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NBT-304

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID :154317**

Roll No.

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**B. Tech. (Semester-III)**

**SPL. THEORY EXAMINATION, 2014-15**

**MICROBIOLOGY AND CELL BIOLOGY**

*Time : 3 Hours]*

*[Total Marks : 100*

*Note:* Attempt all questions.

1. Attempt any four parts of the following: 4×5=20
  - (a) Explain nitrification and denitrification. Write two examples of microbes for each.
  - (b) What are the constituents of basic nutrient media? Also give one function each.
  - (c) Differentiate between the growth rate and generation time of a microorganism.
  - (d) What are the retroviruses? Discuss in brief the replication of a retrovirus genome in eukaryotic cell.
  - (e) Explain why photosynthesis is an oxidation reduction process.

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2. Attempt any four parts of the following:  $4 \times 5 = 20$

- (a) Discuss the chemical structure and function of bacterial capsule.
- (b) Discuss the etiology and control measures of rabies.
- (c) Give the methods for the classification of bacteria. What are the various methods used for the identification of culture?
- (d) What are the major functions of carotenoids and phycobilins in phototrophic bacteria?
- (e) Define microbial growth. How will you measure microbial growth?

3. Attempt any two parts of the following:  $2 \times 10 = 20$

- (a) What are biofertilizers and how they differ from chemical fertilizers? Explain their production.
- (b) Explain the genetic changes and cell inclusions differences between a normal cell and a cancerous cell.
- (c) Name four divisions of the kingdom prokaryotes according to Bergey's Manual and state their essential properties.

4. Attempt any two parts of the following:  $2 \times 10 = 20$

- (a) What do you understand by strain improvement of microorganism? Discuss the mutation concept for strain development.
- (b) What is tuberculosis? Discuss in brief about the causal organism and control measures.
- (c) Discuss the etiology and control measures of typhoid.

5. Attempt any two parts of the following:  $2 \times 10 = 20$

- (a) Discuss about benign and malignant cancer. What is the role of p 53 protein in human?
- (b) Explain the process of protein localization to its target site. Discuss the role and importance of signal peptide and SRP.
- (c) Explain biological nitrogen fixation. Discuss in brief about microbes involved in  $N^2$  Fixation.

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