

B. N. BANDODKAR COLLEGE OF SCIENCE, THANE
IV SEMESTER END EXAMINATION- MARCH - 2015
S.Y.B.Sc.
USMB- 401

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 a Explain dihybrid cross with the help of a diagrammatic representation.
b Explain Mendel's second law of inheritance.
- 2 a Write a note on bacterial plasmids.
b Write a note on IS elements.
- 3 a Enlist the characteristic features of Watson and Crick model of DNA structure.
b Compare and contrast: A, B and Z forms of DNA.
- 4 a Describe the 'cut and paste' mechanism of transposition.
b Write a note on effect of temperature on DNA structure.

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

20M

- 1 a Why is the genetic code said to be ALMOST universal and not completely universal?
b Compare: Viral and prokaryotic chromosomes.
- 2 Define: genetic code. Give a detailed account of its historical perspective.
- 3 Elaborate on the different orders of chromatin packing in eukaryotes.
- 4 a State the two forms of chromatin and differentiate between the same.
b Write a note on telomere.

P.T.O.

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

20M

- 1 a Justify – ‘Amino Acid Sequencing plays an important role in molecular taxonomy.’
b Write a note on genomic fingerprinting as a tool for taxonomic studies.
- 2 a What are the different bases on which the organisms can be classified?
b Justify – ‘SSU RNAs are almost ideal for studies of microbial evolution and relatedness & identification.’
- 3 a Write a short note on RFLP.
b Write a short note on Microbial Evolutionary Processes.

Q.4 Answer the following.

- a
- i State the principle of independent assortment. **OR** Define: test cross. State its significance. 2M
- ii State Wobble hypothesis. **OR** Explain: Degeneracy of genetic code. 2M
- iii Define: Phylogenetic tree. **OR** Define: Systematics. 1M
- b
- i Define: homologous chromosomes. **OR** Define: gene. 1M
- ii State two functions of centromere. **OR** Name any four standard amino acids. 2M
- iii Explain operational taxonomic Unit? **OR** What is the significance of indels? 2M
- c
- i Name two basic proteins associated with bacterial chromosomes. **OR** What is the function of topoisomerase II? 2M
- ii Define: linkage. **OR** Define: linked genes 1M
- iii What is HGT? **OR** What is endosymbiotic hypothesis? 2M
