



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.TECH (BT-NEW)/SEM-3/BT-303/2011-12**

**2011**

**MICROBIOLOGY**

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 the following :

10 × 1 = 10

- i) Facultative anaerobic organism is an organism that can survive in
  - a) presence of oxygen
  - b) absence of oxygen
  - c) both in presence and absence of oxygen
  - d) none of these.
- ii) Lichen is a symbiotic association of ..... and .....
  - a) algae, bacteria
  - b) bacteria, fungus
  - c) fungus, algae
  - d) none of these.

- 3262 (N)



- ix) Resolution unit of light microscope is
- between 0.5 — 0.2 microns
  - between 2 — 5 microns
  - between 10 — 20 microns
  - between 0.02 — 0.05 microns.
- x) A bacterium which can grow only in the total absence of oxygen is described as
- Facultative anaerobic
  - Anaerobes
  - Obligate aerobes
  - Obligate anaerobes.

### GROUP – B

#### ( Short Answer Type Questions )

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

- Which lens in a compound microscope gives maximum magnification ? What is the purpose of using Cedar Wood Oil ?
- What bacterial cell structure may help to increase the cell's surface areas/volume ratio ? Draw a typical bacterial cell and identify all parts.  $2 + 3$
- What are the various direct and indirect modes of measuring of bacterial growth ?  $2 \frac{1}{2} + 2 \frac{1}{2}$
- Why some bacteria follow Entner Duodruff's pathway ? Give example. What is mixed acid fermentation ?  $2 + 3$
- What do you mean by haploid and diploid cells of *saccharomyces cerevisiae* ? Show reproductive life cycle of yeast.  $2 + 3$



**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. Briefly discuss with suitable diagram the process of symbiotic nitrogen fixation. Explain four different phases of bacterial growth curve. What is heterocyst ?  $7 + 4 + 4$
8. Differentiate between Gram positive and Gram negative cell walls.
9. “Archaea belongs to a kingdom between prokaryote and eukaryote.” Justify why are archaea preferred producers of industrial enzymes ? What are different potential biotechnological uses of Algae ? What is lysogenic virus ?  
 $5 + 3 + 5 + 2$
10. Explain different steps involved in endospore formation. Explain the differences between sexual and asexual spores. In what ways are fungi important to human ?  $6 + 5 + 4$
11. Write two different waterborne diseases with causative agent. What is the difference between fecal and non-fecal coliforms ? Write notes on one positive, one negative and one neutral interaction present in soil microbes.  
 $3 + 4 + 8$

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