SS/MBBS-I/PHY-II/02-21

First Professional MBBS Examination

2021

(February)

PHYSIOLOGY

Paper-II

Full Marks: 100

Time: 3 hours

The figures in the margin indicate

full marks for the questions

Write the answers to the two Halves in separate books

Answer all questions

FIRST HALF

1. Define the cardiac cycle. With suitable diagram, describe and correlate heart sound, ECG changes and the pressure and volume changes in the left ventricle in the different phases of cardiac cycle. What is ejection fraction? Give its physio-clinical significance. [2 + 8 + 2 + 3 = 15]

2. Write short notes on the following : [5 × 4 = 20]

(a) Circulatory shock

(b) Non-respiratory functions of the lung

(c) Pathophysiology of fever

(d) Obesity

3. Describe empathy. 5

4. For the following MCQ-type questions, choose and write down the correct option from (i), (ii), (iii) or (iv) against the question in the answer booklet :

[1 × 10 = 10]

(a) Which of the following is a correct sequence of events involved during phagocytosis?

(i) Chemotaxis—Diapedesis—Opsonization—Phagocytosis

(ii) Diapedesis—Opsonization—Chemotaxis—Phagocytosis

(iii) Phagocytosis—Diapedesis—Chemotaxis—Opsonization

(iv) Diapedesis—Chemotaxis—Opsonization—Phagocytosis

(b) Cyanosis is not seen in

(i) polycythaemia

(ii) anaemic hypoxia

(iii) stagnant hypoxia

(iv) hypoxic hypoxia

(c) The renal threshold for glucose in arterial plasma is

(i) 180 mg/dL

(ii) 200 mg/dL

(iii) 300 mg/dL

(iv) 375 mg/dL

(d) Cholagogues are the substances which cause

(i) contraction of the gallbladder

(ii) increase in concentration of bile

(iii) increase in secretion of bile

(iv) acidification of bile

(e) Which of the following are Windkessel vessels?

(i) Arterioles

(ii) Veins

(iii) Capillaries

(iv) Aortas

(f) Which factor is not dependent on Vitamin K for its synthesis?

(i) Factor VII

(ii) Factor IX

(iii) Factor X

(iv) Factor I

(g) PR interval in ECG signifies the interval between the

(i) beginning of the P wave and the beginning of the R wave

(ii) beginning of the P wave and the beginning of the QRS complex

(iii) end of the P wave and the beginning of the QRS complex

(iv) end of the P wave and the end of the QRS complex

(h) Which is not a feature of histotoxic hypoxia?

(i) Normal arterial pO2

(ii) Normal arterial O2 saturation of haemoglobin

(iii) Normal arteriovenous pO2 difference

(iv) No difference of O2 content of arterial and venous blood

(i) What happens to diastolic blood pressure during mild to moderate exercise?

(i) Increases slightly

(ii) Moderate increase

(iii) Decreases

(iv) No change

(j) The first urge to pass urine is felt at a urinary bladder volume of about ____ ml.

(i) 50

(ii) 100

(iii) 150

(iv) 250

SECOND HALF

5. Give an account of composition, function and regulation of pancreatic juice. Is the pancreas prevented from auto-digestion normally? What is steatorrhoea? [3 + 3 + 4 + 3 + 2 = 15]

6. Write short notes on the following : [5 × 3 = 15]

(a) Cardiovascular changes during acute exercise

(b) Health benefits of yoga

(c) P-R interval

7. Answer the following in short (physiological significance) : [2 × 3 = 6]

(a) In anaemic hypoxia, oxygen therapy is not much help. Explain.

(b) Chronic renal failure leads to which disease?

(c) Name the conductive system of heart.

8. Give the difference between the following : [2 × 2 = 4]

(a) Haemolytic and Obstructive jaundice

(b) Tubuloglomerular feedback and Glomerulotubular balance

9. A 29-year-old male resident at sea level experiences increased respiratory rate and depth, headache and nausea after ascending to a ski resort at an altitude of 3000 m. Within two days his symptoms improved and become normal.

(a) What type of hypoxia the subject experienced?

(b) Which of his respiratory regulatory mechanisms adapted first to help him get acclimatized?

(c) Explain why and how his respiratory rate and depth is increased to cope with the situation.

(d) Mention the different physical features of a chronic high-altitude dweller.

[1 + 2 + 4 + 3 = 10]

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