

2012

M.Sc.

1st Semester Examination

BIOTECHNOLOGY

PAPER—BIT-103

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Group—A

1. Answer any *five* questions from the following : 5×2
- (a) What are porins? What role do they play?
 - (b) Mention the molecular mechanism of flagellar movement of bacteria.
 - (c) State the function of KDPG aldolase.

(Turn Over)

- (d) What is Plaque count ?
- (e) Why Com EA is important during transformation in *Bacillus subtilis* ?
- (f) State the role of sterols in mycoplasma membrane.
- (g) What is growth rate constant ?

Group—B

Answer any *two* questions from the following : 5×2

2. (a) Is there any difference between a capsule and a clime layer? What increases the virulence of anthrox bacillus? State the role of UDP-glucose in capsule formation in *Streptococcus pneumoniae*. 2+1+2
- (b) What is transcription antitermination in *a* phage? How the molecular switch in the Or region works? Write a short note on "Prophage". 1+2+2
- (c) How do sulfa drugs act as anti bacterial agents? 5
- (d) What is ED Pathway? Mention its benefit in terms of bioenergetics and anabolic pathways. 2+3

Group—C

Answer any two questions.

3. What are the different forms F factor takes in a *E. Coli* cell? State the importance of tra gene products during conjugation. What are nonconjugative, mobilizable plasmids? 4+5+1
4. How 5-hydroxymethylcytosine help T_4 bacteriophage? What are metastable structures? T_4 DNA molecule is terminally redundant explain. Write short notes on
- (i) Introns in T_4 ;
- (ii) Regulation of T_4 gene expression. 3+1+2+4
5. How bacteria show resistance to oxidising biocides? How concatemers in viral genomes are formed? With a suitable diagram describe different major viral structural arrangements. 2+2+6
6. Mention different ecological types of biological N_2 fixer with suitable examples. Write the regulatory process and the major components involved in N_2 fixation. How do different bacteria protect their nitrogenase from O_2 during N_2 fixation? 4+3+3
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