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6072

Your Roll No.

B.Sc. (Hons.) Microbiology / I Sem. B

Paper MIHT – 102

BACTERIOLOGY

(Admissions of 2010 and onwards)

Time : 3 Hours

Maximum Marks : 75

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Attempt any five questions.

Q. No. 1 is compulsory.

All questions carry equal marks.

1. Give one example of a bacterium for each of the following (any fifteen)
 - (i) Causative agent of trachoma
 - (ii) Forming root nodules
 - (iii) Exhibiting bioluminescence
 - (iv) Acting as bioinsecticide
 - (v) Exhibiting budding morphology
 - (vi) Causative agent of toxic shock syndrome
 - (vii) Exhibiting magnetotaxis

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- (viii) Containing membrane bound DNA – containing region
- (xi) Largest in size
- (x) Causative agent of crown gall
- (xi) Used for Swiss cheese ripening
- (xii) An antibiotic producer
- (xiii) Halophile
- (xiv) Used as probiotic
- (xv) Purple sulphur bacteria
- (xvi) Showing endoflagella (1×15=15)

2. Differentiate between the following (any five) :

- (i) Sterilization and disinfection
- (ii) Archaeal and eubacterial cell wall
- (iii) Sulphur and Volutin granules
- (iv) Fimbriae and Pili
- (v) Chemoorganotrophs and photolithotrophs
- (vi) Differential and selective media (3×5=15)

3. (a) Define the following terms (any six) :

- (i) Glycocalyx

- (ii) Thermal death time
 - (iii) Protoplasts
 - (iv) Generation time
 - (v) Teichoic acid
 - (vi) Methanogen
 - (vii) Polyphasic taxonomy (2×6=12)
- (b) Discuss the methods used for the preservation of pure cultures. (3)
4. (a) What are the desirable characteristics of a disinfectant/sterilant? (4)
- (b) Diagrammatically represent the stages of bacterial endospore formation. (4)
- (c) On what factors does the length of the lag phase in a growth curve depends? (3)
- (d) Discuss the role of nucleic acid hybridization in molecular taxonomy. (4)
5. Write short notes on the following (any five) :
- (a) Pasteurization
 - (b) Asexual methods of bacterial reproduction

- (c) Plasmids
- (d) Bergey's Manual of Systematic Bacteriology
- (e) LPS
- (f) Enterobacteria (3×5=15)

6. (a) Justify the following (any six) :

- (i) Only 0.1–1% of the microbes in natural environmental have been cultured.
- (ii) Acid fast staining is used for *Mycobacterium*.
- (iii) Mycoplasmas are pleomorphic in shape.
- (iv) Streaking is essentially a dilution process.
- (v) Two microorganisms with the same G+C content may not belong to same species.
- (vi) Pour plate technique cannot be used for heat sensitive bacteria.
- (vii) *Deinococcus* is extraordinarily resistant to radiation. (2×6)

(b) Discuss the methods used for culturing anaerobes. (3)