B.N.BANDODKAR COLLEGE OF SCIENCE, THANE

PRELIM EXAMINATION FEBRUARY 2011

DAY: SATURDAY **T.Y. B.Sc** **MARKS: 100**
DATE: 5/2/11 **TIME: 11.00 am – 2.00pm**

MICROBIOLOGY Paper -III

NB:

1. **Attempt Any Five the questions.**
2. **Illustrate your answers with suitable examples.**
3. **All Questions carry equal marks.**

Q. 1. A) Write Short note on (Any 4) **20**

1. How would you study metabolism using Isotope labeling methods.
2. Discuss the significance of HMP pathway
3. Diagrammatically explain : degradation of purines
4. Calculation of energetics for Palmitate oxidation
5. Regulation of arabinose operon
6. Schematically with structures explain Calvin cycle.
7. Biological Nitrogen Fixation with suitable diagram.

Q.2 A) Comment on (any 3) **12**

1. Methods of studying solute transport.
2. Explain structure of FoF1ATPase molecule.
3. Explain Na-K Pump with suitable diagram.
4. Different complexes of ETC.
5. Distinguish between Mitochondrial ETC vs Prokaryotic ETC

Q.2 B) Give Role / Significance of (Any 4) **8**

1. Group Translocation 2. Solute transport 3. Liposomes
4. Bacteriorhodopsin 5. Bioluminescence 6. PMF

Q.3 A) Answer the following (any 3) **12**

1. Comment on Reductive TCA
2. Discuss biosynthesis of peptidoglycan in bacterial cell.
3. Write a note on different modes of fermentation in microorganisms
4. Comment on pasture effect. How can it be experimentally demonstrated

5. Justify Gluconeogenesis is not reversal of Glycolysis

B) Name the enzymes involved in the following reactions (any 4) **4**

1. Glucose 6 phosphate----------→ 6 phospho gluconate
2. Acetyl phosphate ----------→ acetyl Co A
3. Beta hydroxbutyryl SCoA----------→ Crotonyl S CoA
4. Alpha Cetolactate ----------→ Acetoin
5. ADP glucose ----------→ Glycogen

C) Give significance of (Any 2) **4**

1. HMP 2. Sugar Nucleotides 3. FAD

Q.4 A) Answer the following (any 3) **12**

1. Write notes on oxidation of fatty acids.
2. Comment on catabolism of protocatechuic acid
3. Write a note on biosynthesis of amino acids. Explain the biosynthesis of any one family in detail.
4. Give a brief account of fermentation of pair of amino acids
5. Comment on Salvage pathway

B) Answer the following (any 2) **4**

1. Give the role of tetra hydrofolic acid in biochemical reactions
2. Give the significance of PHBs
3. Explain in details omega oxidation pathway in C*orynebacterium*

C) Answer the following (any 4) **4**

1. Two amino acids of glutamate family
2. Two Enzymes in salvage pathway
3. Two FAD dependent enzymes
4. Two Bacteria which produce organic solvents in fermentation
5. Two unsaturated fatty acids
6. Two transamination reactions

Q.5 A) Write an essay on **12**

1. Tryptophan Operon a unique mechanism of gene expression.

OR

Q.5 A) Discuss the following

1. Assimilation and dissimilation of inorganic Nitrogen by bacteria. **6**
2. Regulation of enzyme activity by end product inhibition. **6**

Q.5 B) Give two examples of (Any 4) **4**

1. Denitrifiers
2. Purple sulfur bacteria
3. Carriers involved in Cyclic photophosphorylation
4. Scientist involved in Dark reaction
5. Structural gene involved in ara Operon
6. Prokaryotic photosynthetic pigments.

Q. 5 C) Define (any 4) **4**

1. Operon
2. Rpressor
3. Sequential induction
4. End product inhibition
5. Dark reaction
6. Reaction center