would be expected to be lower than normal in patients with:
    a- Lead poisoning.
    b- Hepatitis.
    c- Muscular dystrophy.
    d- Diabetes mellitus.
14- Serotonin is synthesized from which amino acid?
   a- Cysteine.
   b- Histidine.
   c- Serine.
   d- Tryptophan.
15- Increased urinary indoxyl sulfate occurs in
   a- Maple syrup urine disease.
   b- Hartnup disease.
   c- Homocystinuria.
   d- phenylketonuria.
16- Serine
   a- Is in equilibrium with the reonine via a reaction by hydroxymethyltransferase.
   b- May be metabolically connected to 3- phosphoglycerate or phruvate.
   c- Can be converted to selenoserine for incorporation into proteins.
   d- Is a prosthetic group for S-adenosylmethionine decarboxylase.
17- Aneonate developed unconjugated hyperbilirubinemia. No hemolysis can be demonstrated and other liver function tests are normal. There is no bilirubin found in urine. This infont condition continues to deteriorate and has died at 2 weeks of age. What is the most likely diagnosis?
   a- Crigler - Najjar syndrome, type I.
   b- Crigler - Najjar syndrome, type II.
   c- Dubin - johnson syndrome.
   d- Gilbert's syndrome.
18- Acute intermittent porphyria results form the deficiency of:
   a- Coproporphyrinogen oxidase.
   b- Protoporphyrinogen oxidase.
   c- Uroporphyrinogen 1 synthase.
19- The catabolism of hemoglobin:
   a- Occurs in red blood cells.
   b- Involves the oxidative cleavage of the porphyrin ring.
   c- Results in the liberation of carbon dionxide.
   d- Results is the formation of protoporphyrinogn.
20- S-Aminolevulinic acid synthase activity:
   a- Is frequently decreased in individuals treated with drugs, such as barbiturate phenobarbital.
   b- Catalyzes a rate- limiting reacion in porphyrin biosynthesis.
c- Requires the coenzyme biotin.
d- Is strongly inhibited by heavy metal ions such as lead.

21- The biosynthesis of heme requires all of the following EXCEPT:
a- Propionic acid.
b- Succinyl COA.
c- Glycine.
d- Ferrous ion.

22- Conversion of ribonucleotides to deoxyribonucleotides by ribonucleotide reductase requires:
a- Thioredoxin.
b- NADH.
c- Coenzyme A.
d- Pyridoxal phosphate.

23- Methotrexate is a potent anticancer that starves dividing cell of deoxyribonucleotides through direct inhibition of which of the following enzymes?
a- Ribonucleotide reductase.
b- Xanthine oxidase.
c- Dihydrofolate reductase.
d- Thymidylate synthetase.

24- Which drug is most effective in preventing uric acid accumulation for treating
a- Colchicines.
b- Hypoxanthine.
c- Cycloheximide.
d- Allopuninol.

25- Which of the following reactions is the committed step in de novo purine synthesis?
a- Ribose 5 phosphate. - 5- phosphoribosylase 1.
b- PRPP. - 5- phosphoribosylamine.
c- Hypoxanthine. - inosine monophosphate.
d- Carbamoyl phosphate. - carbamoyl aspartate.

26- Purine nucleotide biosynthesis can be inhibited by which of the following?
a- GTP.
b- UMP.
c- AMP.
d- ATP.
27. Which one of the following contributes nitrogen atoms to both purine and pyrimidine?
   a. Aspartate
   b. Carbamoyl phosphate
   c. Glycine
   d. Glutamic

28. In addition to arthritis, what other condition is most often associated with primary gout?
   a. Dementia
   b. Stones in renal system
   c. Hypoglycemia
   d. Alcoholism

29. Regarding starvation, all the following statements are true EXCEPT:
   a. Increased gluconeogenesis
   b. Increased glycogen degradation
   c. Decreased fatty acid oxidation
   d. Negative nitrogen balance

30. Which of the following is the most important source of blood glucose during the last hours of a 48 hour fast?
   a. Muscle glycogen
   b. Acetoacetate
   c. Liver glycogen
   d. Amino acids

31. Which of the following metabolic alterations would most likely be present in a chronic alcoholic compared to a non-drinker?
   a. Fatty acid oxidation is stimulated
   b. Dihydroxyacetone phosphate formation is favored over glycerol 3-phosphate formation
   c. The ratio of lactate to pyruvate is decreased
   d. The ratio of NADH/NAD increases

32. Which of the following conditions is NOT associated with alcoholism
   a. Hypoglycemia
   b. Increased synthesis of y-glutamyltransferase
   c. Hyperuricemia
   d. Inhibition of cytochrome p-450 system
33- Concerning the functions of vitamin E, all of the following statements are correct EXCEPT:
   a- Antioxidant
   b- Normal reproduction in animals.
   c- Helps in vision.
   d- Protects cellular membrane.

34- The tetrahydrofolic (FH4) does the following EXCEPT:
   a- Carrier of single carbon and it is involved in single carbon transfer reactions
   b- contributes to C-2 purine ring.
   c- Contributes to C-8 purine ring.
   d- Synthesis of UCP

35- The effects of vitamin A may include all of the following EXCEPT:
   a- Prevention of xerophthalmia.
   b- Serving as an antioxidant.
   c- Induction of certain cancers.
   d- Cell differentiation.

36- Formimino glutamic acid (FIGLU) is excreted in urine in the deficiency of:
   a- Folic acid.
   b- Vitamin B12.
   c- Niacin.
   d- Pyridoxal phosphate.

37- All the following processes occur in the red cells EXCEPT:
   a- Glycolysis.
   b- TCA cycle.
   c- HMP.
   d- BPG shunt.

38- Ascorbic acid may be associated with all of the following EXCEPT:
   a- Iron absorption.
   b- Bone formation.
   c- Visual cycle.
   d- Wound healing.

Match the enzymes from (a-d) with the following items from 39-42
39- Used to diagnose acute pancreatitis.
40- Used to detect bone disease.
41- Used to detect alcohol abuse.
42- Used to diagnose prostate cancer
   a- Amylase.
   b- y-glutamyl troansferase.
   c- aid phosphatase.
   d- alkaline phosphatase.

Match vitamins and their derivatives from (a-d) with the following items from 43-46
43- Carries carbon dioxide
44- Important constituent of acetyl coa
45- carries methyl groups and contains cobalt
46- required to convert proline to hydroxyproline
   a- ascorbic acid.
   b- pantothenic acid.
   c- biotin.
   d- cobamide coenzyme.

Match the following (a-d) with the following items from 47-50
47- Component of xanthine oxidase
48- Combined with iron to be stored
49- Required for synthesis of thyroxine
50- Essential component of carbonic anhydrase and carboxypeptidase
   a- Ferritin.
   b- Zinc.
   c- Molybdenum.
   d- Iodine.
The following are TEN MCQ and TEN extended matching questions in 3 pages. Answers ID! questions.

Choose the one answer you consider correct and record your choice on the separate Answer sheet. Each correct answer will score 1/2 mark (total 10 marks).

1- Accelerated de novo purine nucleotide biosynthesis in the LeschNyhan syndrome is most probably due to:
   a) Depression of 5-phosphoribosyl-l-pyrophosphate amidotransferase.
   b) Increased availability of 5-phosphoribosyl-1-pyrophosphate (PRPP).
   c) Defective feedback inhibition of carbamoyl phosphate synthetase II.
   d) Increased hypoxanthine-guanine phosphoribosyl transferase (HGPRT).

2- ALA dehydratase catalyzes conversion of ALA into:
   a) Hydroxymethylbilane.
   b) Uroporphyrinogen 1.
   c) Porphobilinogen.
   d) Coprophyrinogen III.

3- In case of congenital hyperammonemia, the following enzymes should be screened except?
   a) Argininosuccinate synthetase.
   b) Carbamoyl phosphate synthetase-I.
   c) Ornithine transcarbamoylase.
   d) Carbamoyl phosphate synthetase-II.

4- Pyruvate carboxylase is essential for
   a) Pentose shunt.
   b) Glycolysis.
   c) Gluconeogenesis.
   d) None of above.

5. Which of the following statements regarding vitamin A is true?
   a) It is not an essential vitamin.
   b) It is related to tocopherol.
   c) It is a component of rhodopsin.
   d) It is derived from ethanol.
6- Which of the following compounds serves as a primary link between the citric acid cycle and the urea cycle?
   a) Malate.
   b) Succinate.
   c) Isocitrate.
   d) Fumarate.

7- A deficiency of vitamin 812 causes:
   a) Cheliosis.
   b) Beri beri.
   c) Pernicious anemia.
   d) Scurvy.

8- Glycolysis and gluconeogenesis are reciprocally regulated. Which of the following correctly describes the mechanism of this regulation?
   a) Fructose 1.6 -bisphosphatase is activated by fructose 2.6 bisphosphate.
   b) Glucagon stimulates phosphofructokinase 2and inhibits fructose 2.6 -bisphosphatase.
   c) Insulin activates fructose 1.6. -bisphosphatase and inhibits phosphofructokinase 1.
   d) Fructose 2.6 -bisphosphate activates phosphofructokinase 1 and inhibits fructose1.6. -bisphosphatase.

9- Which of the following vitamin:biochemical reaction relationship is correct?
   a) Biotin: pyuvate---tacetyl CoA
   b) Thiamine pyrophosphate: pyruvate---toxaloacetate
   c) Niacin: NADPH+ + oxidized glutathione (GSSG)---tNADP+ +reduced glutathione (GSH)
   d) Pantothenic acid: alanine +-+ pyruvate

10- The catecholamines are synthesized from which amino acid?
   a) Tyrosine
   b) Tryptophan
   c) Glutamate
   d) Histidine
Match each disease with the suitable deficient enz

a) Tay-Sacks disease
b) vonGierke' disease
c) Hypouricemia
d) Albinism
e) Favism
f) Neiman- Pick
g) Hyperammonemia type II
h) Alkaptonuria i} Porphyria cutanea tarda
j) lesch-Nyhan syndrome

1- Glucose 6 phosphate dehydrogenase .
2- Adenosine deaminase deficiency
3- Hexosamidinase .
4- Glucose-
6- phosphatase .
5- Sphingomyelinase .6- Homogentisic acid oxidase .
7- Hypoxanthine-guanine phosphoribosyl transferase .
8- Uroporphrinogen decarboxylase .
9- Tyrosinase.
10- Ornithine transcabamoylase .
Second Year Final Examination
All The Following Questions Must Be Attempted (65 marks)

1- Diagramatically illustrate: (16 marks)
   1- Oral glucose tolerance curve of normal and diabetic patients.
   2- Hormonal regulation of glycogen metabolism.
   3- Vitamin K cycle.
   4- Source of atoms of purine and pyrimidine rings.

11- Illustrate the biochemical reactions catalyzed by the following enzymes. Mention the required cofactors: (6 marks)
   1- ALA synthase.
   2- Pyruvate dehydrogenase.
   3- Serum hydroxyl methyl transferase.
   4- Alanine aminotransferase.

III- Give short account on:
   1- Hepatic steatosis (definition & causes).
   2- Hyperhomocysteinemia (causes, effects & treatment).
   3- Metabolic adaptation in pregnancy.
   4- Hyperammonemia (types, mechanism of intoxication & treatment). (16 marks)

IV- Enumerate
   1- Two metabolites derived from each serine & tryrosine.
   2- Two sources & two fates of acetyl-CoA.
   3- Two actions of NADPH.
   4- Two functions of glutathione.
   5- Active form of vitamin B6, Bl, O & Folic acid.
   6- Two sources & two fates of one-carbon units.
   7- Two plasma enzymes used in diagnosis of pancreatic disease. (14 marks)

V- Compare between:
   1- Carbamoyl phosphate synthetase I & II.
   2- Type I & II diabetes mellitus. (3 marks)
1- A two - year old child had his first meal of Egyptian beans. Shortly after the meal he was pale, drowsy and fainted. Hemoglobin was as low as 4.0 gram/dl. Urine color was not appreciably changed, but sclera was yellow. (5 marks)
a- What is your diagnosis?
b- What is the biochemical pathway affected?
c- What is the defective enzyme?
d- What is the biochemical basis for hemolysis?

2- A 35 year old man present with acute pain in his right big toe. There was no history of trauma or pain in other joints. Routine investigation revealed that uric acid is 8.5 mg/dl (5 marks)
1- What is the likely diagnosis?
2- What are the different biochemical causes?
3- What is main drug of choice in this case? How does it act?
All questions must be attempted (4 questions in 2 pages)

I. Give an account on: (24 Marks)
   1. Phenylketonuria (biochemical defect, clinical manifestations, diagnosis, and treatment).
   2. Ketogenesis (regulation and importance). What are the effects of ketosis?
   3. Hypoglycemia (types and causes).

II. On biochemical basis, explain: (20 Marks)
   1. The metabolic adaptations that occur during Early Fasting State.
   2. Causes and effects of hyperhomocysteinemia.
   3. Retinoic acid is important for the regulation of cell growth and differentiation.
   4. Disturbance in metabolism of tryptophan may be associated with pellagra.
   5. HDL is important in chylomicron, VLDL and cholesterol metabolism.
   6. Metabolism of the red blood cells has certain characteristics which are different from the metabolism of other tissues (details are NOT required).

III. Illustrate the following biochemical transformations (Enzymes and coenzymes are required - chemical formulae are NOT required): (6 Marks)
   1. Adrenaline from tyrosine.
   2. Creatinine from glycine.
IV. **Cases:**

1. A thirty-year old leukemic patient complained from severe pain in the joints of his feet. He went to his doctor who referred him for laboratory investigation. The results showed high plasma uric acid level.

   a. Mention the most probable **diagnosis**.
   b. What is the **biochemical basis** of the disease?
   c. Mention **2 drugs** (with different mechanisms) used in the lowering of blood uric acid level and mention the **mechanism** of their action.
   d. One of the previous drugs used may lead to **renal stones**, explain why and how to prevent this.

2. After a heavy fatty meal, a subject complained from nausea, vomiting and pain in the right hypochondrium. His stools became pale clay colored and his urine became dark brown. Sonar showed gall bladder stones. His sclera showed yellowish discoloration.

   a. Mention the most probable **diagnosis**.
   b. What are the **causes** of the changes in the **color** of the **urine and stool**?
   c. How can laboratory tests differentiate the **three major types of jaundice**.
All questions must be attempted (5 questions in 2 pages)

I. Give an account on: (ONLY TWO are required) (12 Marks)
   1. Hyperhomocysteinemia (causes and effects).
   2. Functions of vitamin C.
   3. Gout (definition and causes).

II. On biochemical basis EXPLAIN: (ONLY SIX are required) (18 Marks)
   1. PLP is important for heme synthesis. (the reaction is required)
   2. Diagnostic value of plasma aminotransferases.
   3. Statins are a group of drugs used to lower plasma cholesterol.
   4. Administration of aspirin may lead to hemolytic anemia in patients suffering from favism.
   5. Vitamin D is important to maintain normal plasma levels of calcium.
   6. Glycogenesis and glycogenolysis are reciprocally regulated.
   7. Glutamic acid is important for brain metabolism. (the reactions are required)

III. Illustrate the following biochemical transformations (Enzymes and coenzymes are required - chemical formulae are NOT required):
     (ONLY THREE are required) (9 Marks)
     1. Glycerol to glucose.
     2. Tryptophan to serotonin.
     3. Adenosine to hypoxanthin.
     4. Serine to cysteine.

IV- Mention: (ONLY SIX are required) (12 Marks)
   1. Two differences between CPSI and CPSII.
   2. Two deficiency manifestations of vitamin A.
   3. Two functions of glutathione.
   4. Two metabolic inborn errors of glycine.
   5. Two substances which are methylated by SAM.
   6. Two causes of phenylketonuria.
7. Two metabolic derivatives of tyrosine.

V. Cases: (ONLY TWO cases are required) (14 Marks)

1- A 45-year old, female complains of excessive thirst, fluid intake, urination. She reports no medical problem. On examination she was obese. Her urine analysis revealed glucosuria, and a serum random blood sugar 360mg/dL. (7 marks)
   1- What is the most likely diagnosis?
   2- Mention the changes that can occur in lipid metabolism in the above disease.
   3- How can you treat the above disease?

2- A newborn boy has yellow color of the sclera. The yellow color started to appear three days after birth. The color became worse by the fifth day then started to decline by the seventh day after birth. His plasma total bilirubin was elevated but never reached 15 mg/dL. (7 marks)
   1. What is your possible diagnosis?
   2. Explain the biochemical mechanism involved.
   3. How can you treat this condition?
   4. Which type of bilirubin you should expect to be elevated in plasma?

3- A 5-month old baby was admitted to the hospital complaining of periodic bouts of vomiting, lethargy and failure to gain weight. Examination revealed increased concentration of plasma ammonia but low concentration citrulline. (7 marks)
   1. What is the cause of this hyperammonemia?
   2. What is the mechanism of toxicity of hyperammonemia?
   3. How can you treat this condition?
All questions must be attempted (questions in 2 pages)

I. Give an account on: (15 Marks)
   1. Glycogen storage disease Type I (cause and metabolic effects).
   2. Creatine (biosynthesis, fate and excretion).

II. On biochemical basis, explain: (16 Marks)
   1. Celiac disease produce fatty diarrhea. (2 Marks)
   2. Serine plays an important role in phospholipids metabolism. (2 Marks)
   3. Causes of neurological manifestations indicative of vitamin deficiencies. (4 Marks)
   4. Hyperglycemia causes vascular complications in diabetic patients. (3 Marks)
   5. AMP and calcium are important in regulation of glycolysis in muscles. (3 Marks)
   6. Association of hypercholesterolemia with diabetes mellitus. (2 Marks)

III. Illustrate the following biochemical transformations (Enzymes and coenzymes are required - chemical formulae are NOT required): (6 Marks)
   1. Melatonin from tryptophan.
   2. Carbamoyl phosphate to ura.
   3. Isocitrate to fumarate.

IV. Mention: (12 Marks)
   1. One amino acid is required for both purine and pyrimidine synthesis.
   2. One allosteric activator of acetyl CoA carboxylase.
   3. One water soluble vitamin which is stored in the body.
   4. One vitamin deficiency leading to another vitamin deficiency.
   5. One vitamin deficiency occur in chronic alcoholism.
   6. Number of ATP generated when one molecule of palmitic acid is oxidized completely.
7. The cause of death in cyanide poisoning.
8. When a standard oral glucose tolerance test was done, the blood glucose levels of the patient were found as: fasting level = 120 mg/dl and postprandial level = 160 mg/dl. What is your diagnosis.
9. Two co-enzymes required for the conversion of propionyl CoA to succinyl CoA.
10. Two markers that increase in myocardial infarction.
11. Two enzymes needed for hydrogen peroxide to be metabolized in more physiological fashion.
12. Two important inborn error of amino acid metabolism which cause mental retardation.

V. Cases: (16 Marks)
1. A 30-years-old chronic alcoholic male suffers from episode of aching joints, swelling, tenderness and an asymmetric tophus on his big toe. Also he suffers from frequent renal colic. There is no history of trauma. Blood and urine analysis revealed elevated levels of uric acid. (8 Marks)
   a) What is your diagnosis?
   b) How does alcohol precipitate this attack?
   c) What is the drug of choice in treating such patient? How does it act?

2. A forty-year-old, obese, woman complained of yellow discoloration of skin and sclera. Her urine became dark. The condition was associated with acute severe abdominal pain and pruritis (itching). (8 Marks)
   Comment on the following:
   a) The possible cause(s) for such a condition.
   b) The changes in plasma total bilirubin, plasma direct bilirubin, and plasma indirect bilirubin in such condition(s).
   c) The cause of the dark colour of the urine in the above condition.
   d) The plasma enzymes elevated in such condition(s).
Histology

Section II : 7 questions for 45 marks

Essay Question : (10 marks)

1. Illustrate your answer with a labeled diagram describe the histological structure of the renal malpighian corpuscle;
   a- Bowman's capsule (2 marks)
   b- Podocytes (2 marks)
   c- Glomerulus (1 mark)
   d- Blood renal barrier (2 marks)
   e- Mesangial cells (1 marks)
   f= Diagram (2 marks)

2. Draw a labeled diagram for a section of :
   a- Suprarenal gland. (5 marks)
   b- Testis.

Short Answer Questions : (5 marks each)

3. Describe the histological structure of organ of Corti with reference to the auditory pathway.

4. Define & describe the alveolar epithelium (L.M, E.M & functions) & the structure of the blood-air barrier.

5. In a table form mention the differences between parotid & pancreas.

6. List the cells lining the fundic glands & mention the L.M & E.M/characters for two of these cells.

7. Describe the histological structure of a mature Graafian follicle.
Histology (HIS - 202)

The exam is formed of 2 sections:

Section 1: 40 questions for 20 marks (40 minutes)
MCQ and extended matching paper (4 pages).

Section II: 9 1questions for 55 marks (2:20 H:min)

Answer the following questions:

1- In a table form list 5 histological differences between proximal and distal convoluted tubules of nephron. 5 marks

2- State site, Lm, EM and functions of Sertoli cell. 5 marks.

3- Define and describe components of blood placental barrier.

4- Describe histological features of different layers in suprarenal cortex

5- a. In fig. 1 Label a, b, c, d, e. (5)

b- With reference to fig. 1, List the passages through which exocrine secretion produced by the cells passes and state their epithelial lining. (5)

6- Draw a labeled coloured diagram of a section in fundus of stomach.

7- Describe the structure of olfactory mucosa illustrating your answer with a diagram.

8- In a table form compare and contrast histology of cornea and sclera. 5 marks

9- (a) Outline the proprioception pathway from face and head. (5)

(b) State the origin, course, termination and functions of medial lemniscus. (5)

10 marks
Identify the choice that best completes the statement or answers the question.

1- Which of the following statements concerning the oviduct is Not true?
   a- It is lined by a simple columnar partially ciliated epithelium.
   b- Ite epithelium contains more ciliated cells in infundibulum.
   c- It helps in capacitation of spermatozoa.
   d- The cilia have the greatest role in pushing the ovum towards the uterus.
   e- Its musculara is thickest in the isthmus and intramural parts.

2- Each of the following statements about granulose lutein cells is correct EXCEPT:
   a- They secrete progesterone.
   b- They contain abundant ser.
   c- They form the main bulk of corpus luteum.
   d- They can divide and increase in number.
   e- They are large and pale stained.

3- The oocyte in unilaminar primary follicles is about ...... in size
   a- 10 um.                    b- 20 um.                  c- 30 um.
   d- 40 um.                    e- 50 um.

4- Concerning cortical stromal cells of the human ovary, all of the following are correct except
   a- Appear during pregnancy.
   b- Stromal cellularity is hormone dependant.
   c- Secrete estrogen.
   d- Provide support for developing ova.
   e- give rise to theca folliculi.

5- Concerning multilaminar primary follicle, one statement is false:
   a- Primary oocyte reaches about 30 um.
   b- Follicular cells form granulosa cells.
   c- Zona pellucida appears.
   d- Theca folliculi appears.
   e- Fshis responsible for development.
6- Differentiation of theca folliculi to theca interna and externa occurs for the first time in.
   a- Primordial follicle.
   b- Unilaminar primary follicle.
   c- Multilaminar primary follicle
   d- Antral follicle
   e- Graafian

7- Concerning the endocervix, which of the following is correct?
   a- Is aglandular.
   b- Normally covered by stratified squamous epithelium.
   c- Connects directly with the vaginal wall.
   d- Has branched tubuloalveolar glands.
   e- Lined with columnar ciliated epithelium.

8- The cervical mucus:
   a- Does not undergo marked changes with the menstrual cycle.
   b- In the proliferative phases is thick & viscid.
   c- In the secretory phase is thin & watery.
   d- In the secretory phase prevents passage of spermatozoa and microorganisms into the body of spermatozoa and microorganisms into the body of uterus.
   e- Originates from goblet cells in the lining epithelium of the cervix

9- Lactiferous sinus in the mammary gland is lined by:
   a- Simple cuboidal epithelium.
   b- Simple columnar epithelium.
   c- Pseudostratified columnar epithelium.
   d- Stratified cuboidal epithelium.
   e- Simple squamous epithelium.

10- Bartholin's gland:
   a- Is a serous secreting gland.
   b- Is a mucus secreting gland.
   c- Is situated in the labia majora.
   d- Is situated on either sides of the clitoris.
   e- Is also known as Cowper's gland.

11- Ciliated cells in the fallopian tube are most numerous in:
   a- Intamural segment.
   b- Isthmus.
   c- Ampulla.
   d- Infundibulum.
   e- Fimbriae.
12- The type of junction between cytoplasmic processes of corona radiata cells and microvilli from the oocyte is:
   a- Tight occluding
   b- Desmosome
   c- Gap
   d- Adherens
   e- Hemidesmosome

13- Concerning the eye lens the subcapsular epithelium is:
   a- Simple squamous.
   b- Simple columnar ciliated.
   c- Simple cubidal.
   d- Simple columnar.
   e- Pseudo stratified columnar epithelium.

14- Concerning the choroid, the layers are arranged from out inwards are:
   a- Suprachoroid, choriocapillaries, vessel layer and Bruch's membrane.
   b- Bruch's membrane vessel layer choriocapillaries and suprachoroid.
   c- Suprachoroid, vessel layer, choriocapillaries and Bruch's membrane.
   d- Bruch's membrane, choriocapillaries: vessel layer and suprachoroid.
   e- Bruch's membrane, suprachoroid, choriocapillaries and vessel layer.

15- Ceruminous glands are:
   a- Ceiled tubular apocrine sweat glands.
   b- Ceiled tubular holocrine sweat glands.
   c- Ceiled tubular apocrin sebaceous glands.
   d- Ceiled tubular holocrine sebaceous glands.
   e- Simple tubular apocrine sweat glands.

16- concerning the Shrapnel's membrane, all are true except:
   a- It is the antero - superior part of the tympanic membrane.
   b- It is transparent.
   c- It is flaccid.
   d- It contains two layers of collagen fibers.
   e- Outer Surface covered by stratified squamous epithelium.

17- Concerning the middle ear, all true except:
   a- The lateral wall is closed by the tympanic membrane.
   b- The oval window is closed by fool plate of the stapes.
   c- The round window is closed by secondary tympanic membrane.
   d- Posteriorly, it is separated from the mastoid air cells by a bony septum.
   e- It is connected to the nasopharynx by the Eustachian tube.
18- Concerning the Eustachian tube:
   a- Its cartilaginous part is lined by simple cuboidal epithelium.
   b- Its bony part is lined with simple columnar ciliated epithelium.
   c- It is always open.
   d- It is about 7 cm in length.
   e- Connects the middle ear to the oro-pharynx.

19- Which of the following is not found in basilar membrane?
   a- Inner hair cells.
   b- Outer hair cells.
   c- Pillar cells.
   d- Stria vascularis.
   e- Phalangeal cells.

20- Perilymph is located in which of the following structures?
   a- Utricle.
   b- Saccule.
   c- Semicircular canals.
   d- Scala media.
   e- Scala tympani.

21- The ampullary gelatinous mass in which type I and type II hair cells is inserted is called.
   a- Crista.
   b- Otolithic membrane.
   c- Ampulla.
   d- Cupula.
   e- Tectorial membrane.

22- Which of the following is the function of the vestibular membrane?
   a- Maintain the gradient between the endolymph and the perilymph.
   b- Maintain communication between the tympanic and vestibular cavities.
   c- Transmit sound to the oval window.
   d- Maintain the concentration gradient necessary for sensory transduction.
   e- Dampen the action of the auditory ossicles.

23- Medial geniculate body is related to
   a- Visual pathway.
   b- Auditory pathway.
   c- Pain & temperature pathway.
   d- Proprioception pathway.
   e- Crude touch pathway.
24- All of the followings are true for red nucleus except:
   a- It receives afferent impulses from cerebral cortex.
   b- It gives efferent impulses to thalamus.
   c- It receives afferent impulses from spinal cord.
   d- It receives impulses from cerebellum of opposite side.
   e- It receives afferent impulses from subthalamus.

25- The following are connections of vestib nuclei except:
   a- Vestibulo cocular connection.
   b- Vestibulo cerebral connection.
   c- Vestibulo reticular connection.
   d- Vestibulo bulbar connection.
   e- Vestibulospinal connection.

26- All of the following is true about Climbing fibres except:
   a- The arise from inferior olivary nucleus.
   b- They synapse with purkinje cells.
   c- Each carry inhibitory signals.
   e- Can be seen in molecular of cerebellum.

27- Which of the following is involved in the blood brain barrier?
   a- Astrocytes.
   b- Ependymal cells.
   c- Oligodendrocytes.
   d- Schwann cells
   e- Macrophages.

28- Border cells are found in:
   a- Pia mater.
   b- Arachniond matter.
   c- Dura matter.
   d- Pons.
   e- Medulla.

29- Which of thee following is not passing through superior cerebellar peduncle?
   a- Tectocerebellar tract.
   b- Cerebellothalamocortical fibres.
   c- Ventral spinocerebellar tract.
   d- Dorsal spinocerebellar tract.
   e- Cerebelloruospinal fibres
30- Which of the following is not true for golgi cells in cerebellum?
   a- They are large cells.
   b- Their dendrites branch in different directions.
   c- They provide inhibitory feedback on granular cells.
   d- Present in granular layer of cerebellum.
   e- Their axons synapse with purkinje cells.

Matching
   a- Origin is from lower 1/3 of motor area 4 in cerebral cortex.
   b- Decussation of superior cereellar peduncle.
   c- Axons of associative neurons between sensory and motor nuclei in spinal cord.
   d- Superior olive.
   e- Connect extrapyramidal nuclei with anterior thalamic cells.
   f- Origin is from area 8 of cerebral cortex.
   g- Clark's nucleus.

1- Fasciculi propri tracts.
2- Medial corticobulbar tract.
3- Mid brain at level of inferior colliculus.
4- Medial longitudinal bundle.
5- Dorsal spinocerebellar tract.
   a- Supportive glial cells with long processes.
   b- Are rich in melanin pigments.
   c- Their dendritic processes are highly modified cilia.
   d- Cell processes terminate near synapse between bipolar and ganglion cells.
   e- Make synapse with either rod or cone cells.
   f- Large nerve cells with axons bended at right angle.
   g- Cell processes terminate near synapse between photoreceptors and bipolar cells.

6- Bipolar cells.
7- Ganglion cells.
8- Horizontal cells.
9- Amacrine cells.
10- Muller cells.
Histology (HIS-202)

Final Examination
READ THESE INSTRUCTIONS FIRST
The examination is formed of 2 sections;
Section I: 20 marks
- Multiple choice questions (section A, 30 questions) and extended matching (section B, 10 questions).
- Write the ID of the exam A or B in the space provided in the separate answer sheet.
- Read the instructions on the Answer Sheet very carefully.
- Choose the one you consider correct and record your choice in soft pencil on the separate Answer Sheet.
- Each correct answer will score half mark. No mark will be deducted for a wrong answer.

Section I- 40 questions 45 minutes 20 marks
Section A: Multiple Choice
identify the choice that best completes the statement or answers the question.

1. The central canal is lined by:
   a. Stratified squamous epithelium.
   b. Simple cubical epithelium partially ciliated.
   c. Pseudostratified columnar ciliated epithelium.
   d. Simple squamous epithelium.
   e. Simple columnar non ciliated epithelium.

2. The grey matter is formed of the following except:
   a. Nerve cells.
   b. Oligodendroglia.
   c. Neuroglial cells.
   d. Unmyelinated nerve fibres.
   e. Myelinated nerve fibres.

3. The following are tracts that carry sensations that reach the cerebral cortex except:
   a. Gracile tract.
   b. Dorsal spinocerebellar tract.
   c. Ventral spinothalamic tract.
   d. Cuneate tract.
   e. Lateral spinothalamic tract.
4. The second order neuron in proprioception from lower half of the body is in:
   a. Cuneate nucleus on the same side.  
   b. Gracile nucleus on the same side. 
   c. Cuneate nucleus on opposite side. 
   d. Gracile nucleus on opposite side. 
   e. Medial lemniscus on the same side. 

5. Which of the following is involved in the blood brain barrier?
   a. Schwann cells  
   b. Astrocytes. 
   c. Oligodenclrocytes.  
   d. Macrophages. 
   e. Ependymal cells. 

6. All of the followings are true for red nucleus except:
   a. It receives afferent impulses from subthalamus. 
   b. It receives afferent impulses from spinal cord. 
   c. It gives efferent impulses to thalamus. 
   d. It receives afferent impulses from cerebral cortex. 
   e. It receives afferent impulses from cerebellum of opposite side. 

7. Vestibulo bulbar fibres connect vestibular ` nuclei with
   a. red nucleus  
   b. nucleus of glossopharyngeal nerve. 
   c. nucleus of accessory nenre. 
   d. nucleus of vagus nerve. 
   e. cerebellum 

8. Medial longitudinal bundle extends in spinal cord in the form of:
   a. ventral vestibulospinal tract. 
   b. olivospinal tract. 
   c. lateral vestibulospinal tract. 
   d. ventral reticulospinal tract. 
   e. lateral reticulospinal tract 

9. Inferior cerebellar peduncle contains all the following except:
   a. exteranl arcuate fibres. 
   b. vestibulocerebellar fibres. 
   c. ventral spinocerebellar tract. 
   d. reticulocerebellar libres. 
   e. olivocerebellar fibres. 

10. All the following are true for comma shaped tract except:
   a. presents in cervical and upper thoracic segments. 
   b. completes stretch reflex arc 
   c. presents in posterior column of white matter. 
   d. formed of short ascending fibres from cuneate tract. 
   e. terminates in cuneate nucleus. 

11. Middle part of nucleus ambiguous gives origin to;
   a. glossopharyngeal nerve.  
   b. hypoglossal nerve. 


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c. accessory nerve.  
d. vagus nerve.  
e. facial nerve.

12. Which of the following statements is characteristic of the choroid?  
a. It is avascular.  
b. It is the posterior portion of the tunica fibrosa.  
c. it is tightly attached to the sclera.  
d. it is one of the refractive media of the eye.  
e. It contains many melanocytes.

13. Which of the following statements is characteristic of the cornea?  
a. It is devoid of nerve endings.  
b. It is rich in melanocytes.  
c. It forms the anterior boundary of the posterior chamber of the eye.  
d. It is the anterior transparent portion of the tunica fibrosa.  
e. It represents the anterior portion of the tunica vasculosa.

14. Which description is true of the retina's pigmented epithelium?  
a. is classified as photoreceptor.  
b. phagocytoses flattened discs shed by cones.  
c. is composed of a single layer of columnar cells with basal oval nuclei  
d. rests on Descemet's membrane.  
e. shares information with Bruch's membrane

15. Concerning the Bowman's membrane, all are true except:  
a. It forms a protective barrier to the cornea.  
b. it cannot regenerate.  
c. It is formed of collagen fibrils.  
d. It is a thin membrane.  
e. It is non cellular.

16. Concerning the eye lens, the subcapsular epithelium is:  
a. Simple columnar.  
b. Pseudo stratified columnar epithelium.  
c. Simple squamous.  
d. Simple cuboidal.  
e. Simple columnar ciliated.

17. The inner limiting membrane is formed by tight junctions between:  
a. Photoreceptors.  
b. Amacrine cells.  
c. Muller's cells and amacrine cells.  
d. End processes of Muller's cells.  
e. Muller's cells and photoreceptors.

18. The proliferative phase of the menstrual cycle:  
a. it is initiated by the secretion of estrogen from theca interna.
b. spiral arteries elongate and become congested.
c. begins in the 14\textsuperscript{th} day and ends at the 28\textsuperscript{th} day of the cycle.
d. the endometrial glands become long and highly tortuous.
e. it is known as the luteal phase.

19. Mucosa of the fallopian tube is lined by:
   a. Pseudostratified columnar ciliated epithelium
   b. Simple columnar partially ciliated
   c. Non-keratinized stratified squamous epithelium
   d. Simple columnar non ciliated  e. Simple cubical epithelium

20. Concerning the corpus luteum, which of the following statements is true?
   a. It is concerned with the secretion of progesterone & estrogen.
   b. When it is degenerated, it changes into atretic follicle.
   c. It is embedded in the ovarian hilum
   d. it is a permanent endocrine organ
   e. it is formed under effect of FSH

21. The type of junction between cytoplasmic processes of corona radiata cells and microvilli from the oocyte is:
   a. Gap b. Adherens
   c. Hemidesmosome d. Tight occluding
   e. Desmosome

22. Liquor folliculi is secreted by:
   a. Theca interna cells b. Zona pellucida
   c. Granulosa cells d. Theca externa cells
   e. Corona radiata cells

23. Which structures are located outside the muscle spindle capsule?
   a. extrafusal fibres b. nuclear chain fibres
   c. intrafusal fibres d. flowerspray endings
   e. nuclear bag fibres

24. Which receptors are classified as uncapsulated?
   a. Golgi tendon organs b. muscle spindles
   c. free nerve endings d. Pacinian corpuscles
   e. Meissner's corpuscles

25. Which of the following statements concerning the stratum granulosum is true?
   a. It lies superficial to the stratum lucidum.
   b. It contains melanosomes.
   c. It contains Merkel's cell.
   d. It is the thickest layer of the epidermis in thick skin.
   e. It contains keratohyalin granules.

26. Meissner's corpuscles are present in which of the following regions of the skin?
   a. Hypodermis b. Dermal reticular layer
c. Epidermal ridges
d. Stratum basale
e. Dermal papillary layer.

27. **Which cells in epidermis of skin are stellate shaped and contain Birbeck’s granules?**
   a. melanocytes
   b. myoepithelial cell
c. Langerhans cells
d. keratinocytes
e. Langerhans cells

28. **All are characters of keratinocytes except:**
   a. represent 15% of cells of epidermis
   b. superficial layer cotinously shed off
c. cells accumulate keratin
d. deep layer divides continuously
e. arranged in 5 layers in epidermi

29. **All are true concerning sebaceous glands except:**
   a. cells at center degenerate & release watery content rich in urea & ammonia.
b. alveoli are lined by flat germinal & polyhedral cells.
c. A simple or branched alveolar glands.
d. open into upper third of the hair follicle.
e. secretion has antifungal & antibacterial actions.

30. **Merkel's cells**
   a. act as antigen presenting cell
   b. form keratin
c. form sebum
   d. mechanoreceptors
e. form melanin pigment

**Section B: Matching**

a. trigeminal ganglion
b. lateral geniculate body
c. mesencephalic nucleus
d. medial geniculate body
e. small cells in spinal ganglion.
f. large cells in spinal ganglion.
g. medium sized cells in spinal ganglion.

1. **Proprioceptive pathway from face**
2. **Simple touch pathway from head**
3. **Pain and temperature pathway from body**
4. **Auditory pathway**
5. **Crude touch pathway from the body**
   a. secretes HCG
   b. secretes mucus
c. secretes progesterone
d. synthesizes glycogen
e. aglycoprotein layer
   f. secretes estrogen
g. secretes aromatase enzyme

6. **theca lutein cell**
7. **syncytiotrophoblast**
8. **vaginal epithelium**
9. **granulosa cell**
10. **zona pellucida**
Histology Section II

Instructions for candidates:
- 9 Short answer questions in 2 printed pages.
- Write your candidate number and name in the spaces provided at the slip on the separate answer booklet.
- Write your answer in the separate answer booklet.
- The number of marks is given in brackets [ ] at the end of each question or part question.

Answer all the questions.

1. State the components of:
   a. Billroth cords. [1]
   b. Blood thymic barrier. [2]
   c. Paracortex of lymph node. [1]

   (4 marks)

2. a. Name four secretory cell types in gastric glands and differentiate between them in terms of their site in gland, staining properties, secretory product(s) and prominent organelles. [7]
   b. Sketch a labeled diagram for EM picture of one the cells you mentioned in question 2.a. [I]

   (8 marks)

3. How to differentiate between a cells and pcells in a section of pancreas?

   (4 marks)

4. In a table form compare somatotrophs and mammotrophs in terms of shape, reaction, hormone secreted and EM picture.

   (4 marks)

5. List functions of mesangial cells.

   (4 marks)

6. Describe blood testis barrier in terms of the ~ and cellular structure responsible for its formation, the contents of the basal and adluminal compartments and its functions.

   (6 marks)
7. In ovary, differentiate between:
   a. Primordial and unilaminar primary follicles.[I]
   b. Unilaminar and multilaminar primary follicles.[3]
   c. Primary and secondary follicles.[3]

(7 marks)

8. Compare eccrine sweat glands and apocrine sweat glands in terms of mode
   of secretion, ecory part and excretory duct.                        (4 marks)

9.                                           (14 marks)

   a. State the exact location of organ of Corti and name the cells present in
      it.[4]
   b. Outline the auditory pathway

(14 marks)
Histology
Section II

Instructions for candidates:

- 10 Short answer questions in 2 printed pages.
- Write your candidate number and name in the spaces provided
  at the slip on the separate answer booklet.
- Write your answer in the separate answer booklet.
- The number of marks is given in brackets [ ] at the end of each
  question or part question.

Answer all the questions:

1. Describe the white pulp of spleen in terms of one
   specific character, different zones and predominant
   lymphocyte type in each zone.
   [5 marks]

2. Name four key cell types in the epithelium lining the
   small intestine. Differentiate between them in terms of
   their functions and structural properties.
   [8 marks]

3. List four organelles present in hepatocytes with
   reference to function(s) performed by each one.
   [4 marks]

4. Distinguish between zona glomerulosa and zona
   reticularis in suprarenal gland in terms of:
   a. Site in gland.
   b. Arrangement of cells and type of blood vessels.
   c. Light microscopic features of cells.
   d. Electron microscopic features of cells.
   e. Functions with reference to its control.
   [5 marks]
5. Relate the structure of podocytes to its functions. 
   [5 marks]

6. Describe interstitial (Leydig) cells in terms of location, shape, staining properties, primary function and organelle(s) responsible for this primary function. 
   [5 marks]

7. Corpus luteum is embedded in ovarian cortex. 
   a. Describe its structure.[2] 
   b. State its fate.[2] 
   c. List its types.[1] 
   [5 marks]

8. Eye and ear are special sense organs. 
   a. List causes of corneal transparency [2.5] 
   b. Describe inner and outer hair cells in organ of Corti.[2.5] 
   [5 marks]

9. Skin is the largest organ in the body. 
   a. Mention site, prominent organelles and function of Langerhans cells in skin.[2.5] 
   b. Describe Meissner's corpuscle in terms of site, shape and function of this nerve ending.[2.5] 
   [5 marks]

10. Describe the following lemnisci in terms of origin, course, termination and function(s): 
    a. Medial lemniscus.[4] 
    b. Trigeminal lemniscus.[4] 
    [8 marks]
Histology (HIS-202)

Section II

- 8 Short answer questions in 2 printed pages.
- The number of marks is given in brackets ( ) at the end of each question & parts of a question.

• Answer all questions:
  1. Describe the main structural changes that occur throughout the respiratory airways. (5 marks)
  2. a. Define space of Disse and list 4 principal components. (4 marks)
     b. Describe L.M., E.M. features of:
        • Oxyntic cells
        • Paneth cells (4 marks)
  3. Describe the Adrenal Medulla in terms of:
     • Embryonic origin
     • Histological structure
     • Blood Supply (5 marks)
  4. Define the Blood Renal Barrier. Mention its components and describe the role of each component in the filtration process. (5 marks)
5. List and describe Four Spermatogenic cell types in terms of:
   - Nuclear morphology
   - Chromosomal number
   - Role in spermatocytogenesis (7 marks)

6. a. Compare and contrast the Uterine Endometrial Zones. (4 marks)
    b. Describe the histological structure of Uterine Cervix. (4 marks)

7. a. Name and describe the structural components of the Lens. Mention one visual problem that would result from any change in such components. (5 marks)
    b. Name and describe the structures in the Maculae and Crista ampularis that correspond to the following structures in the organ of Corti:
       - Inner and outer hair cells
       - Stereocilia
       - Phalangeal cells
       - Tectorial membrane (4 marks)

8. a. Compare between Dorsal and Ventral Spinocerebellar tracts as regards: origin, course, termination and function. (4 marks)
    b. Describe the pathway of the tract that carries pain and temperature from the body. Mention the manifestations of lesion of this tract. (4 marks)
Cairo University
Faculty of medicine

June Exam., 2015

Date: 2/7/2015

Total Marks Allocated: 55
Time allowed: 2 h, 15 min

Histology (HIS-202)

Section II

• 8 Short answer questions in 2 printed pages.
• The number of marks is given in brackets ( ) at the end of each question & parts of a question.

• Answer all questions:
  1. Correlate histological structure (L.M. & E.M.) of melanocytes to its function. (4 marks)

  2. Describe the histological structure of:
     a. Olfactory epithelial cells. (4 marks)
     b. Organ of Corti. (4 marks)

  3. Mention the site, L.M., E.M., picture and functions of:
     a. Phagocytic cells of the liver. (4 marks)
     b. Intestinal APUD cells. (4 marks)

  4. In a table form differentiate between Basophils of pars distalis in terms of:
     a. Hormones secreted and their actions. (3 marks)
     b. L.M. & E.M. Picture. (2 marks)

  5. Describe the structure and the correlated functions of:
     a. Mesangial cells. (3 marks)
     b. Intercalated cells lining the collecting tubules. (2 marks)
c. Fallopian tube. (4 marks)

d. Secretory alveoli of lactating mammary gland. (3 marks)

6. Enumerate the refractive media of the eye. Describe the histological structure of the most anterior one. (5 marks)

7. Enumerate the extra-testicular male genital ducts. Describe the histological structure of the duct where sperm capacitation starts. (5 marks)

8. a. State the origin, course, termination and function of medial lemniscus. (4 marks)
    b. Enumerate connections of red nucleus. (4 marks)
Section A: Multiple Choices. 30 questions, 1/4 mark for each question.
Identify the choice that best completes the statement or answers the question.

1. Concerning spermatids:
   a. They are the initial germ cells
   b. They are small cells, 12 um in diameter
   c. They contain the haploid number of chromosomes
   d. They are located in the basal compartment
   e. They are three types dark type A, pale type A and type B

2. A sterile young male suffers from chronic recurrent respiratory infections, he might be diagnosed to have:
   a. Pernicious anemia
   b. Pheochromocytoma
   c. Immunologic cilia syndrome
   d. Cryptorchidism
   e. Cancer prostate

3. Which feature distinguishes corpora cavernosa from corpus spongiosum:
   a. Thick tunica albuginea and more elastic fibers in corpus spongiosum
   b. Thick tunica albuginea and less elastic fibers in corpus spongiosum
   c. Thin tunica albuginea and more elastic fibers in corpus spongiosum
   d. Thin tunica albuginea and less elastic fibers in corpus spongiosum
   e. Thick tunica albuginea and more elastic fibers in corpora cavernosa

4. In this diagram, choose the correct statement regarding the cell pointed to by the arrow:
   a. Presence of myosin filaments
   b. Has both endocrine and exocrine function
   c. Being connected by adherent junction
   d. Rich in peroxisomes
   e. Contains numerous Reinke's crystalloids
5. **Regarding hormonal regulation of spermatogenesis:**
   a. LH stimulates sperm production
   b. Sertoli cells are the primary target for androgens
   c. Sertoli cells are the primary regulators of spermatogenesis
   d. Prolactin increases steroidogenic activity of Leydig cells
   e. Testosterone influences spermatogenesis

6. **Non-disjunction during the first meiotic division in the seminiferous epithelium results in abnormal number of chromosomes in:**
   a. Primary spermatocytes
   b. Secondary spermatocytes
   c. Sertoli cells
   d. Type A spermatogonia
   e. Type B spermatogonia

7. **Cowper’s glands:**
   a. Are simple tubular glands
   b. Are lined by simple squamous epithelium
   c. Secret mucus-like substance to lubricate the urethra
   d. Secret fructose and citrate for activation of sperms
   e. Open in the ejaculatory ducts

8. **EM examination of interstitial cells of Leydig reveals the prevalence of:**
   a. rER, ribosomes & Golgi
   b. Ribosomes, mitochondria & lipid droplets
   c. sER, mitochondria & lipid droplets
   d. rER, Golgi & secretory granules
   e. Lysosomes, sER & secretory granules

9. **A middle aged female presented to the fertility clinic complaining of failure to get pregnant after 2 years of marriage & was diagnosed as a case of polycystic ovary. The syndrome is characterized by:**
   a. Failure of growth of primary follicles into secondary follicles
   b. Failure of secondary follicles to reach maturity
   c. Liberation of oocyte without the surrounding zona pellucida
   d. Elevated levels of anti-mullerian hormone
   e. Primary oocytes are arrested in the prophase of the 1st meiotic division

10. **The primary cause of the acidic pH in the vaginal lumen is:**
    a. Bacterial conversion of mucus into lactic acid
    b. Bacterial conversion of glycogen into lactic acid
    c. Secretion of acidic mucopolysaccharides by glands in the vaginal wall
d. Secretion of HCL by the vaginal epithelium

e. Secretion of acid by the uterine glands

11. Concerning the corpus luteum, which of the following statements is true?
   a. It is a permanent endocrine organ
   b. When it is degenerated, it changes into atretic follicle.
   c. It is concerned with the secretion of progesterone & estrogen
   d. It is formed under effect of FSH
   e. It is embedded in the ovarian hilum

12. Concerning the cervix of the uterus:
   a. The endocervix is lined by mucus-secreting simple columnar cells
   b. The ectocervix is lined by keratinized stratified squamous epithelium
   c. The cervical mucosa is shed during the menstrual cycle
   d. Its stroma is formed of elastic C.T.
   e. It is formed of mucosa, musculara & serosa

13. LASIK operation is indicated for:
   a. Correction of corneal curvature
   b. Correction of cataract
   c. Correction of retinal detachment
   d. Correction of presbiopia
   e. Correction of macular degeneration

14. The inner nuclear layer of retina contains nuclei of:
   a. Rods & cones, Amacrine cells, Müller cells and Bipolar nerve cells
   b. Rods & cones, Amacrine cells, Müller cells and Horizontal nerve cells
   c. Amacrine cells, Müller cells, Ganglion cells and Bipolar nerve cells
   d. Amacrine cells, Müller cells, Horizontal cells and Bipolar nerve cells
   e. Amacrine cells, Müller cells, macrophages and Bipolar nerve cells

15. The following component limits the entrance of macro-molecules from the choriocapillaries to the outer part of retina:
   a. Descemet's membrane
   b. Bowman's membrane
   c. Inner limiting membrane
   d. Bruch's membrane
   e. Outer limiting membrane

16. Variations in eye color are determined by the number of pigmented cells in the:
   a. Ciliary epithelium
   b. Iris epithelium
c. Iris stroma
d. Corneal stroma
e. Corneal epithelium

17. **Glands of Moll are:**
   a. Endocrine glands
   b. Apocrine sweat glands
   c. Holocrine glands
   d. Sebaceous glands
   e. Eccrine sweat glands

18. **Concerning cone cells, which statement is true?**
   a. Contain the visual pigment rhodopsin
   b. Are more abundant in the periphery of the retina
   c. Their cell bodies send inner fibers that end by spherules
   d. Their cell bodies send inner fibers that end by pedicles
   e. Responsible for vision in dim light

19. **Choose the correct statement regarding the fovea centralis:**
   a. Also known as the blind spot
   b. Region where ganglion cell axons converge to form the optic nerve
   c. Region where retinal veins converge to exit the eye
   d. Thinnest part of the retina
   e. Lacks photoreceptor cells

20. **A child with infection in the nasopharynx can develop inflammation of the middle ear due to spread of infection through:**
   a. Cochlear duct
   b. Eustachian tube
   c. Tunnel of Corti
   d. Utricle
   e. Saccule

21. **Choose the correct statement about the cochlear duct:**
   a. It contains perilymph
   b. It contains the neuroreceptor for balance & equilibrium
   c. The organ of Corti lies on the vestibular membrane
   d. Its outer wall is formed of stria vascularis
   e. The basilar membrane is lined by simple cubical epithelium
22. **One of the following statements is a characteristic feature for syringomyelia:**
   a. Congenital dilatation of central canal in lumbar region
   b. Pressure on dorsal column
   c. Pressure on lateral spinothalamic tract
   d. Loss of pain & temperature in lower limb
   e. Loss of touch in the lower limb

23. **Concerning Ventral spinocerebellar tract, the following statement is true:**
   a. Is an uncrossed tract
   b. Receives input from muscle & tendon spindle
   c. Arises from nucleus dorsalis
   d. Enters cerebellum via I.C.P.
   e. Terminates as climbing fibers in cerebellum

24. **Medial longitudinal bundle:**
   a. Is the upward continuation of tectospinal tracts
   b. Contains only ascending fibers
   c. Sends vestibular fibers to all occlumotor nuclei
   d. Extends from pons to mid brain
   e. Present lateral to trigeminal nuclei

25. **The first order neurons in pain and temperature pathway from face and head are:**
   a. Cells in trigeminal ganglion
   b. Cells in dorsal root ganglion
   c. Cells in mesencephalic nucleus of trigeminal nerve
   d. Cells in spinal nucleus of trigeminal nerve
   e. Cells in nucleus proprius

26. **One of the following tracts extends in all levels of spinal cord:**
   a. Reticulospinal tract
   b. Rubrospinal tract
   c. Olivospinal tract
   d. Cuneate tract
   e. Dorsal spinocerebellar tract
27. **Anterior external arcuate fibers relay in:**
   a. Dentate nucleus
   b. Inferior olivary nucleus
   c. Arcuate nucleus of the same side
   d. Arcuate nucleus of the opposite side
   e. Accessory cuneate nucleus

28. **The central canal is lined by:**
   a. Simple squamous epithelium
   b. Stratified squamous epithelium
   c. Simple cubical epithelium partially ciliated
   d. Simple columnar non ciliated epithelium
   e. Simple cubical epithelium non ciliated

29. **Concerning Purkinje cells, one of the following statements is true:**
   a. Pyramidal in shape
   b. Have few dendrites
   c. Stimulated by basket cells
   d. Receive inhibitory input from parallel fibers
   e. Send efferents to thalamus

30. **The first order neuron of pain and temperature from the body is in:**
   a. Trigeminal ganglion
   b. Substantia gelatinosa of Rolandi
   c. Small cells of dorsal root ganglion
   d. Large cells of dorsal root ganglion
   e. Main sensory nucleus
### Section B: Extended Matching, 10 questions in two tables, each question for ½ mark

#### Table 1

<table>
<thead>
<tr>
<th>Column (A)</th>
<th>Column (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unitaminar primary follicle</td>
<td>a. Iry oocyte changes into 2ry, just before ovulation</td>
</tr>
<tr>
<td>2. Atretic follicle</td>
<td>b. Oocyte is 25 μm in diameter</td>
</tr>
<tr>
<td>3. Tertiary follicle</td>
<td>c. Death of oocyte &amp; degeneration of surrounding cells leaving a scar</td>
</tr>
<tr>
<td>4. Preantral follicle</td>
<td>d. Theca folliculi differentiates into theca interna &amp; externa</td>
</tr>
<tr>
<td>5. Secondary follicle</td>
<td>e. Oocyte is 40 μm in diameter</td>
</tr>
<tr>
<td></td>
<td>f. Fibroblasts invade the degenerated area to form white body</td>
</tr>
<tr>
<td></td>
<td>g. Zona pellucida is formed between oocyte &amp; granulosa cells</td>
</tr>
</tbody>
</table>

#### Table 2

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Spiral ligament</td>
<td>a. Covered with thick cupula having no CaCO₃ crystals</td>
</tr>
<tr>
<td>7. Macula utriculi&amp;sacculi</td>
<td>b. Bony projection extending from the modiolus into the lumen of cochlear tube</td>
</tr>
<tr>
<td>8. Modiolus</td>
<td>c. Irregular bony cavity housing the utricle &amp; saccule</td>
</tr>
<tr>
<td>9. Vestibule</td>
<td>d. Membranous sacs lined with simple squamous epithelium</td>
</tr>
<tr>
<td>10. Crista ampullaris</td>
<td>e. Peristomal thickening on the outer bony wall of the cochlear tube</td>
</tr>
<tr>
<td></td>
<td>f. Central axis of spongy bone containing cell bodies of neurons of spiral ganglia</td>
</tr>
<tr>
<td></td>
<td>g. Neureceptor covered by gelatinous membrane with CaCO₃ crystals</td>
</tr>
</tbody>
</table>
A. Answer THREE ONLY of the following questions:

1. A 21 year old female patient was accompanied by her husband to the doctor complaining that she cannot remember any of the events in the last 2 days. The husband tells you that they had a quarrel over him leaving the family.
   a. What type of memory disturbance is this lady having? (3 marks)
   b. List and explain the other memory disorders you know? (7 marks)
   (Total 10 marks)

2. a) List the names of 4 methods of learning? (4 marks)
   b) Explain one method in detail. (6 marks)
   (Total 10 marks)

3. A patient presents to the emergency room with evidence of an acutely inflamed appendix. The surgeon decides that the patient needs an operation to remove it. Use the principles of Medical Ethics you studied to describe how the surgeon should proceed to obtain the patient's consent to the operation.
   (10 marks)

4. What can the doctor do to reduce the anxiety of a patient about having a cardiac catheterization procedure?

B. Answer ALL the following MCQ's in your answer booklet. (20 marks)
BEHAVIOURAL SCIENCES : MCQ

1. A terminally ill patient who uses a statement such as, "It is the doctor's fault that I became ill; she didn't do an electrocardiogram when I came for my last office visit," is most likely in which stage of dying:
   A. Denial
   B. Anger
   C. Bargaining
   D. Depression

2. When compared to the general population, elderly patients are more likely to show which of the following psychological characteristics:
   A. Less anxiety
   B. Lower intelligence
   C. Poorer sleep quality
   D. Less depression

3. The basic developmental task during adolescence is to achieve:
   A. Strong friendships
   B. High grades in examinations
   C. Parental approval
   D. A mature sense of identity

4. When a medical student represents a rude (aggressive) manner towards a certain female colleague, this can be an example of:
   A. Denial
   B. Rationalization
   C. Projection
   D. Reaction formation

5. A 10-year-old girl likes to play and put on her mother's makeup. This behavior by the child is an example of:
   A. Stimulus generalization
   B. Modeling
   C. Shaping
   D. Imprinting

6. A child is tested and found to have a mental age of 12 years. The child's chronological age is 10 years. What is the IQ of this child:
   A. 60
   B. 80
   C. 100
   D. 120

7. A child is tested for intelligence and is found to have an IQ of 90. What category of intellectual function best describes this child:
   A. Moderately retarded
   B. Mildly retarded
C. Borderline  
D. Normal  

8. Sleep spindles, and K-complexes are most characteristic of sleep stage :  
   A. Stage 1  
   B. Stage 2  
   C. Stage 3 and 4  
   D. REM sleep  

9. A 55-year-old woman undergoes surgical repair of a torn knee ligament. After the surgery, she has partial paralysis of the affected leg and sues the surgeon for malpractice. The law-suit will be successful if the patient can prove that :  
   A. The physician did not follow the usual standards of professional care  
   B. The paralysis is permanent  
   C. her marriage is negatively affected by the paralysis  
   D. She will lose a significant amount of time from work because of the paralysis  

10. A 58-year-old man is scheduled for open-heart surgery. The patient seems anxious and worried. When the surgeon obtains informed consent from the patient he/she should explain :  
   A. The risks of the anesthesia only  
   B. The risks of the operation only  
   C. No discussion of risks, only the benefits and producers.  
   D. The risks of both the surgery and anesthesia.  

11. Habitual overeating in order to relieve feelings of stress is an example of learning by :  
   A. Trial and error  
   B. Classical conditioning  
   C. Operant conditioning  
   D. Insight learning  

12 An ex-smoker goes to a coffee shop where he used to smoke Shisha. He suddenly feels an intense desire to smoke again. This is an example of :  
   A. A tendency to repeat bad behaviour  
   B. Imitating others  
   C. A desire to feel good  
   D. A conditional response  

13. We can reduce the anxiety associated with invasive physical investigations and procedures in patients by all the following except :  
   A. Allowing the patient to talk about his/her fears  
   B. Reducing the amount of information given to the patient  
   C. Encouraging the patient to talk to others who have been through the procedure.  
   D. Providing the patient with training on how to relax\
14. A physician becomes angry with a patient when the patient does not take his medication. She shouts at the patient and blames him for his illness. What is the ethical principle that has been violated in this case?
A. Patient autonomy
B. Beneficence
C. Confidentiality
D. Justice

15. A doctor who neglects to pursue continuous medical education in his specialty is more likely violating the ethical principle of:
A. Patient autonomy
B. Beneficence
C. Informed consent
D. Justice

16. One of the following statements is correct about boundary violations between doctors and patients:
A. A doctor and his/her patient should never be married
B. A doctor and a patient may start an engagement after a suitable period from the end of treatment
C. A doctor and patient can only get married if the patient is proposing
D. A doctor and patient can marry freely as consenting adults

17. A parent who treats his child with excessive aggression says "I do this to teach him good manners". The psychological defense mechanism used here is:
A. Rationalization
B. Displacement
C. Projection
D. Reaction formation

18. Ambivalent emotions towards a person are characterized by:
A. Having persistently negative feelings towards the person
B. Having good and equally bad feelings towards the person
C. Having neutral or no feelings towards the person
D. Having unrealistic good feelings about the person

19. The brain region subserving the expression and experience of emotions is:
A. The limbic regions
B. The thalamus
C. The frontal cortex
D. The cerebellum

20. Aggressive behaviour is facilitated by all the following except:
A. Availability of weapons
B. Calm, and firm responses from surrounding persons
C. Sexual arousal
D. Frustration
A- Answer THREE ONLY of the following questions:

1. A 21 year old male patient was involved in a serious car accident. After recovering from coma, he does not remember the events of the days before the accident.
   a) What type of memory disturbance is this patient having? (3 marks)
   b) List and explain the other types of memory disorders you know? (7 marks)

2. a) Describe an experiment illustrating learning by operant conditioning. Give examples from daily life about how 'reinforcement' can shape our behaviour (6 marks)
   b) Explain 'generalization' and 'extinction' of conditioned responses (4 marks)

3. A patient presents to the gynaecologist become not become pregnant after 2 years of marriage. Investigations reveal she cannot have children because of a uterine anomaly. Her husband calls the gynaecologist by telephone to Know the results.
   a) What are the ethical principles involved in this situation? 5 marks
   b) How will you respond to the husband's request? 5 marks

4. What can the doctor do to reduce the anxiety of a patient about having
   a) cardiac catheterization procedure? (10 marks)
   b) Answer ALL the following MCQ's in your answer booklet. There is only ONE CORRECT ANSWER. Write the letter corresponding to the correct answer beside the question number. (20 marks)

1. Informed patient consent to medical and surgical procedures is not required if:
   a) The patient is elderly
   b) The patient has a mental disorder
   c) The illness is immediately life threatening
   d) The illness is infective to others

2. When a mother rewards her daughter a new dress every time she achieves good grades in school exams, this is an example of learning by:
   a) classical conditioning
   b) operant conditioning
   c) trial and error
   d) insight

3. In classical conditioning:
   a) The conditioned stimulus is presented before the unconditioned stimulus
   b) The conditioned stimulus is presented after unconditioned stimulus
c) The conditioned stimulus is presented at the same time of the unconditioned stimulus
d) The conditioned stimulus may be presented before or after the unconditioned stimulus

4. A child is likely to develop higher intelligence if:
   a) Female
   b) Black race
   c) Brought up in the countryside
   d) Given proper stimulation in the first 2 years of

5. Basic (simple) emotions characteristic of all mammals include all the following except:
   a) sympathy  b) joy
   c) fear  d) anger

6. The main reason for depression the elderly is:
   a) social isolation and exclusion
   b) abuse by children
   c) limited food resources
   d) financial problems

7. Insight learning is characterized by:
   a) Many trials and errors
   b) Observing and imitating others
   c) Discovery of new relationships between objects
   d) Repression

8. Aggression can be all the following except:
   a) A basic instinct
   b) Verbal or physical
   c) Accepted by society
   d) Caused by frustration

9. In relation to dreaming:
   a) Half of sleep activity is occupied by dream
   b) All dreams are meaningful
   c) Dreams allow expression of subconscious feelings
   d) Dreams tell the future of a person

10. Rapid eye movement (REM) sleep is characterized by:
    a) Presence of dreaming
    b) EEG changes of sleep spindles and K complexes
    c) Slow pulse
    d) Increased muscle tone

11. Disorders of emotions include all the following except:
    a) Depression  b) Elation
    c) Acting out  d) Apathy (blunting of emotions)

12. A man who keeps postponing to go for an important investigation that will determine if he has a heart problem, is employing the mental defence mechanism of:
    a) denial  b) rationalization
    c) repression  d) projection
13. Having an aversion to go school after being punished repeatedly for poor homework is an example of:
   a) de-conditioning
   b) generalization
   c) operant conditioning
   d) classical conditioning

14. All the following improve retention except:
   a) Whole learning
   b) Recitation
   c) Spaced learning
   d) Sleep deprivation

15. We tend to forget in all the following situations except:
   a) the passage of time
   b) Presence of a painful emotional state
   c) when we learn new material
   d) when we remember old learned material

16. When one think he recognized somebody he knows and then finds out that the person is not known to him, this is an example of:
   a) deja vu
   b) confabulation
   c) delusion
   d) illusion

17. A person with a mental age of 12 and a chronological (actual) age of 10 is said to have an IQ of:
   a) 120.      b) 100.      c) 80.      d) 60

18. Valid informed consent satisfies the following elements except:
   a) the patients should be competent to make a decision
   b) the patient family agrees to decision
   c) the patient's decision should be voluntary
   d) the patient should be fully informed

19. A person is considered amenable to education in special schools if the IQ is:
   a) 0-20
   b) 20-40
   c) 20-40
   d) 50-80

20. In adolescence, sublimation through sports can alleviate the problem of:
   a) Identity crisis
   b) Academic pressure and career impasse
   c) Sexual tension
   d) Emotional immaturity
I. Answer the ALL MCQs in your answer booklet: (20 marks)

II. Answer THREE ONLY of the following questions: (30 marks)

1. A 30-year-old married lady went to her gynaecologist for a check-up. Her investigations revealed that she has an infantile uterus and she might not be able to get pregnant. The patient's husband called the physician about the results of the check-up.
   A. What are the ethical dilemmas encountered in this situation? (3 marks)
   B. How would you manage a similar situation? (2 marks)
   C. What are the guiding ethical principles in medical practice? (5 marks)
   (Total marks 10)

2. A 50-year-old female patient was admitted in a general hospital for knee replacement surgery. An X-ray was needed so she went to the radiology department. She entered the X-ray room and found the physician writing a report. After waiting for a while, he gave her an injection without saying a word. The lady started to scream. The doctor asked the nurse to calm her down and went out of the room for few minutes then came back to start the X ray procedure. The nurse then took her back to her room.
   A. Was there any mistake done concerning the proper communication skills? If yes, what kind of mistake, and what would you do if you were the physician? (5 marks)
   B. What would be the proper way of preparing the patient for the procedure? (5 marks) (Total marks 10)

3. A 15-year-old adolescent boy became exceedingly aggressive towards his parents and siblings in the last few months. He comes from a low socioeconomic background, and his parents are divorced.
   A. Discuss the possible factors that may contribute to the boy's aggressive behaviour. (3 marks)
   B. What is the psychological crisis characterising this age (being adolescent)? Describe it. (4 marks)
   C. How can we manage to decrease adolescents' aggression? (3 marks) (Total marks 10)

4. The Medical professor teaches his medical students to look at their patients as human beings not as cases.
   A. What are the different aspects of the individual doctors might put in consideration when examining their patients? (1 mark)
   B. What are the different types of the personality? (4 marks)
   C. What are the different grades of intelligence? (4 marks)
   D. How can these reflected on the communication and medical performance of physicians (1 mark) (Total marks 10)
INSTRUCTIONS

Answer All the following Multiple Choice questions in your answer booklet.
For each question, there is ONLY ONE correct answer.
Write the number of each question and then the letter (A or B or C or D) corresponding to the correct answer.
DO NOT write more than one answer. This will make you lose the mark for that question.
Each question has one mark allocated to it.

Total marks for the MCQ examination are 20.

Behavioral Sciences MCQ (July, 2012)

1. A terminally ill university professor who uses a statement such as, "Would you give me more time till I finish my mission with my students!" is in the stage of
   A. Denial  B. Anger  C. Bargaining  D. Depression

2. Biological human motives include all the following EXCEPT:
   A. Sex  B. Self-actualization  C. Thirst  D. Hunger

3. A physician becomes very angry with a patient when the patient does not take his medication. The patient reminds the doctor of her rebellious son. This physician's intense reaction to the patient's behavior is most likely to be a result of:
   A. Projection  B. Reaction formation  C. Displacement  D. Denial

4. Which of the following defense mechanisms is classified as the basic for all defenses:
   A. Denial  B. Sublimation  C. Dissociation  D. Repression

5. Which of the following structures of the mind are developed in a normal 4-year-old child?
   A. The id only  B. The id and the ego only  C. The id, ego, and superego  D. The ego and superego only
6. A 3-year-old child who likes and looks up to her physician states that she wants to become a doctor when she grows up. This behavior by the child is an example of:
   A. Stimulus generalization  
   B. Modeling  
   C. Shaping  
   D. Imprinting

7. A 6-year-old child has an IQ of 50. The mental ability of this child is equivalent to that of a child aged
   A. 2 years  
   B. 3 years  
   C. 4 years  
   D. 5 years

8. A 58-year-old man is scheduled for open-heart surgery. The night before the surgery, the patient seems anxious and worried. When the surgeon obtains informed consent from the patient he should include:
   A. The risks of the anesthesia only  
   B. The risks of the surgery only  
   C. The risks of both the surgery and anesthesia, omitting the risk of death  
   D. The risks of both the surgery and anesthesia, including the risk of death

9. Concerning attention choose the right statement:
   A. It is a purely cognitive function that is never influenced by emotions  
   B. Attention is the direction and concentration of perception  
   C. Distraction is a positive aspect of attention  
   D. Deja vu phenomenon is a disorder of attention

10. Insight learning is characterized by:
    A. Many trials and errors  
    B. Observing and imitating others  
    C. Discovery of new relationships between objects  
    D. Repression

11. General adaptation syndrome:
    A. Is a serious body reaction to stress which could not be modified  
    B. During its terminal stage various psychosomatic disorders may result  
    C. During its initial stage cortisol level is lowered  
    D. Includes four stages

12. Which of the following occurs during dream sleep?
    A. Irregular heart rate and blood pressure  
    B. Delta waves  
    C. Increased muscle tension  
    D. Sleep walking

13. According to Freud, the id is governed by the
    A. Pleasure principle.  
    B. Reality principle.
C. Egoideal. D. Creature comfort principle.

14. Ambivalent emotions towards a person are characterized by:
   A. Having persistently negative feelings towards the person
   B. Having good and equally bad feelings towards the person
   C. Having neutral or no feelings towards the person
   D. Having unrealistic good feelings towards the person

15. The following is a disorder of memory:
   A. Hallucinations B. Delusions
   C. Confabulation D. Obsessions

16. When a teacher put a sticker on the child's well done homework, this is called learning by:
   A. Classical conditioning B. Operant conditioning
   C. Trial and error D. Insight

17. Informed consent to operate on an unconscious patient coming to emergency room alone and in a critical condition should be obtained as follows:
   A. Wait for a relative to come and sign one
   B. Wait for the patient to regain consciousness
   C. No need to get a consent
   D. Cannot treat the patient because there is no consent

18. A girl who has to live with a difficult mother in law in order to be with her beloved husband is said to be suffering from:
   A. Multiple level conflict
   B. Approach-avoidance conflict
   C. Avoidance-avoidance conflict
   D. Approach-approach conflict

19. Hallucinations:
   A. Are mental impressions of sensory vividness occurring without external stimulus
   B. Never occur in normal individuals
   C. They must be found to diagnose psychotic disorders
   D. Olfactory hallucinations are very common in schizophrenic patients

20. All the following improve retention except:
   A. Whole learning B. Recitation
   C. Spaced learning D. Sleep deprivation
Answer 3 only of the following questions:

1- A newly married couple worried about the possibility of getting child with inherited medical condition, especially with the family history loaded with this condition from the wife side. The wife visited you alone and she asked you to deny this fact in front of her husband to save her marriage.

a- What are the ethical dilemmas encountered in this situation?(5 marks)

b- How would you manage this condition?(5 marks)

(Total marks 10)

2- You have been invited to talk in TV show about problems of education for youth and children.

a- What are the different types of learning you would like to talk about.? (5 marks)

b- Choose one of the different types of learning and discuss it in detail? (5 marks)

(Total marks 10)

3- You referred a patient suffering from renal problems for investigations. One of the procedures was to do kidney biopsy.

a- What are the steps you will take to prepare your patient before doing the procedure?(5 marks)

b- What are the possible responses of the patient in response bad news?(5 marks)

(Total marks 10)

4- a- What are the causes of increasing aggression in adolescents (biological, social and psychological)?

b- What are the different approaches to decrease aggression among adolescents?(5 marks)

(Total marks 10)
FINAL SECOND YEAR EXAMINATIONS

BEHAVIOURAL SCIENCES,

July, 9, 2013

INSTRUCTIONS

Answer **All** the following Multiple Choice questions **in your answer booklet**.

For each question, there is **ONLY ONE** correct answer.

Write the number of each question and then the letter (A or B or C or D) corresponding to the correct answer.

**DO NOT** write more than one answer. This will make you lose the mark for that question.

Each question has one mark allocated to it.

Total marks for the MCQ examination are **20**.
Behavioral Sciences MCQ (July, 2013)

1- A good looking university student who believes that another good looking university student hates her, is employing the mental defense mechanism of:
   a- sublimation
   b-rationalization
   c-repression
   d-projection

2- We tend to forget in all the following situations except:
   a- The passage of time
   b- Presence of a painful emotional state
   c- When we learn new material
   d- When we remember old learned material

3- Valid informed consent does not necessitate that:
   a- The patients should be competent to make a decision
   b- The patient family agrees to the decision
   c- The patient's decision should be voluntary
   d- The patient should be fully informed

4- When compared to the general population, elderly patients are more likely to show which of the following psychological characteristics:
   a- less anxiety
   b- lower intelligence
   c- poorer sleep quality
   d- less depression

5- A child is tested and found to have a mental age of 12 years. The child's chronological age is 10 years. What is the IQ of this child:
   a- 60
   b-80
   c-100
   d-120
6- Sleep spindles and K-complexes are most characteristic of sleep stages:
   a- Stage 1
   b- Stage 2
   c- Stage 3&4
   d- REM sleep

7- A 55-year old woman undergoes surgical repair of a torn knee ligament. After
   the surgery, she has partial paralysis of the affected leg and sues the surgeon for
   malpractice. The law suit will be successful if the patient can prove that:
   a- the physician did not follow the usual standards of professional care
   b- the paralysis is permanent
   c- her marriage is negatively affected by the paralysis
   d- she will lose a significant amount of time from work because of the paralysis

8- A physician becomes angry with a patient when the patient does not take his
   medication. She shouts at the patient and blames him for his illness. What is the
   ethical principle that has been violated in this case?
   a- patient autonomy
   b- beneficence
   c- confidentiality
   d- justice

9- Aggressive behavior is facilitated by all the following except:
   a- Availability of weapons
   b- Calm, and firm responses from surrounding persons
   c- Sexual arousal
   d- Frustration

10- Disorders of memory include all the following except:
   a- amnesia for remote events
   b- amnesia for recent events
   c- circumscribed amnesia
   d- Reflex amnesia

11- Basic (simple) emotions characteristics of all mammals include:
   a- sympathy
   b- pride
   c- disgust
   d- love
12- Stages of memory are all except:
   a-registration
   b-retrieval
   c-retention
   d-repercussion

13- Adolescents have a problem with all of the following except:
   a-understanding what goes on around them
   b-forming a stable identity
   c-the love of their parents
   d-lack of desire for the other sex

14- Patients who are about to undergo stressful medical procedures should:
   a-be kept in bed
   b-be given heavy sedation
   c-be told what to expect
   d-not be allowed to have visitors

15- Egocentric thinking is characterized by all of the following except:
   a-distortion of reality
   b-difficulty in dealing with conceptual relations
   c-magical form of thinking
   d-logical form of thinking

16- The following is true in the psychology of learning:
   a-aversion technique is related to insight learning
   b-observational learning is a type of classical conditioning
   c-modeling is a type of observational learning
   d-learning by imitation is the least used in humans

17- A girl who reacts to the sight of a bug in a panicky way during her preparatory school years and eventually she started to suffer same reactions to different pets what might explain worsening in her behavior?
   a-extinction
   b-generalization
   c-reinforcement
   d-desensitization
18- 14- A terminally ill patient who uses a statement such as: "it is the doctor's fault that I became ill, she didn't do an electrocardiogram when I came for my last office visit" is most likely in which stage of dying:

a- Denial  
b- Anger  
c- Bargaining  
d- Depression

19- Concerning perception choose the right statement:

a- it is a cognitive function which is never influenced by emotions  
b- delusions are considered as perceptual faults  
c- we perceive our body  
d- we do not perceive our psyche

20 - Confidentiality can be broken in all the following circumstances except:

a- serious harm to others  
b- possible suicide  
c- death of the patients  
d- abuse to victims unable to protect themselves
Answer THREE (3) only of the following questions:

1- A 50 - year old male suffering from chest pain he needs to do cardiac catheterization procedure.
   a- What are the characteristics of a valid informed consent. (5 marks).

   b- What are the exceptions to the requirements of informed consent. (5 marks)

2- a- Define what is meant by memory, what are the different types of memory. (5 marks)

   b- What are factors affecting the process of memorizing, enumerate different disorders of memory. (5 marks)

3- A 35 – year old female presented with advanced ovarian carcinoma, she needs urgent surgical intervention, radiation, and chemotherapy.
   a- What are the possible reactions when the doctor inform her about her condition. (4 marks)

   b- What are the different factors determining her reaction, and how can the doctor help her to cope with her condition. (6 marks)

4- a- Discuss the possible factors that may contribute to adolescent’s aggressive behavior. (5 marks)

   b- What are the different approaches to decrease this aggressive behavior. (5 marks)
INSTRUCTIONS

Answer **All** the following Multiple Choice questions **in your answer booklet**.

For each question, there is **ONLY ONE** correct answer.

Write the **number** of each question and then the **letter** (A or B or C or D) corresponding to the correct answer.

**DO NOT** write more than one answer. This will make you lose the mark for that question.

Each question has **one** mark allocated to it.

Total marks for the MCQ examination are **20**.
1-A 10-year-old boy who was injured during gym class is brought to the emergency department. He has a severe injury that required immediate suturing. His parents are on vacation and cannot be located and an aunt is babysitting for the child. The most appropriate action for the physician to take this time is to:
   a- Obtain consent from the aunt
   b- Suture the laceration without obtaining consent
   c- Keep the patient comfortable until the physician reaches the parents
   d- Obtain consent from the child himself

2- Psychological interventions for stressful medical procedures include all the following except:
   a- Giving the patient information about the procedure
   b- Modeling (showing how other patients dealt with the procedure)
   c- Abrace (encouraging expression of feelings)
   d- Showing the instruments that are going to be used to the patient

3- A 25-year-old man who is Hepatitis positive comes to a physician's office for treatment of a skin lesion. Because he is afraid of infection, the physician refuses to treat him. This physician's refusal to treat the patient is best described as:
   a- Unethical and illegal
   b- Ethical and legal
   c- Unethical but legal
   d- Ethical but illegal

4- A 4-year-old child who has received beatings in the past, from which he could not escape, appears unresponsive and no longer tries to escape new beatings. This behavior by the child is an example of:
   a- Modeling
   b- Shaping
   c- Imprinting
   d- Learned helplessness
5 - A child is likely to develop higher intelligence if:
   a-female
   b-black race
   c-brought up in the countryside
   d-given proper stimulation in the first 2 years of life

6- When a person blames his failure in exams on his teacher he may be using the defense mechanism of:
   a-projection
   b-reaction formation
   c-rationalization
   d-repression

7- Habitual overeating in order to relieve feelings of stress is an example of learning by:
   a-trial and error
   b-classical conditioning
   c-operant conditioning
   d-insight learning

8- A 58-year old man is scheduled for open-heart surgery, the patient seems anxious and worried. When the surgeon obtains informed consent from the patient he/she should explain:
   a-the risks of the anesthesia only
   b-the risks of operation only
   c-no discussion of risks, only the benefits and procedures
   d-the risks of both the surgery and anesthesia

9- The child's crying upon the smell of antiseptic (usually used before injections) can be called the:
   a- Unconditional stimulus
b- Unconditional response

c- Conditioned stimulus

d- Conditioned response

10- A 12-year-old child who is having difficulty in school is given an intelligence test. The test determines that the child is functioning mentally at the level of an 8-year-old child. What category of intellectual function best describes this child?

a- Severely retarded (IQ < 25)

b- Moderately retarded (IQ: 30-50)

c- Mildly retarded (IQ: 50-70)

d- Borderline (IQ: 70-90)

11- 29-year-old woman tells the doctor that she often hears the voice of Amr Khaled speaking directly to her. This woman is showing a disorder of:

a- Perception

b- Insight

c- Judgment

d- Mood

12- A 22-year-old student in the middle finals week tells her doctor that for the last 2 weeks she has been studying late into the night and has started to have trouble falling asleep. What is the doctor’s most appropriate recommendation?

a- Exercise before bedtime

b- A large meal before bedtime

c- A fixed wake-up and bedtime schedule

d- A short-acting benzodiazepine at bedtime

13- 40-year-old man who is angry at his ill wife, but does not consciously acknowledge that anger, shouts at his children as soon as he returns home from work, this is a form of:

a- Denial.

b- Reaction formation.

c- Displacement.
d- Suppression.

14- Aggression can be all the following except:

a-a basic instinct
b-verbal or physical
c-accepted by society
d-caused by frustration

15- In relation to dreaming:

a-half of sleep activity is occupied by dreams
b-all dreams are meaningful
c-dreams allow expression of subconscious feelings
d-dreams tell the future of a person

16-A 32-year-old man who unconsciously attracted to his wife's sister becomes extremely jealous whenever his wife speaks to another man.

a- Regression.
b- Projection.
c- Intellectualization.
d- Displacement.

17- Egocentric thinking is characterized by all of the following except:

a- distortion of reality
b-difficulty in dealing with conceptual relations
c-magical form of thinking
d-logical form of thinking

18- A 52-year-old man was told by his physician that his level of prostate-specific antigen (PSA) was abnormally high during his last visit. When the man appears at his physician’s office for a follow-up visit, he complains about a headache but does not mention or seem to remember receiving the letter about his PSA test.

a- Denial.
b- Reaction formation.

c- Displacement.

d- Splitting.

19- A physician has just diagnosed a case of terminal pancreatic cancer in a 68-year-old man. Which of the following statements regarding the reactions and behavior of the physician is the most true?

a- She should inform the family, but not the patient, about the serious nature of the illness.

b- She should not inform the patient or family.

c- She should provide strong sedation for family members when the patient dies until the initial shock of his death wears off.

d- She will feel that she failed when the patient dies.

20- Confidentiality can be broken in all the following circumstances except:

a- serious harm to others

b- possible suicide

c- death of the patients

d- abuse to victims unable to protect themselves
Answer THREE (3) only of the following questions:

1- Violence in schools among school students, and between teachers and students is now a worldwide problem increasing every day.
   a- What are the possible causes, biological basis, and precipitating factors causing the increase of this violent behavior? (5 marks)
   b- What are the possible preventive and control measures for this violent behavior? (5 marks)

2- a- What are the types of human motives? (5 marks)
   b- Discuss the concept of defense mechanisms, mention two types and give example for each. (5 marks)

3- A 26-year old was preparing for her wedding came to your clinic complaining from a breast mass and was confirmed with the mammography. You advised her that you should prepare for a surgical operation at once and that she should postpone her wedding until she undergo the surgery. 2 days later her fiancée came to your clinic asking about her condition.
   a- What are the ethical dilemmas that you are facing, and how would you solve them? (5 marks)
   b- What are the points which you will discuss with her when you are taking the informed consent from her? (5 marks)

4- A 65-year old male patient was admitted in a surgical word to investigate and prepare him for prostatectomy operation, he was sent by the resident to the radiology department to do a MRI (Magnetic resonance imaging) on his pelvis. When the patient entered the room, the doctor was writing a previous report and started putting the patient on the machine while he is talking on his mobile, the patient was afraid and started screaming.
   a- What are the possible mistakes done by the doctor concerning the proper communication skills? (5 marks)
   b- What would be the proper way of preparing the patient for the procedure? (5 marks)
INSTRUCTIONS

Answer **All** the following Multiple Choice questions **in your answer booklet**.

For each question, there is **ONLY ONE** correct answer.

Write the **number** of each question and then the **letter** (A or B or C or D) corresponding to the correct answer.

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Each question has **one** mark allocated to it.

Total marks for the MCQ examination are **20**.
1- 4-month-old and a 12-month-old infant observe their mothers leaving the room. Which one will most likely begin to cry?

a- The 3-month-old.
b- The 12-month-old.
c- Both will cry.
d- Neither will cry.

2- Decreased perceptual response to repeated stimuli is called:
a- Habituation.
b- Selective attention.
c- Divided attention.
d- Hallucination.

3- The distribution of IQ scores:
a- Is approximately normal or bell-shaped.
b- Shows that most people score between 80 and 100.
c- Reveals a difference in the average for men and women.
d- Falls off abruptly above 100.

4- Which of the following is a primary motive?
a- Curiosity
b- Self esteem
c- Hunger
d- Education

5- A situation in which an individual has two or more opposing goals is known as
a- Conflict.
b- Frustration.
c- Crisis.
d- Dilemma

6- A circadian rhythm refers to a cycle:
a- Of sexual receptivity caused by hormone cycles.
b- Of bodily activity approximately 24 hours in length.
c- Of emotional arousal.
d- During which various bodily systems are in phase.

7- In adolescence, sublimation through sports can alleviate the problem of:
a- identity crisis
b- academic pressure and career impasse
c- sexual tension
d- emotional immaturity

8- A 68-year-old man is seen by his physician for a monthly appointment to monitor his diabetes. The physician provides encouragement with his diet and adjusts his medication dosage. Several days later, the patient's wife telephones the physician and asks about her husband's condition and what she should do to keep him on his diet. What action should the physician take?

a- Have the nursing staff call her back and explain the dietary regime.
b- Give her an internet address where information about diabetes can be found.
c- Obtain permission from her husband before discussing his diabetes with her.
d- Schedule an appointment to discuss the issues she raises face-to-face.

9- Patients are most likely to adhere to medical advice for which of the following reasons:

a- The illness has few symptoms.
b- The patient likes the physician.
c- The management schedule is complex.
d- The illness is chronic.

10- The part of mind that contains material of which we are unaware of it:

a- Conscious.
b- Preconscious.
c- Unconscious.
d- cognition
11- K-complexes are characteristic of a stage of sleep also distinguished by:
   a- Delta waves.
   b- Theta waves.
   c- Saw tooth waves.
   d- Sleep spindles.

12- When a physician conducts a well-child checkup on a typical 2-year-old girl, the child is most likely to show which of the following skills or characteristics?
   a- Speaks in two-word sentences.
   b- Is completely toilet-trained.
   c- Can comfortably spend most of the day away from her mother.
   d- Can ride a tricycle.

13- A 54-Year-old Man, working as a bus driver, was sent by his company for a physical exam, the man reported that he often finds himself nodding off during the day. He also reports hallucinations as he is falling asleep and sometimes is unable to move when he wakes up in the morning. The physician suspects that the man suffers from a sleep disorder. The patient asked the physician to keep this information confidential from his employer. At this point, the physician's best action is to:
   a- Arrange for pharmacologic treatment for the patient and maintain his confidentiality.
   b- Do not inform the employer, but negotiate with the patient to take time off from work on medical leave pending outcome of treatment.
   c- Inform his employer about his diagnosis and begin treatment.
   d- Try to obtain the patient's permission to inform the employer and schedule him for treatment.

14- Which of the following is true about short-term memory (STM)?
   a- It has unlimited capacity.
   b- It deals with information for longer periods of time, usually for at least 30 minutes.
   c- It is seriously affected by any interruption or interference.
   d- Once information is placed in STM, it is permanently stored.
15- A 50-year-old, poorly groomed woman has monthly meetings with a cardiologist. The patient, who frequently complains about the office and staff during these visits, tells the cardiologist that on this day the office receptionist was unfriendly to her. The physician’s best response is to:

a- Not comment and proceed with the exam.

b- Apologize to the patient and offer to speak to the receptionist.

c- Refer the patient to psychiatric evaluation.

d- Ask the receptionist to reschedule the patient’s appointment for another day.

16- A 40-year-old man who is angry at his ill wife, but does not consciously acknowledge that anger, shouts at his children as soon as he returns home from work.

a- Denial.

b- Reaction formation.

c- Displacement.

d- Suppression.

17- Punishment is most effective in suppressing behavior when it is:

a- Immediate, consistent, and intense.

b- Delayed, consistent, and mild.

c- Immediate, consistent, and mild.

d- Delayed, inconsistent, and intense.

18- In teaching hospital, although a pregnant lady agreed to allow a medical student to attend the delivery, but at the time of giving birth, she changed her mind, and declares that she does not want the medical student in the delivery room. The most appropriate action for him to take at this moment is to:

a- Stay but keep a part of the room where the patient cannot see him.

b- Tell the patient that he must attend because she is in a teaching hospital.

c- Ask the attending physician for permission to stay.

d- Inform the attending physician and then leave the delivery room.
19- Illusions are:
   a- Distortions of existing stimuli.
   b- The same as hallucinations.
   c- The result of innate mechanisms.
   d- Not based on external reality.

20- Consciously forcing painful or anxiety-producing thoughts from memory is called:
   a- Retroactive inhibition.
   b- Repression.
   c- Suppression.
   d- Continued avoidance.