

**2020**

**PHYSIOLOGY — HONOURS**

**Paper : CC-2**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**Group - A**

1. Answer **any five** questions :

2×5

- (a) What do you understand by the term exergonic reactions?
- (b) What do you mean by ionization constant of water? Give its significance.
- (c) What do you mean by epimerism? Give example.
- (d) Write the structure and systemic name of linoleic acid.
- (e) Give two important differences between globular and fibrous proteins.
- (f) Write the optical parts of compound light microscope.
- (g) Give an example of deoxy sugar and draw its structure.
- (h) Draw the zwitterionic structure of alanine. Mention the nature of its side chain.
- (i) Name the rings present in histidine and tryptophan.
- (j) What is Lung surfactant? State its importance.

**Group - B**

2. Answer **any two** questions :

- (a) What are sugar enediols? Show how glucose and fructose form the same enediols. 2+3
- (b) What is numerical aperture of a lens? List three important differences between scanning and transmission electron microscope. 2+3
- (c) State Beer's law. Mention its limitations. What is optical density? 3+2
- (d) How do amino acids react with formaldehyde? What is tautomerism? 3+2

**Please Turn Over**

**Group - C**

3. Answer *any three* questions :

- (a) Discuss the principles of construction, uses and advantages of pH meter. State any two uses of phase contrast microscope. 8+2
- (b) State the salient feature of  $\alpha$ -helix. What do you mean by 'hyperchromicity' and 'half Cot value'? 6+(2+2)
- (c) Explain mutarotation taking D-glucose as an example.  
State the characteristics of glycosaminoglycans. Give an example of glycosaminoglycan, draw its structure and mention its function. 4+(3+1+1+1)
- (d) Discuss briefly the cloveleaf secondary structure of t-RNA. Compare A-DNA, B-DNA and Z-DNA. 6+4
- (e) 'Living body is a thermodynamic system'. — Explain.  
What is Gibbs–Donnan membrane equilibrium? Mention its physiological importance. 5+2+3
- (f) Define and classify phospholipids with example for each type. State the physiological importance of sphingolipids.  
Define saponification number and state its significance. (1+4)+2+(2+1)
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