

II B.Tech. I Semester Regular Examinations, November -2005

BIO-CHEMISTRY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Explain with suitable examples reducing and non-reducing sugars?
(b) What is an invert sugar? Explain? [8+8]
2. What is a glycosidic bond? Illustrate with structures of suitable examples [16]
3. What is lipogenesis? Describe the cytoplasmic system of fatty acid synthesis. [4+12]
4. Give an account of any three non essential aminoacids and add a note on their formation. [16]
5. Describe the pathways in the biosynthesis of aromatic amino acids. [16]
6. Describe the pathways involved in:
(a) Glycogenesis
(b) Glycogenolysis [8+8]
7. Is CO₂ uptake and O₂ production directly proportional in photosynthesis? [16]
8. Explain how the process of photosynthesis is involved in net primary production and an increase in plant biomass. [16]

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1. (a) What is a glycoprotein ? Give examples of glycoprotein functions.
(b) Name the different sugars and derivatives of glycoprotein's. [8+8]
2. Describe the mobilization of sugars from polysaccharide storage as well as synthesis [16]
3. Describe the pathway involved in the biosynthesis of palmitic acid. [16]
4. Write short notes on
 - (a) Biosynthesis of any three aliphatic aminoacids
 - (b) Glucogenic aminoacids
 - (c) Ninhydrin reaction [6+5+5]
5. Discuss the pathways for the synthesis of aromatic amino acids? Also comment on the regulation of the pathways. [9+7]
6. Calculate the bioenergetics involved in the aerobic oxidation of
 - (a) Glucose
 - (b) Acetyl coAWrite the specific reactions involved. [8+8]
7. Where are the pigments of photo systems located in plants and bacteria? Write their role. [4+12]
8. Differentiate the processes of the light and dark reaction. [16]

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1. (a) What is a disaccharide ?
(b) Give two examples with structure?
(c) Discuss the role of any two disaccharides in nutritional metabolism? [3+4+9]
2. Explain the salient features of glycoproteins. Name the common sugar residues associated with glycoproteins. Highlight the functions of glycoproteins with examples [4+12]
3. Describe the metabolism of cholesterol. [16]
4. Write short notes on
 - (a) Biosynthesis of any three aliphatic amino acids
 - (b) Glucogenic amino acids
 - (c) Ninhydrin reaction [6+5+5]
5. Describe the pathways in the biosynthesis of aromatic amino acids. [16]
6. Describe the alternative pathway of glucose oxidation (pentose phosphate) in detail. [16]
7. Where does photosynthesis occur in an organism? How do you differentiate between bacterial and plant photosynthesis system? [4+12]
8. How did the appearance of the first photosynthetic microorganisms (blue-green algae) change the earth's atmosphere? [16]

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1. (a) Explain with suitable examples reducing and non-reducing sugars?
(b) What is an invert sugar? Explain? [8+8]
2. Highlight the difference between starch, dextran and glycoprotein [16]
3. What is the normal blood cholesterol level? Describe briefly the chemistry and biosynthesis of cholesterol and its physiological significance. [3+13]
4. What are essential aminoacids? Explain how nitrogen balance is maintained in the body. [3+13]
5. Discuss the pathways for the synthesis of aromatic amino acids? Also comment on the regulation of the pathways. [9+7]
6. Schematically trace the pathways involved in the synthesis of glucose from
 - (a) Alanine
 - (b) Fatty acid [8+8]
7. What unique role do the pigments of the “photochemical reaction center” of photo systems play? [16]
8. Explain what the plant does with the carbohydrate that is produced by photosynthesis? [16]
