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UG/1st Sem/PHYSIO(H)/T/19

2019

B.Sc.

1st Semester Examination

**PHYSIOLOGY (Honours)**

**Paper - C 2-T**

**(Biological Physics and Enzymes)**

Full Marks : 40

Time : 2 Hours

*The figures in the margin indicate full marks.  
Candidates are required to give their answers  
in their own words as far as practicable.*

1. Answer any five questions of the following :

5×2

- (a) State four principal non-covalent bonds in proteins. 2
- (b) What is turnover number of an enzyme ? 2
- (c) State the law of mass action. 2
- (d) Distinguish between scanning and transmission electron microscope. 2

[ Turn Over ]

(e) What are ribozymes and abzymes ? 1+1

(f) State the uses of nanoparticles in physiology along with their biomedical implications. 2

(g) What are entropy and enthalpy ? 1+1

(h) What is meant by desensitization of allosteric enzyme ? 2

2. Answer any *four* questions : 4×5

(a) What is sol-gel transformation ? 5

(b) Do you think that PH of a buffer solution would change on dilution ? Justify your statement. 5

(c) Write a short note on UV-V is spectrophotometer. 5

(d) What is the main difference in the properties of laminar and streamline flow ? How cell fractions are separated through density-gradient centrifugation ? 2+3

(e) Which enzymes are detected in case of performing a liver function test ? Why rate-limiting enzymes are essential to any biochemical pathways ? What is meant by feedback regulation ? 2+2+1

- (f) What is the difference between competitive and non-competitive enzyme inhibition ? Briefly state the principle of SDS-PAGE. 2+3

3. Answer any *one* question from the following :  $1 \times 10$

- (a) (i) Distinguish between diffusion and osmosis.
- (ii) State the first and second law of thermodynamics. What is meant by open and closed system ?
- (iii) What are isoenzymes ? Write a brief note on the Lineweaver-Burk plot. 2+(2+2)+1+3
- (b) (i) Briefly describe the optical and electrical properties of colloids.
- (ii) What is ultra-sonication ? Mention two applications of radio-isotopes.
- (iii) What is allosteric regulation ? What is meant by sigmoid kinetics ?
- (iv) Give some names of dyes that are used in fluorescence microscopy. What is their unique property ? 4+(1+1)+(1+1)+(1+1)