

M. Sc. (Biotechnology) Sem-I (2012 Course)(Choice Based Credit System) : WINTER - 2018

SUBJECT : BIOLOGICAL CHEMISTRY

Day : Monday
Date : 22/10/2018

W-2018-1204

Time : 10.00 AM TO 01.00 PM
Max. Marks : 60

N.B.:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the remaining questions attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in separate answer books.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Figures to the right indicate **FULL** marks.
- 5) Assume suitable data if necessary.

SECTION – I

- Q.1** Attempt **ANY FIVE** of the following: [10]
- a) Give the structure of monoglyceride and diglyceride. Comment on their properties and industrial applications.
 - b) Which lipids are structural component of cell membrane? Mention their specific biological role.
 - c) Explain with reasons for rancidity and spoilage of lipids. Which superior methods are used for their storage?
 - d) Explain the role of glycoproteins with suitable examples.
 - e) Which acidic and basic amino acid residues constitute the structure of protein? Give the structure of any one amino acid with acidic and basic nature.
 - f) Explain the role of secondary and tertiary structure in stabilization of protein.
- Q.2** a) Explain the pentose phosphate pathway involved in synthesis of 5-carbon sugar and its regulation. [05]
b) Describe Watson-Crick double helical model of DNA with a suitable diagram. [05]
- Q.3** a) Differentiate between metabolism involved in synthesis and degradation of glycogen. [05]
b) Why gluconeogenesis is a reversal pathway of glycolysis? [05]
- Q.4** Attempt **ANY TWO** of the following: [10]
- a) Give a note on prostaglandins and their biological role.
 - b) Give comment on amphibolic nature of TCA cycle.
 - c) Write a note on hydrolytic products of polysaccharides and their industrial applications.

SECTION – II

- Q.5** a) Describe the structural and function role of ATP synthase. [05]
b) Write about deamination and transamination reactions involved in amino acid metabolism. [05]
- Q.6** Attempt **ANY TWO** of the following: [10]
- a) Explain all reactions involved in Calvin cycle.
 - b) Explain the role of pancreatic hormones in regulation of blood glucose level.
 - c) Write equation to calculate Michaelis-Menten constant. Explain its significance.
- Q.7** a) Comment on inhibitors and uncouplers in electron transport chain. [05]
b) Explain urea cycle as important metabolic pathway in amino acid metabolism. [56]
- Q.8** Describe application of enzymes with their specific role in diagnosis and industry. [10]

OR

Give the structure of vitamin 'E'. Comment on its specific biological role.

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