

Answer a total of 12 out of the following 15 questions (each 8.33%). The first three are compulsory. Please elaborate your answers as much as possible:

Compulsory: (answer ALL THREE of the following)

1. A. Explain why diseased cells swell whereas healthy ones do not.
B. What are the main functions of plasma proteins?
2. What happens to action potentials if the sodium-potassium pump is suddenly inhibited?
3. Give evidences for the role of the sinoatrial (SA) node as the normal cardiac pacemaker.

Elective: (answer 9 out of the following 12)

4. Name the principal blood group system and explain how the various blood groups are classified.
5. A. In simple terms, what is the effect of calcium ion upon actomyosin?
B. What are the determinants of cardiac output?
6. Make a sketch showing how the blood pressure varies through the cardiac cycle in the arteries, capillaries and veins.
7. Outline the main cardiovascular changes on assumption of the upright posture.
8. A. Give the consequences of a deficiency of surfactant.
B. How does a fall in P_{O_2} compare with an increase in P_{CO_2} as a stimulator of respiration?
9. Of what physiological value is the form of oxygen hemoglobin dissociation curve?
10. A. How does the amount of water ingested as food and drink compared with the urinary output?
B. Inulin clearance is used to determine which parameter of the kidney function?
11. A. What are the mechanisms of heat loss and heat gain by the body?
B. What is basal metabolic rate? Compare average values for a man and a woman.
12. A. What is the simplest way in which secretion of a hormone may be controlled?
B. Outline the steps in the 'life cycle' of a hormone.
13. Explain the hormonal changes seen at menopause.
14. Explain the chief tests of pituitary function.
15. A. What is the physiological basis of the phrase 'seeing stars' (e.g. when your head is given a sudden blow)?
B. Why is the taste of food affected when you have a cold?

-End of Questions-