

**B. N. BANDODKAR COLLEGE OF SCIENCE, THANE**  
**IV SEMESTER END EXAMINATION- MARCH - 2015**

**S.Y.B.Sc.**  
**USMB- 402**

**Duration: 2 hrs 30 min**

**Total Marks: 75**

- N. B.** 1) All questions are compulsory.  
2) Figures to right indicate full marks.  
3) Draw neat and labeled diagrams wherever necessary

**Q.1 Answer the following (Any 2 of 4). 20M**

- 1 Compare initiation of transcription in prokaryotes and eukaryotes.
- 2 Write a note on termination of transcription and translation in *E.coli*.
- 3 a Write a note on RNA-dependent RNA synthesis.  
b Describe the mechanism of 5' capping of mRNA.
- 4 Give a detailed account of post-translational modification of proteins.

**Q.2 Answer the following (Any 2 of 4). 20M**

- 1 a Compare and contrast: Anabolism and catabolism.  
b Compare and contrast: Constitutive Vs inducible pathway.
- 2 a Justify: ATP is the energy currency of the cell.  
b What are the methods employed to study metabolism.
- 3 a What are metabolic pathways? Explain linear and branched pathways with one example of each.  
b Schematically explain the EMP pathway.
- 4 a Justify: TCA cycle has amphibolic nature.  
b What are anaplerotic reactions? Explain taking example of a biochemical pathway.

**P.T.O.**

**Q.3 Answer the following (Any 2 of 4).**

- 1 a What are enzyme inhibitors? Discuss competitive inhibitors in brief.  
 b Justify: Every enzyme shows highest activity at a specific temperature.
- 2 a Discuss the steps involved in preliminary purification of enzymes.  
 b Explain in detail any two mechanisms involved in multisubstrate reactions.
- 3 a Derive Michaelis-Menton equation.  
 b Discuss Koshland's model for enzyme substrate reactions.
- 4 a Explain in detail the mechanism by which enzyme increases the rate of reaction.  
 b Write a short note on allosteric enzymes.

**Q.4 Answer the following.**

- a  
 i State the significance of poly(A) tailing. OR 2M  
 What is the function of IF-1 and IF-2 proteins in translation?
- ii Give significance of reducing power in metabolism. OR 2M  
 What are cyclic pathways? Give one example.
- iii Define: Enzymes. OR 1M  
 Enlist the different methods of microbial cell disruption for enzyme extraction.
- b  
 i Define: translocation. OR 1M  
 Name the subunits of prokaryotic ribosomes.
- ii What are glyoxysomes? OR 2M  
 What is Pasteur effect?
- iii What are Coenzymes? OR 2M  
 Give significance of LB plot.
- c  
 i Explain the term: spliceosome. OR 2M  
 Name two inhibitors of bacterial RNA polymerase.
- ii Give the structure of ATP. OR 1M  
 Name the enzymes of TCA cycle involved in regulation of the same.
- iii Define: Holoenzyme. OR 2M  
 Explain the term: Rate limiting step.

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