

(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID : 254101

Roll No.

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B.Tach.

(SEM. I) THEORY EXAMINATION, 2015-16

BIOCHEMISTRY, BIOPHYSICS & MICROBIOLOGY

[Time : 3 hours]

[Total Marks : 100]

SECTION - A

1. Attempt **all** part. All parts carry equal marks. write answer of each part in short. (2×10=20)
 - (a) Why can't we visuallize single molecules by X-ray crystallography?
 - (b) If $N=10_8$, $N_0=5 \times 10^7$, and $t=2$ hours. Then calculate 'n' and generation time.
Given $\text{Log}(5 \times 10^7)$ is equal +07.69.
 - (c) Define precessional frequency.
 - (d) Write about significance of Michaelis-Menten constant (K_m).
 - (e) Classify carbohydrates. Give one example of each of them.

- (f) Differentiate Enrichment medium and selective medium?
- (g) Define Bragg's law.
- (h) Write about (n+1) Rule.
- (i) How can you say that Metabolism is important for us.
- (j) Define Allosteric inhibition.

SECTION - B

Attempt **any five** question from this section. (10x5=50)

2. How X-ray crystallography is useful in study of biological macromolecules.
3. Define phase problem. Describe various methods of overcoming of phase problems.
4. Describe bacterial growth kinetics. Differentiate exponential phase and stationary phase.
5. Write about instrumentation and application of NMR spectroscopy.
6. What do you mean by Bioenergetics? Describe the use of equation $\Delta G = \Delta H - T \Delta S$.
7. Classify different types enzyme inhibition. Describe competitive inhibition with suitable example.

8. What is biomolecules? Write about functional importance of protein with suitable example.
9. Define Spin-spin Splitting. How it is beneficial for us in structure determination.

SECTION - C

Attempt **any two** question from this section. (15x2=30)

10. What do you mean by molecular modeling? How molecular modeling is useful for us describe in detail?
11. Differentiate cell organization in prokaryotes and eukaryotes. Describe structure and function of Ribosome and Mitochondria.
12. What do you mean by enzyme kinetics? Describe enzyme kinetics with the help of Michaelis-Menten Equation.

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