SS/MBBS-I/PHY-II/01-22

First Professional MBBS Examination

2022

(January)

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. What is cardiac output? Describe one method of measurement of cardiac output. Explain the factors controlling cardiac output. What is cardiac index?

[2 + 5 + 6 + 2 = 15]

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

(a) Dietary fibres

(b) Caisson's disease

(c) Mass peristalsis

(d) Haemodialysis

3. What do you think are the privileges and responsibilities of physicians? 5

4. Choose the correct option from the following: [1 × 10 = 10]

(i) Life span of RBC is

(a) 30 days

(b) 60 days

(c) 90 days

(d) 120 days

(ii) APUD cells in the lung alveoli secrete

(a) immunoglobulins

(b) VIP

(c) surfactant

(d) heparin

(iii) Glucose reabsorption occurs in

(a) proximal tubule

(b) loop of Henle

(c) distal tubule

(d) cortical and medullary collecting duct

(iv) Turbulence occurs when the Reynold's number is

(a) 100

(b) 1000

(c) 1500

(d) 3000

(v) Which of the following has the highest pH?

(a) Gastric juice

(b) Bile in gall bladder

(c) Pancreatic juice

(d) Saliva

(vi) The normal structure of foetal haemoglobin is

(a) one alpha chain and one beta chain

(b) two alpha and two beta chains

(c) two alpha and two gamma chains

(d) two gamma and two delta chains

(vii) The proteolytic enzyme present in saliva is

(a) ptyalin

(b) lysozyme

(c) kallikrein

(d) lipase

(viii) Blood-brain barrier is not present in

(a) area postrema

(b) thalamus

(c) cerebral cortex

(d) corpus callosum

(ix) Which of the following does not stimulate peripheral chemoreceptors?

(a) Hypoxia

(b) Hypocapnia

(c) Acidosis

(d) Low perfusion pressure

(x) Glomerular filtration per day is

(a) 40-50 litres

(b) 90-100 litres

(c) 140-150 litres

(d) 170-180 litres

SECOND HALF

5. Give the composition and functions of gastric juice. Describe the mechanism of HCl secretion in the stomach. How is the secretion of gastric juice regulated? Write briefly about the gastric-mucosal barrier.

[5 + 5 + 3 + 2 = 15]

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

(a) Cheyne-Stokes respiration

(b) Micturition reflex

(c) Physiological effects of meditation

7. Give the physiological basis of the following : [2 × 3 = 6]

(a) Sigmoid shape of oxygen-haemoglobin dissociation curve

(b) Cardiac muscle cannot be tetanised

(c) Fat absorption is poor in obstructive jaundice

8. Compare and contrast between the following : [2 × 2 = 4]

(a) Osmotic diuresis and water diuresis

(b) Salivary amylase and pancreatic amylase

9. A 35-year-old woman attends the OPD with complaints of general weakness, palpitations, breathlessness and generalized body ache. She feels easily tired even after doing her normal household chores. History reveals that she has heavy menstrual blood flow. On examination, pulse rate and blood pressure are found to be normal and there is pallor and the nails are dry and spoon shaped. Blood investigations reveal the following:

RBC count = 3·5 million/cu.mm of blood, Haemoglobin = 7 gm%, PCV = 40%, MCV = 70 fL, MCH = 20 pg, MCHC = 28%, WBC count = 7000/cu.mm of blood, Platelet count = 3 lakhs/cu.mm of blood

a) What may be the probable diagnosis?

b) What may be the likely cause in the above case?

c) What are the findings which support your diagnosis?

d) What other investigations will you advise to confirm your diagnosis?

[2 + 2 + 4 + 2 = 10]

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