PHYS 900 MD Physiology Tanta University
Time allowed three Hours Second Paper Faculty of Medicine
Total marks : 450 Date:25 /11/2020

All the questions must be answered :-

1. Normally momentarily change in output of one ventricle is followed by similar change in output of the other. Discuss: The physiological coordination regulating right and left ventricular pumps . (50 marks)
2. Mention: The physiological advantages of reciprocal , antagonistic and complementary autonomic innervations. (50 marks)
3. Discuss : Effects of gravity on respiratory function of the lung. (50 marks)
4. Mention : The renal handling of water in different tubules with special reference to water clearance. (50 marks)
5. State: The physiological role of enteric nervous system in regulating gastrointestinal functions. (50 marks)
6. State : a) The natural mechanisms preventing blood coagulation inside the body. (25 marks)

   b) Dietary factors affecting erythropoiesis. (25 marks)

7. Case study . (25 marks)

40 years old patient undergo vagotomy operation to treat peptic ulcer. As a result . Which of the following gastrointestinal motor activities will be most affected.

a. Distension induced intestinal segmentation .
b. Secondary esophageal peristalsis in lower half esophagus .
c. Proximal gastric accommodation.
d. Migrating motor complex.

8. Choose only one choice (125 marks for 25 MCQ)

1- Blood viscosity is :

a. Decreased in small size blood vessels.
b. Increased in small size blood vessels.
c. Mainly depend on plasma protein albumin.
d. Directly proportion with blood velocity.

2- The pulmonary blood vessels:

a. Receiving very little sympathetic innervation.
b. Receiving more blood volume than systemic blood vessels.
c. Show more vascular resistance than systemic blood vessels.
d. Are less compliant than systemic blood vessels.

3- If the ejection fraction increased there will be decrease in:

a. Heart rate.
b. Stroke volume.
c. Cardiac output.
d. End systolic volume.

4- Increase systemic arterial blood pressure leading to :

a. Increase cardiac output.
b. Decrease time for left ventricular wall to develop peak tension.
c. Increase velocity of blood ejected from left ventricle.
d. Increase residual volume of blood in left ventricle.

5- At the end of isometric relaxation phase of cardiac cycle :

a. The ventricular pressure reaching 80 mmHg.
b. The ventricular volume become 150 ml.
c. Atrio-ventricular valve closed.
d. Atrio-ventricular valve opened.

6- The closing volume of the lung mark the point at which there is:

a. Opening of apical alveoli.
b. Closure of apical alveoli.
c. Sudden decrease in nitrogen concentration in expired air.
d. Sudden increase in nitrogen concentration in expired air.

7- Hyperventilation could induce:

a. Increase P_{50}.
b. Increase affinity of hemoglobin to oxygen.
c. Decrease affinity of hemoglobin to oxygen.
d. Respiratory acidosis.

8- Compared with the apex of the lung the base of the lung has:

a. High pulmonary capillary PCO_2.
b. High pulmonary capillary PO_2.
c. High ventilation perfusion ratio.
d. Low pulmonary capillary PCO_2.

9- Increase hemoglobin content could induce the following finding:

a. Increase % oxygen saturation.
b. Normal % oxygen saturation.
c. Increase arterial PO_2.
d. Decrease oxygen capacity.

10- If pressure gradient between PO_2 in alveolar air and PO_2 in arterial blood is more than 10 mmHg this indicates :

a. Normal condition.
b. Defect ventilation perfusion ratio.
c. Better ventilation than perfusion.
d. Better perfusion than ventilation.

11- The daily production of hydrogen ion from CO_2 is primarily buffered by:

a. Extracellular bicarbonate.
b. Bicarbonate inside RBCs.
c. Hemoglobin.
d. Plasma protein.

12- Which of the following could induce hyperkalemia:

a. Acidosis.
b. Alkalosis.
c. Insulin injection.
d. Decrease plasma osmolarity.

13- As plasma glucose concentration rise above normal:

a. The transport maximum will decrease linearly .
b. The transport maximum will increase linearly .
c. The transport maximum will be constant .
d. The urinary excretion of glucose is markedly increase then decrease.

14- Cutting sympathetic nerve to urinary bladder cause:

a. Increase tone of internal urethral sphincter.
b. Increase tone of external urethral sphincter.
c. Loss pain sensation from urinary bladder.
d. Decrease frequency of micturition.

15- Conjugation of bilirubin occur in:

a. Small intestine.
b. Hepatocytes.
c. Colon.
d. Terminal ileum.

16- Which of the following have NO basal electrical rhythm:

a. Distal stomach and duodenum.
b. Duodenum and jejunum.
c. Jejunum and ileum.
d. Esophagus and proximal stomach.

17- Which of the following having little effect on pancreatic secretion:

a. Vagus. b. Sympathetic. c. Secretin. d. CCK hormone.

18- Vagotomy:

a. Can abolish gastric secretion in response to insulin injection.
b. Can abolish gastric secretion in response to histamine injection.
c. Can not abolish gastric secretion in response to insulin injection.
d. Can not abolish gastric secretion in response to see food.

19-Migrating motor complex :

a. Occur during inter digestive period.
b. Occur during food digestion.
c. Increased by food ingestion.
d. Inhibited by motilin.

20- Raised blood pH and bicarbonate is consistent with:

a. Normal or increase arterial PCO_2.
b. Decrease arterial PCO_2.
c. Metabolic acidosis.
d. Partly compensated respiratory acidosis.

21- Iron is stored in the body in the following structures EXCEPT:

a. Gall bladder . c. Spleen .
b. Liver . d. Reticuloendothelium system.

22-Monocytes:

a. Can not migrate across capillary wall.
b. Can migrate across capillary wall.
c. Synthesize immunoglobulin.
d. Originally formed in the liver.

23- Sympathetic chemical transmission :

a. At the iris is mediated by acetyl choline.
b. At the iris is mediated by noradrenaline.
c. At bronchi is mediated by acetyl choline.
d. At skin arterioles is mediated by acetyl choline.

24- Parasympathetic affecting cardiovascular system mainly by altering:

a. Vascular resistance.
b. Vascular compliance.
c. Heart rate.
d. Cardiac contraction.

25-The relay of preganglionic sympathetic :

a. Could be blocked by atropine.
b. Help to potentiate sympathetic action at the tissue.
c. Prevent the antagonistic action of sympathetic at the tissue.
d. May occur at terminal ganglia.