B.N.BANDODKAR COLLEGE OF SCIENCE, THANE

PRELIM EXAMINATION FEBRUARY 2011

DAY: THURSDAY **T.Y. B.Sc** **MARKS: 100**
DATE: 3/2/11 **TIME: 11.00 am – 2.00pm**

MICROBIOLOGY Paper -I

NB:

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

Q.1. Attempt any four of the following. **20M**

1. Write a note on sigma replication.
2. Write a note on long accurate PCR.
3. How will you select for cells with r-DNA while using pBR322 as vector?
4. Write a note on Prions
5. Diagrammatically explain Holliday Model of recombination
6. Write note on HFr strains

Q.2.A. Attempt any two of the following. **12M**

1. With respect to transformation explain neutral transformation in *B. subtilis* and *Streptococcus pneumonia*
2. What is transduction? Explain in detail specialized transduction
3. Write note on lambda phage model for site specific recombination

Q2 B. Attempt any Two of the following. **8M**

1. Explain briefly
   a. Electroporation
   b. Interrupted conjugation
2. Order che A , che B, eda and sup D from the following data

Markers	% Co transduction
Che A-eda	15
Che A- supD	5
Che B- eda	28
cheB- supD	2.7
Eda – supD	0

3. In a transduction experiment, the donor was c+, d+, e+ and the recipient was c,d,e,. Selections for c+ was done. The four classes of transductants from this experiment are shown in the following table:

Class	Genetic composition	No of individuals
1	C+d+e+	57
2	C+d+e	76
3	C+de	365
4	C+de+	2
	Total:	500

a) Determine the co-tranduction frequency for c+ and d+
b) Determine the cotransduction frequency for c+ and e+
c) Which of the cotransduction frequencies calculated in (a) and (b) represent greater actual distance between genes and why?

Q.3 A). 1. Explain, in detail, molecular mechanisms involved in initiation, elongation and termination of prokaryotic DNA replication **12M**

OR

2. (i) How was the theory of mutation proved against the theory of adaptation? **6M**

(ii)Explain the mismatch repair system with the help of a neat labeled diagram. **6M**

1.

B). **Define the following terms. (Any four)** **4M**

1. Bidirectional replication
2. Mutational hotspots
3. Allele
4. Pyrimidine dimer
5. Telomerase

II) Give significance of the following. (Any two) **4M**

1. Conditional lethal mutants
2. Ame's test
3. SOS repair

Q.4. A) Attempt any two of the following. **12M**

1. Explain the use of λ phage as cloning vector.
2. Define 'Probe'. Explain , in detail, random primer method of probe preparation.
3. What is cDNA library? Explain steps in construction of a cDNA library.

Q.4 B: I). Give significance of the following. (Any four) **4M**

1. GSDB
2. CATH
3. TrEMBL

4. DDBJ
5. Comparative genomics
6. Gene therapy

II) Define the following terms. (Any four) **4M**

1. Transcriptome
2. Cosmid
3. Western blotting
4. Shuttle vector
5. VNTRs
6. Transcriptome

Q.5. A) Attempt any two of the following. **12M**

1. Discuss in brief regulation of life cycle of temperate phage
2. Justify the statement "The Viral infection induce various biochemical and cytopathological effects on the cell"
3. Write a note on enumeration of viral particles

Q. 5 B) Diagrammatically explain (Any 2) **8 M**

1. Replication of Influenza virus
2. Symmetry of Virus causing AIDS
3. Sites of inoculation in embryonated egg