DBK-003-1015010 Seat No. _____

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

June - 2022

Microbiology : Paper - MB 502

(Prokaryotic Metabolism)

Faculty Code : 003

Subject Code : 1015010

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

Instructions :

(1) Attempt any five out of ten questions.

(2) Right side figure indicate total marks of the question.

(3) All questions carry the same marks.

1 (a) Answer specifically : **4**

(1) What is Energy ?

(2) The catalytic activity of an enzyme is restricted to its small portion is called _____.

(3) Give full form of ATP and ADP.

(4) Define : Activation energy.

(b) Answer the following : **2**

Write two names of energy rich compound.

(c) Answer the following : **3**

What is Feed Back Inhibition ?

(d) Write a note on : **5**

General Properties of Regulatory Enzyme.

2 (a) Answer specifically : **4**

(1) Give an example of reaction having large Negative ΔG.

(2) How non competitive inhibitor inactivates an enzyme ?

(3) State Michaelis Menten equation.

(4) Define : Km.

(b) Answer the following : **2**
What is Allosteric site ?

(c) Answer the following : **3**
What is the role of Reducing power in metabolism ?

(d) Write a note on : **5**
ATP is universal energy currency.

3 (a) Answer specifically : **4**
(1) Give reaction of catabolism of Glucose to Pyruvate.
(2) Define : Anabolism.
(3) Which three enzymes are responsible for irreversible reactions in Glycolysis ?
(4) Give full form of PFK.

(b) Answer the following : **2**
Enlist the enzymes involved in Glyoxylate cycle.

(c) Answer the following : **3**
Explain : Stickland reaction.

(d) Write a note on : **5**
Glycolysis

4 (a) Answer specifically : **4**
(1) Give names of any two Decarboxylases.
(2) In which bacteria ED pathway is found ?
(3) Which enzymes regulate TCA cycle ?
(4) What is PPP ?

(b) Answer the following : **2**
Write two general reactions of amino acid catabolism.

(c) Answer the following : **3**
Explain : ED pathway

(d) Write a note on : **5**
β-Oxidation of Fatty acid.

5 (a) Answer specifically : **4**
(1) Define : Exothermic reaction.
(2) Which electron carrier is not bound to any protein ?
(3) Define : Cytochromes.
(4) A common precursor of biosynthetic pathways of arginine and proline is _____.

(b) Answer the following : **2**
What is Proton Motive Force ?

(c) Answer the following : **3**
What is the application of biochemical mutants ?

(d) Write a note on : **5**
ETC in bacteria.

6 (a) Answer specifically : **4**
(1) Name any two enzymes participating in Denitrification process.
(2) The Auxotrophic Mutants which require biochemical intermediates as their growth factors, were isolated by _____ in the year_____.
(3) Give example of two Phototrophic bacteria.
(4) Give two examples of Cyanobacteria.

(b) Answer the following : **2**
What is Oxidative phosphorylation ?

(c) Answer the following : **3**
Write a note on ATP generation in bacteria.

(d) Write a note on : **5**
Photosynthesis in Cyanobacteria.

7 (a) Answer specifically : **4**
(1) Define : Hydrogen bacteria.
(2) Which species of nitrifying bacteria is found in ocean ?
(3) Name one enzyme used in oxidation of ammonia.
(4) Give two examples of Iron bacteria.

(b) Answer the following : **2**
Define Chemolithotroph with suitable example.

(c) Answer the following : **3**
Explain sulphur bacteria.

(d) Write a note on : **5**
Nitrifying bacteria.

8 (a) Answer specifically : **4**
(1) Define : Methanogens.
(2) Give an example of species of Homo fermentative Lactic acid bacteria.
(3) Name any two fermentation products produced by Gram negative Eubacteria.
(4) Which proton is found in purple membrane of Halobacteria ?

(b) Answer the following : **2**
What are Chemoautotrophs ?

(c) Answer the following : **3**
Explain Propionate fermentation.

(d) Write a note on : **5**
Hetero fermentative Lactic acid bacteria

9 (a) Answer specifically : **4**
(1) State two names of Phospholipids.
(2) Give example of Carbohydrates present in bacterial membrane.
(3) Define : Signal Transduction.
(4) Name three domains of Glycophorin.

(b) Answer the following : **2**
Define Siderophore.

(c) Answer the following : **3**
Describe Mechanosensitive channels.

(d) Write a note on : **5**
Bacterial Membrane

10 (a) Answer specifically : **4**
(1) What is G protein ?
(2) Who discovered Fluid Mosaic Model of bacterial cell membrane ?
(3) What is simple diffusion ?
(4) The outwardly directed pressure used by the cell to maintain shape and to allow for expansion of the cell membrane as the cell grows is called _____.

(b) Answer the following : **2**
What is Signal Transduction ?

(c) Answer the following : **3**
Give differences between Active and Passive Transport.

(d) Write a note on : **5**
Quorum sensing.
