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DB-003-001527 Seat No. _____

B. Sc. (Sem. V) (CBCS) (W.E.F. 2010) Examination

March – 2022

MB-503 : Prokaryotic Metabolism

(Old Course)

Faculty Code : 003

Subject Code : 001527

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions are Compulsory.
(2) Figures on right indicate total marks of the question.
(3) Draw neat Diagrams wherever necessary.

1 Answer Specifically : **20**

(1) Lower Km value of an enzyme indicates _____
(2) Define free energy ΔG.
(3) Define K_m.
(4) Give full form of NAD & NADP.
(5) Define Substrate level Phosphorylation.
(6) Key enzyme in the pentose-phosphate pathway is _____
(7) _____ is a key intermediate compound in Entner-Doudroff pathway.
(8) What is Glyoxylate cycle?
(9) Define Biochemical Mutant.
(10) Define chlorosomes.
(11) Give examples of two Electron donor modules in case of bacterial ETC.
(12) Define Photoreaction centre.
(13) Give an example of sulphur oxidizing bacteria.
(14) Define nitrification & give an example of Nitrifying bacteria.

(15) Name the group of proteins involved in Photophosphorylation in Helophiles.
(16) Comment on Rusticyanin.
(17) Give an example of secondary messenger in signal transduction.
(18) Give difference between uniport and antiport.
(19) Give function of phosphoenolpyruvate: carbohydrate phospho-transferase system.
(20) Give two functions of Membrane Proteins.

2 (A) Answer any **three** : **6**

(1) Enlist general properties of regulatory enzymes.
(2) Name anaplerotic reaction of citric acid cycle.
(3) Write a brief note on flavoproteins.
(4) Comment on Helophiles giving one example.
(5) Enlist bacterial membrane lipids with examples.
(6) Define: Enzyme Turnover Number, giving an example

(B) Answer any **three** : **9**

(1) Define Enzyme Inhibition and enlist & define various mechanism of enzyme inhibition.
(2) Discuss Glycolysis.
(3) Discuss methods of studying biosynthesis.
(4) Discuss Hydrogen Bacteria.
(5) Write a note on transport system in which transport of molecules across the membrane does not require an input of energy.
(6) What is ED Pathway?

(C) Answer any **two** : **10**

(1) Derive Michaelis-Menten equation.
(2) Discuss Beta oxidation of fatty acid
(3) Explain : Bacterial photosynthesis.
(4) Describe : Energy metabolism and Carbon Assimilation in Methanogens
(5) Discuss : Quorum sensing.

3 (A) Answer any **three** : **6**

(1) State 1^{st} and 2^{nd} Law of Thermodynamics and define entropy.

(2) What is the fate of Pyruvate after glycolysis?

(3) Give name and functions of enzymes involved in denitrification.

(4) Briefly explain: Propionate Fermentation

(5) What is G protein?

(6) What is the function of Enzyme 'RUBISCO' ?

(B) Answer any **three** : **9**

(1) Discuss role of ATP in metabolism and enlist two examples of precursor metabolites.

(2) Discuss in detail catabolism of amino acids.

(3) Discuss Anaerobic Respiration.

(4) Discuss patterns of carbohydrate fermentation in lactic acid bacteria.

(5) Briefly Explain: Signal transduction.

(6) Write a brief note on: Active Transport

(C) Answer any **two** : **10**

(1) Discuss : Regulation of enzyme action.

(2) Explain Citric acid cycle and its regulation

(3) Discuss : Different modes of ATP generation.

(4) Enlist fermentative patterns of Gram-negative eubacteria and explain any one in detail.

(5) Enlist the Specific Transport Systems and explain any three in detail.
