

[A-43]

SARDAR PATEL UNIVERSITY
B.Sc. BOTANY (SEM - 6) Examination

Saturday 9th April, 2016

2. 30 to 5. 30 p. m.

US06CBOT06-Plant Metabolism and Biochemistry

Max. Marks – 70 (Seventy only)

- N.B.: (i) Answers of all the questions (including multiple choice questions) should be written in the provided answer book only.
(ii) Figures in the right indicate marks.

Q1. Choose appropriate answers for the following MCQs:

(10 X 1 = 10)

- (i) Enzymes are best classified as
(a) Protein (b) Fat (c) Starch (d) Carbohydrate
- (ii) Enzymes having slightly different molecules structure but performing identical activity are
(a) Apoenzymes (b) Isoenzymes (c) Holoenzymes (d) Coenzymes
- (iii) Which factor is affecting enzyme catalyzed reaction:
(a) Temperature (b) pH (c) Inhibitors (d) More than one option
- (iv) In Plants, glucose aerobically converted into:
(a) Lactate (b) Pyruvate (c) Ethanol (d) CO₂ and H₂O
- (v) Which one of the following is a pentose?
(a) Lactose (b) Maltose (c) Sucrose (d) None of these
- (vi) Which one of the following is a non reducing sugar?
(a) Lactose (b) Maltose (c) Glucose (d) All of these
- (vii) Which one of the following is a PUFA?
(a) Oleic acid (b) Linolenic acid (c) Acetic acid (d) None of these
- (viii) How many double bonds are present in linoleic acid?
(a) 1 (b) 2 (c) 3 (d) 4
- (ix) Nitrogen is an essential component of:
(a) RNA (b) Protein (c) DNA (d) More than one option
- (x) Which one of the following is a building block of protein?
(a) Amino acids (b) Fatty acids (c) Nucleotides (d) All of these

Q2. Answer any TEN of the following questions in brief:

(10 X 2 = 20)

- (i) Why enzymes are known as biocatalysts?
- (ii) Define 'activation energy'
- (iii) What is apo enzyme?
- (iv) What is meant by reducing sugar?
- (v) What is oxidative phosphorylation?
- (vi) What is the role of hexokinase in Glycolysis?
- (vii) Define 'Lipid'
- (viii) Write structure of oleic acid.
- (ix) Give examples of alcohol present in lipids.
- (x) Give general structure of amino acid.
- (xi) What are the sources of nitrogen?
- (xii) Give examples bacteria involved in nitrogen fixation.

- Q3 (a)** Derive M-M equation when $V_0 = V_{max}/2$ (03)
(b) Write an explanatory note on the classification of enzyme (07)

OR

- Q3 (a)** Write a note on lock and key model of enzyme action. (05)
(b) Write a note on factors affecting enzyme catalyzed reactions. (05)

- Q4 (a)** What is substrate level phosphorylation? Write reactions where ATP is produced by substrate level phosphorylation during glucose oxidation. (07)
(b) What is the role of aldolase in Glycolysis? (03)

OR

- Q4 (a)** Write in detail about citric acid cycle. (07)
(b) Explain: Bridge reaction (03)

- Q5.** How many ATP molecules are produced after complete oxidation of one molecule of palmitic acid? Write all reactions. (10)

OR

- Q5.** Write in detail about β -oxidation. (10)

- Q6 (a)** Explain: Nitrogen cycle (07)
(b) Define: Ammonification (03)

OR

- Q6 (a)** Write in detail about Transamination. (07)
(b) Write in brief on different forms of nitrogen. (03)

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