

**SS/MBBS-I/1<sup>st</sup>1A/PHY/02-25****First Professional MBBS Examination****2025****(February)****PHYSIOLOGY****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**

1. Define haemostasis. Enumerate the major events involved in haemostasis. Describe the intrinsic and extrinsic systems of clotting mechanism. Explain the role of Vitamin K in coagulation. What is thrombus? 1+3+6+3+2=15

2. Write short notes on: 5x8=40

a) Gap junction.

b) Na<sup>+</sup>-K<sup>+</sup>-ATPase.

c) P-R interval in ECG.

d) Excitation-contraction coupling.

e) Surfactant.

f) A-V nodal delay and its significance.

g) Ventricular systole.

h) Strength-duration curve.

3. Describe the importance of empathy in doctor-patient relationship. 5

4. Give physiological basis of:  $2 \times 2 = 4$

- a) Megaloblastic anaemia occurs in Vitamin B12 deficiency.
- b) Cyanosis does not occur in anaemic hypoxia.

5. Differentiate between:  $2 \times 3 = 6$

- a) Isotonic and isometric contraction.
- b) Graded potential and action potential.
- c) Adult haemoglobin and foetal haemoglobin.

6. Describe briefly the structure of the respiratory membrane with suitable diagram. Describe the forms of oxygen transport in blood. Describe the factors affecting oxygen-haemoglobin dissociation curve with suitable diagram. Explain why PCV of venous blood is greater than that of arterial blood.  $4 + 2 + 6 + 3 = 15$

7. A 65 year old woman comes to the primary care physician complaining of rapid onset of fatigue, which worsens towards the evening. She also complains of decreasing ability to read that is more pronounced in the evening. On examination, drooping of the right upper eyelid was seen. Neurological examination showed normal sensory responses with small amount of muscle weakness.  $2 + 3 + 2 + 3 = 10$

- a) What may be the probable diagnosis?
- b) Write briefly on the pathophysiology of your diagnosis.
- c) Write two more clinical features that are associated with your diagnosis.
- d) Write briefly on the treatment you would suggest.

8. Choose the correct answer:  $1 \times 5 = 5$

- i. According to Weibel's model, the conducting zone of respiratory tract is from
  - a) 1 to 16 generations

- b) 17 to 19 generations
- c) 20 to 23 generations
- d) 1 to 20 generations

ii. Chromatolysis is seen in

- a) demyelination
  - b) multiple sclerosis
- section of axon
- d) during nerve activity

iii. Apart from the nucleus, which part of the cell contains DNA?

- a) Endoplasmic reticulum
  - b) Golgi bodies
- Mitochondria
- d) Peroxisomes

iv. After muscle contraction, calcium ions return to the sarcoplasmic reticulum by

- a) facilitated diffusion
  - b) primary active transport
- secondary active transport
- d) simple diffusion

v. The amount of air remaining in the lungs after forceful expiration is

- a) residual volume
- b) inspiratory reserve volume
- c) expiratory reserve volume

d) tidal volume

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