

2018

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 from the following : 2×5
- (a) Is there any difference between isotonic solution and isosmotic solution?
 - (b) Does the pH of a buffer solution change with a rise in temperature? Rationalize your answer.
 - (c) State any two uses of phase contrast microscope.
 - (d) What do you understand by 'tautomerism'? Give an example.
 - (e) Define eicosanoids with examples.
 - (f) Distinguish between the terms 'configuration' and 'conformation' of biomolecules.
 - (g) What will be the surface charge of a GTP molecule?
 - (h) Why is DNA more stable than RNA?
 - (i) What is iodine number? Mention its use.
 - (j) What is epsilon potential?

Group - B

2. Answer **any two** questions from the following : 5×2
- (a) Describe the Gibbs-Donnan membrane equilibrium mentioning one of its physiological relevance.
 - (b) Discuss briefly the 'salting in' and 'salting out' processes of colloidal solution.
 - (c) What are glycosaminoglycans and sphingolipids? Give examples.
 - (d) Between oxygen and carbon dioxide which gas will diffuse at a faster rate across the alveolar-capillary epithelia and why? Distinguish between A-DNA and Z-DNA.

Please Turn Over

Group - C

3. Answer **any three** questions from the following :

- (a) How can you determine the osmotic pressure of a biological fluid using freezing point depression method? 10
- (b) Animals live on negative entropy — Explain. 10
- (c) (i) Why do plasma proteins exist as anions in circulating blood?
(ii) How many isomers can be produced by α -D-glucopyranose?
(iii) What do you understand by geometrical isomerism of fatty acids? 3+4+3
- (d) (i) Describe with diagram the cloverleaf structure of t-RNA.
(ii) Explain the terms 'hyperchromicity' and 'half Cot value'. (4+2)+(2+2)
- (e) (i) What do you understand by ampholytes and amphipathic substances?
(ii) What is Beer-Lambert law? State its uses and limitations. (2+2)+(4+1+1)
- (f) (i) What do you understand by the numerical aperture of a compound microscope?
(ii) Mention the uses of confocal microscope.
(iii) Describe briefly with diagram the structure of parallel and antiparallel beta sheets of protein molecules. 2+2+(2+2+2)
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