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[36]

SARDAR PATEL UNIVERSITY
M. Sc (Int.) Biotechnology: Semester IV Examination
Tuesday, 10th April, 2018
Time: 10.00 am to 1.00 pm
Sub: PS04CIGB01: Bioenergetics

Total Marks: 70

Q-1 Give the answer by choosing appropriate option. [8 X 1]

(1) For a reaction, if ΔG° is positive, then
(a) The products will be favored
(b) The reactants will be favored
(c) The concentration of the reactants and products will be equal
(d) All of the reactant will be converted to products

(2) Following enzyme does not show irreversible reaction in glycolysis.
(a) Pyruvate kinase (b)Phosphofructokinase (c) Hexokinase (d) None of these

(3) The enzymes of electron transport chain are located in_____.
(a) Golgi bodies (b) Cytoplasm (c) Mitochondria (d) Chloroplast

(4) Following is considered as glucostat monitor.
(a) Liver (b) Muscle (c) Kidney (d)None of these

(5) Following is the intermediate compound in the synthesis of GMP.
(a) Adenosuccinate (b) XMP (c) AMP (d)None of these

(6) Nitrogen atoms in the Purine ring are obtained from .....
(a) Glycine (b) Aspartate (c) Glutamine (d) All of them

(7) Following enzyme shows substrate level phosphorylation in TCA.
(a) Succinate thiokinase (b) Succinate phosphorylase
(c) Malate dehydrogenase (d) None of these

(8) The Kreb's cycle continuously requires regeneration of _____.
(a) Pyruvate (b) Oxaloacetate (c) α-Ketoglutarate (d) Malate

Q-2 Answer the following questions in short. (Any seven) [7 X 2]

(1) Write the function of branching enzyme in glycogenesis.
(2) Explain biological oxidation-reduction with one example
(3) Distinguish between substrate level and oxidative phosphorylation.
(4) Explain significance of pentose phosphate pathway.
(5) Why TCA cycle is called as an amphibolic cycle?

(6) What is the role of HGPRT enzyme in purine synthesis?
(7) Write thermodynamics laws.
(8) Give stoichiometry (ATP calculation) of complete oxidation of Glucose.
(9) Differentiate between CPS-I and CPS-II.

Q-3 (a) Explain standard redox potential (E^0) and the experiment for its measurement using a salt bridge? [06]

(b) Discuss types of electron carriers present in Electron Transport Chain. [06]

OR

(b) What is high energy compounds? Discuss hydrolysis of high energy compounds (any two). [06]

Q-4 (a) Discuss irreversible steps in glycolysis with regulation in brief. [06]

(b) Explain glycogen lysis to glucose in detail. [06]

OR

(b) Give detailed explanation on non-oxidative phase of Hexose monophosphate shunt. [06]

Q-5 (a) Describe the reactions of Kreb's cycle. [06]

(b) Discuss anaplerotic reactions of TCA cycle in detail. [06]

OR

(b) Write a short note on Glyoxylate cycle. [06]

Q-6 (a) Outline the denovo pathway for the synthesis of parent purine nucleotide. [06]

(b) Discuss the mechanism of CTP synthesis in detail. [06]

OR

(b) Discuss degradation of purine nucleotides to uric acid. [06]

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