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SARDAR PATEL UNIVERSITY

Bachelor of Science (Semester 5) Examination - 2022

US05 CMIC22: Microbial Metabolism

Date: 11/11/2022(Friday)

Time: 10:00 A.M. to 01: 00 P.M

Total: 70 Marks

NOTE: Figure to the right indicate full marks of the questions.

Q-1 Attempt all following multiple-choice question.

(10)

- (1) Transport mechanisms that require expenditure of cellular energy are called _____
(a) Passive Transport (b) Active Transport (c) Facilitated diffusion (d) None of these
- (2) The energy actually available to do work is known as _____
(a) Enthalpy (b) Entropy (c) Free energy (d) None of these
- (3) Those enzymes formed by the cell under any or all the conditions of growth.
(a) Induced enzyme (b) Constitutive Enzymes (c) Isozyme (d) None of these
- (4) Chemical reactions are independent of the concentration of any reactant are called _____
(a) Zero order reaction (b) First order reaction (c) Second order reaction (d) None of these
- (5) Enzyme exhibit specificity towards the Cis & Trans forms is known as _____
(a) Broad specificity (b) Geometrical specificity (c) Reaction specificity (d) Optical specificity
- (6) TCA cycle has _____ steps.
(a) Five (b) Three (c) Eight (d) Seven
- (7) The last five reaction of glycolysis is known as _____
(a) Preparatory phase (b) Payoff phase (c) Secondary phase (d) None of these
- (8) Which of the following is a common intermediate in biosynthesis of Tyrosine and Phenylalanine amino acids?
(a) L- Aspartic acid (b) Prephenate (c) Chorismate (d) None of these
- (9) Carbon dioxide fixation occurs in _____ cycle.
(a) TCA cycle (b) Glycolysis (c) Calvin Cycle (d) Gluconeogenesis
- (10) Genetic loss of the ability to synthesize the growth factor is known as _____
(a) Chemical mutants (b) Antibiotic resistant mutants (c) Auxotrophic mutants (d) All of these

Q-2 Attempt the following (any ten)

(20)

1. Write the difference between uniporter and cotransporter.
2. Define : Proton motive force.
3. Explain in brief: Role of ATP in cell.
4. What do you mean by turn over number of Enzyme?
5. Explain in brief about Active site of enzyme.
6. Define: Reaction specificity of Enzyme
7. Explain relation between Anabolism & Catabolism.
8. Define: Oxidative deamination.
9. Explain in brief ω -oxidation of fatty acids.
10. Write name of three methods used to study Biosynthesis process
11. Acetyl-CoA Carboxylase enzyme of fatty acid synthesis consist of which three components?
12. How much ATP and NADPH require to synthesize each Trios phosphate from CO₂ in Calvin cycle?

(P.T.O.)

- Q-3 (A) Describe Electron carrying proteins of ETC. (06)
(B) Write a note on group translocation. (04)

OR

- Q-3 (A) Write a note on ATP synthase. (05)
(B) Explain Substrate level phosphorylation in detail. (05)

- Q-4 (A) Write a note on: Factors affecting on enzyme activity. (05)
(B) Discuss IUB system of enzyme classification each with one example. (05)

OR

- Q-4 (A) Derive equation showing relationship between initial velocity & substrate concentration on the basis of steady state assumption. (07)
(B) Explain in brief: "The properties of Allosteric enzyme". (03)

Q-5 Write note on:

- (A) The Preparative phase of Glycolysis. (05)
(B) Write Salient feature of Transamination reaction. (05)

OR

- Q-5. Write a note on: β – Oxidation of Saturated Fatty acids. (10)

- Q-6 Explain in detail biosynthesis of tryptophan amino acid. (10)

OR

- Q-6 Write a Note on: Gluconeogenesis. (10)

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