



PHYS 900
Time allowed three Hours
Total marks : 450

MD Physiology
Second Paper

Tanta University
Faculty of Medicine
Date: 9 /11/2021

All the questions must be answered :-

1. **Discuss: Homeostatic mechanisms regulating the local blood flow to tissue under different physiological conditions . (50 marks)**
2. **The automatic activity of respiration can be altered according to body requirements. Discuss the physiological mechanisms concerned with this regulation. (50 marks)**
3. **Discuss : Renal homeostatic mechanism to adjust blood Ph. (50 marks)**
4. **Mention : the physiological basis regulating intestinal motility and its significance. (50 marks)**
5. **State: Role of higher centers in controlling autonomic function. (50 marks)**
6. **State : a) The natural mechanisms preventing blood coagulation inside the body. (25 marks)**
b) The proposed role of complement system to deal with invader antigen.

(25 marks)

7. Case study . (25 marks)

40 years old patient undergo coronary bypass surgery during operation his oxygen saturation curve shifted to the left.

Which of the following can best account for this shift:

- a. Decrease core body temperature from 37 °C to 32°C .
- b. Change blood Ph from 7.40 to 7.25 .
- c. Change arterial PCO₂ from 40 to 46 mmHg.
- d. Blood transfusion with higher p50 than normal.

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

1- Which of the following is characteristic for pulmonary circulation :

- a. Less compliant than systemic.
- b. More compliant than systemic.
- c. More vascular resistance than systemic.
- d. Mainly depend on sympathetic innervation.

2- If the ejection fraction of heart increase which of the following will decrease :

- a. End systolic volume.
- b. Cardiac out put.
- c. Stroke volume.
- d. Systolic blood pressure.

3- CO₂ mainly regulate blood flow to which of the following :

- a. Brain.
- b. Skin.
- c. Skeletal muscle.
- d. Heart.

4- At which of the following phases mitral valve open :

- a. End of isometric contraction.
- b. End of isometric relaxation.
- c. Start of maximum ejection.
- d. Reduced ejection.

5- Which of the following could decrease central venous pressure :

- a. Heart failure.
- b. Increase venous return.
- c. Increase total peripheral vascular resistance.
- d. Venous vasoconstriction.

6- CO₂ is transportes in arterial blood at which of the following forms:

- a. Bicarbonate.
- b. Carbaminohemoglobin.
- c. Dissolved CO₂.
- d. Carbonic acid.

7- Which of the following could mark closing volume:

- a. Sudden increase nitrogen concentration in expired air.
- b. Sudden decrease nitrogen concentration in expired air.
- c. The point where alveoli at apex of the lung are opened.
- d. The point where alveoli at apex of the lung are closed.

8- Which of the following could describe Halden effect:

- a. Effect of 2,3 DPG on affinity of HB to oxygen.
- b. Effect of 2,3 DPG on affinity of HB to CO₂.
- c. High affinity of oxyHb to carry CO₂.
- d. Low affinity of oxyHb to carry CO₂.

9- Which of the following could differentiate respiratory alkalosis from metabolic alkalosis:

- a. Normal or low bicarbonate.
- b. Increase arterial PCO₂.
- c. Increase arterial bicarbonate.
- d. Decrease blood Ph.

10- Which of the following increase glomerular filtration rate :

- a. Vasoconstriction of afferent arterioles.
- b. Vasoconstriction of efferent arterioles.
- c. Hypovolemia.
- d. Hyperproteinemia.

11- Which of the following having higher tubular osmolarity:

- a. Distal convoluted tubules.
- b. Proximal convoluted tubules.
- c. Tip of loop of Henel.
- d. Ascending segment of loop of Henel.

12-Which of the following is CORRECT regarding renal clearance of amino acids:

- a. It is similar to that of glucose.
- b. It is higher than that of glucose.
- c. It is lower than that of glucose .
- d. It is similar to that of urea.

13- The cause of jaundice is likely to be hemolytic if there is:

- a. Blood reticulocytosis .
- b. Increase blood alkaline phosphatase .
- c. Increase blood cholesterol.
- d. Pale stool.

14- Which of the following is NOT reabsorbed in distal convoluted tubules :

- a. Water.
- b. Sodium.
- c. Potassium.
- d. Chloride.

15- Receptive gastric relaxation could abolished by:

- a. Vagal stimulation.
- b. Vagotomy.
- c. Sympathetic stimulation.
- d. Injection of vasoactive intestinal peptide.

- 16- The effective stimulus for secretion of secretin hormone is:**
- Duodenal acidity.
 - Duodenal alkalinity.
 - Sympathetic stimulation.
 - Hypoglycemia.
- 17- Which of the following occur due to reflux of gastric content into esophagus:**
- Inhibit gastric motility.
 - Inhibit gastric secretion.
 - Initiate primary esophageal peristalsis.
 - Initiate secondary esophageal peristalsis.
- 18- Which of the following is CORRECT regarding parasympathetic fibers:**
- Supply dilator pupillary muscle by postganglionic fiber.
 - Supply adrenal medulla by preganglionic fiber.
 - Having long preganglionic and short postganglionic fibers.
 - Causes sweat secretion with increase body temperature.
- 19-The relay of preganglionic sympathetic could be blocked by :**
- Atropine.
 - Propranolol.
 - Ergotamine.
 - Large dose nicotine.
- 20- Which of the following is NOT autonomic effector :**
- Respiratory muscle.
 - Erector billi muscle.
 - Cardiac muscle.
 - Constrictor pupillary muscle.
- 21- Which of the following is supplied by double autonomic innervation:**
- | | |
|------------------------------|-----------------------------|
| a. Pulmonary blood vessels . | c. Ventricle of the heart . |
| b. Gastric gland . | d. Erector billi muscle. |
- 22-Which of the following is CORRECT regarding erythropoietin:**
- Stimulated by acidosis.
 - Stimulated by alkalosis.
 - Inhibited by low PO_2 .
 - Inhibited by androgen hormone.
- 23- The following circulate in plasma EXCEPT :**
- | | |
|-----------------|-----------------|
| a. Plasmin. | c. Fibrinogen. |
| b. Plasminogen. | d. Prothrombin. |

24- Which of the following promote platelet adhesion:

- a. Von willebrand factor.
- b. Calcium.
- c. Fibrinogen.
- d. Prothrombin.

25- Which of the following is CORRECT regarding monocytes :

- a. Function as tissue macrophage.
- b. Represent 20 % of total leukocytic count.
- c. Form immunoglobulins.
- d. Concerned with allergic reaction.



PHYS 900
Time allowed three Hours
Total marks : 450

MD Physiology
First Paper

Tanta University
Faculty of Medicine
Date: 30 /10/2021

All the questions must be answered :-

- 1. Discuss: Physiological changes occur with aging with special reference to the involved theories . (50 marks)**
- 2. Discuss: The proposed role of brain stem in controlling voluntary movement. (50 marks)**
- 3. Discuss : Role of endocrinal function of heart and kidney in body homeostasis. (50 marks)**
- 4. State: the physiological significance of visual reflexes to maintain normal visual function. (50 marks)**
- 5. State : Metabolic changes occur during muscular exercise . (50 marks)**
- 6. Mention : a) Physiological basis and types of electrotonic potential. (25 marks)**
b) physiological evaluation of testicular function. (25 marks)
- 7. Case study . (25 marks)**

40 years old patient admitted to neurological department complaining of difficulty in naming visual objects and he cannot understand written words and pictures but he can understand auditory information and he can speak normal . Medical investigation reveals brain lesion.

Which of the following lesions will be expected to be found.

- a. Isolated lesion in angular gyrus.
- b. Lesion in broca's area.
- c. Damage to general interpretative area.
- d. Lesion in visual sensory area 17.

Choose only one choice (125 marks for 25 MCQ)

1- Enkephalin is neurotransmitter at which of the following:

- a. Raphe magnus nucleus.
- b. Periaqueductal grey matter.
- c. Hypothalamus.
- d. Type A beta afferent fiber.

2- Which of the following is function of Somatic sensory area I :

- a. Pain localization.
- b. Pain perception.
- c. Somatic reaction to pain.
- d. Autonomic reaction to pain.

3- Lesion in left gracil tract induce loss of pressure sense from:

- a. Right arm.
- b. Right leg.
- c. Left arm.
- d. Left leg.

4- Which of the following occur during stage of spinal shock:

- a. Automatic urination.
- b. Urine retention with over flow.
- c. Mass reflex.
- d. Hypertonia in flexors.

5- Prolonged change in neuronal activity is induced by :

- a. G protein coupled channel.
- b. Voltage gated sodium channel.
- c. Ligand gated sodium channel.
- d. Voltage gated potassium channel.

6- Which of the following cross capillary wall through water filled clefts between endothelial cells:

- a. Glucose.
- b. CO₂.
- c. O₂.
- d. CO.

7- The portion of cell membrane which act as barrier limit movement of water soluble substance is:

- a. Lipid.
- b. Protein.
- c. Pores.
- d. Mucopolysaccharide.

8- Extracellular fluid differ from intracellular fluid in that:

- a. Tonicity is lower.
- b. Anions are mainly inorganic.
- c. Ph is lower.
- d. Volume is greater.

9- Which of the following indirectly require energy source:

- a. Facilitated diffusion.
- b. Active sodium potassium pump.
- c. Secondary active transport.
- d. Exocytosis.

10- Insulin is essential for glucose entry to :

- a. Cardiac muscle.
- b. brain.
- c. kidney.
- d. Intestine.

11- Which of the following occur as result of alkalosis :

- a. Hypernatremia.
- b. Hyponatremia.
- c. Decrease level of ionized calcium.
- d. Increase level of ionized calcium.

12- Cortisol induce the following EXCEPT:

- a. Increase number of esinophil.
- b. Protein catabolic effect.
- c. Hyperglycemia.
- d. Mobilization of fatty acids.

13- Which of the following is CORRECT regarding antidiuretic hormone:

- a. Stimulated by hypovolemia .
- b. Stimulated by hypervolemia.
- c. Tend to increase plasma osmolarity.
- d. Tend to increase plasma Ph.

14- Which of the following is CORRECT regarding secretory phase of menstrual cycle:

- a. Start after ovulation.
- b. Start after end of bleeding.
- c. Under control of follicular stimulating hormone.
- d. Under control of leutinizing hormone.

15- Dark adaptation of retina is characterized by:

- a. Physiological miosis.
- b. Break down of photosensitive pigments .
- c. Increase retinal sensitivity to light.
- d. Decrease retinal sensitivity to light.

16- During accommodation for near vision there will be:

- a. Increase curvature of cornea.
- b. Pupil dilatation.
- c. Decrease depth of focus.
- d. Increase depth of focus.

17- Which of the following is CORRECT as regard stapedius muscle of middle ear:

- a. Dampen vibration of membrane of oval window.
- b. Dampen vibration of tympanic membrane.
- c. Attached to handle of malleus.
- d. Attached to incus.

18- Which of the following is concerned with analysis of sound frequency :

- a. Tectorial membrane.
- b. Vestibular membrane.
- c. Basilar membrane.
- d. Secondary tympanic membrane.

19- Which of the following is CORRECT as regard smell receptors :

- a. Mainly concerned with detection of presence or absence of odour.
- b. Mainly concerned with detection of intensity of different odours.
- c. Are very slowly adapted.
- d. Having the same threshold to all types of stimuli.

20- Which of the following proteins involved in ATPase changes for skeletal muscle contraction:

- a. Actin.
- b. Myocin.
- c. Troponin.
- d. Tropomyocin.

21- The resting membrane potential of nerve is caused by:

- a. Opening of chemically activated sodium and potassium channels .
- b. Opening of voltage activated sodium and potassium channels.
- c. Leak diffusion of potassium outside nerve fiber.
- d. Leak diffusion of sodium inside nerve fiber.

22- Which of the following having less chronaxie :

- a. Smooth muscle.
- b. Skeletal muscle.
- c. Cardiac muscle
- d. Somatic nerve

23- Which of the following is CORRECT regarding brown fat:

- a. Its metabolic activity is stimulated by parasympathetic.
- b. Having higher metabolic rate than ordinary fat.
- c. Having lower metabolic rate than ordinary fat.
- d. More abundant in adult than newborn.

24- Oxidation of 1 gm of fat inside body will yield :

- a. More energy than one gram of protein.
- b. Less energy than one gram of protein.
- c. The same amount of energy as that for one gram protein.
- d. The same amount of energy as that for one gram carbohydrate.

25- Most of heat loss from body occur by:

- a. Evaporation.
- b. Conduction.
- c. Convection.
- d. Radiation.