



HB-003-001527

Seat No. _____

Third Year B. Sc. (Sem. V) (CBCS) Examination

May / June - 2017

Microbiology : Paper - MB-503

(Prokaryotic Metabolism)

Faculty Code : 003

Subject Code : 001527

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) Numbers written on right indicate marks.
(2) Please write answers in correct order.

1 Answer the following : 20

(A) Define following terms : (1 Mark Each)

- (1) Michaelis Constant
- (2) Substrate level phosphorylation
- (3) Anoxygenic phototroph
- (4) Active transport
- (5) Chemoautotroph

(B) Find out True or False : (1 Mark Each)

- (6) Phosphofructokinase is one of the significant enzyme of EMP
- (7) Green sulfur and Heliobacteria contain Type II Reaction center
- (8) Desulfovibrio is sulfur bacterium
- (9) Molecular Switch mechanism directed by Protein Kinase
- (10) Free energy difference becomes standard free energy difference in the condition where K_{eq} is 0.1

(C) Fill in the Blanks : (1 Mark Each)

- (11) _____ is the common signaling molecule of quorum sensing used by bacteria.
- (12) _____ is the precursor used for synthesis of aromatic amino acids

- (13) Y intercept of Llneweaver Burke Plot is _____
- (14) Ribityl Moiety is the component of _____ type of redox carrier.
- (15) Propionate fermentation does not pass through a symmetrical intermediate and termed as _____

(D) Match the columns : (1 Mark Each)

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|-----------------------------|--|
| (16) Emerson | (A) 7 NADH |
| (17) Oxidation of Palmitate | (B) ATPase |
| (18) Peter Mitchell | (C) Briggs and Haldane |
| (19) Beggiatoa | (D) Photosystem-I & II |
| (20) Km | (E) H ₂ S as an energy Source |

- 2** (A) Write Any **Three** : **6**
- (1) Draw any two structures of Precursor metabolite
 - (2) Write in brief: Stickland Reaction.
 - (3) Draw structure of ATP Synthase
 - (4) What are Aquaporins?
 - (5) Define: Siderophores.
 - (6) What is homolactic fermentation?
- (B) Write Any **Three** : **9**
- (1) Enlist and explain in brief the carriers of ETC.
 - (2) Explain in brief the role of ATP in precursor Metabolism
 - (3) Write a note on buterate fermentation.
 - (4) Discuss the pay off phase of EMP.
 - (5) Discuss the concept of free energy.
 - (6) Discuss Beggiatoa species with reference to sulfur oxidation.
- (C) Write Any **Two** : **10**
- (1) Write a note on allosteric Regulation of enzyme.
 - (2) Explain ED pathway with significance.
 - (3) Write a note on light reactions of cyanobacteria
 - (4) Discuss heterofermentative lactic acid pathway
 - (5) Describe various membrane lipids with suitable structures.

- 3 (A) Write Any Three :** **6**
- (1) What is entropy? Write a relevant thermodynamics law.
 - (2) Write in brief significance of HMP Shunt.
 - (3) What is the use of Biochemical mutants.
 - (4) What is Ton Box?
 - (5) What is the use of mutants in studying metabolic pathways?
 - (6) Define: Hydrogen Bacteria
- (B) Write Any Three :** **9**
- (1) Discuss the concept of free energy.
 - (2) Write in brief about Chlorophyll
 - (3) Explain Peptidoglycan biosynthesis.
 - (4) Explain phosphorylation in halophilic bacteria
 - (5) Describe Glyoxylate cycle.
 - (6) Discuss Passive transport mechanisms in detail.
- (C) Write Any Two :** **10**
- (1) Write a note on Rearrangements of Michaelis Menten Equation.
 - (2) Write different reactions of aminoacid metabolism.
 - (3) Explain β Oxidation of Fatty acids.
 - (4) Discuss Quorum Sensing in detail.
 - (5) Describe in detail : Methanogens.
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