



Name :

Roll No. :

Invigilator's Signature :

CS/B.Sc (H)/MICRO.BIO/SEM-2/MGR-204/2012

2012

MICROBIAL GROWTH & REPRODUCTION

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

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

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any ten of the following :

10 × 1 = 10

- i) Organisms that grow well at 55°C and have optimum growth temperatures of 70°C or higher are called
 - a) psychrotrophs b) psychrophiles
 - c) mesophiles d) thermophiles.
- ii) The plasmid which confers drug resistance is
 - a) F plasmid b) Col plasmid
 - c) R plasmid d) Vine lent plasmid.
- iii) Penicillin
 - a) inhibits protein synthesis by affecting 30S subunits
 - b) inhibits cell wall synthesis
 - c) inhibits lysogenic infection
 - d) none of these.

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- x) The substance that is characteristic of endospore but absent in vegetative cell is
- a) SASPs b) dipicolinic acid
c) both (a) and (b) d) none of these.
- xi) The natural function of restriction enzyme is to
- a) cut up foreign DNA b) remove introns
c) add nucleotide d) repair DNA.
- xii) Thirty-six colonies grew in nutrient agar from 1.0 ml of sample withdrawn from a solution diluted to 10^{-5} in a standard plate count procedure. How many cells were in the original sample ?
- a) 360 b) 360,000
c) 1,800,000 d) 3,600,000.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Define plasmid. Why is plasmid called an episome ? Describe *F* plasmid in brief. 1 + 1 + 3
3. What is bi-directional replication ?
4. Describe the stages of endospore germination with the help of diagrams.
5. Write short note on synchronous culture.
6. Nitrous acid can revert mutation. Justify.



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.

3 × 15 = 45

7. What are Mpf and Dtr system in plasmid transfer ? Discuss the steps for mobilization of plasmid from F^+ and F^- cells with proper diagram. What are Col plasmids ? Explain the role of Fts proteins in cell division. 4 + 5 + 2 + 4
8. Describe the techniques of total cell and viable cell counting. How does hyperthermophile differ from a psychrophile ? How does pH and osmotic pressure affect microbial growth ? 6 + 4 + 5
9. a) Write a short note on SOS response.
b) Differentiate between rolling circle model and Q-structure bidirectional replication.
c) How does impairment of proof reading in mutants occur ? 5 + 6 + 4
10. In DNA replication primer is needed. Why ? How replication is initiated and terminated in *E.coli* ? Write down the mechanism of decatination. 3 + 8 + 4
11. Differentiate between the photo-repair and dark-repair. How bromouracil acts as a mutagen ? Which type of repair is facilitated by the ree A genes ? Explain that repair. 6 + 4 + 5

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