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Total Number of Pages: 02

B.Tech.  
PBT31104

3<sup>rd</sup> Semester Regular/ Back Examination 2017-18

**MICROBIOLOGY**

**BRANCH(S): BIOTECH**

**Time: 3 Hours**

**Max Marks: 100**

**Q. CODE: B1127**

**Answer Question No.1 and 2 which are compulsory and any four from the rest.  
The figures in the right hand margin indicate marks.**

**Q1 Answer the following questions: *multiple type or dash fill up type* (2x10)**

- a) Growth of required type from mixed population has been carried out through;  
i. selective medium technique,                      ii. Enrichment medium techniques,  
iii. Differential medium techniques,              iv. All of the above
- b) In lysozyme treatment, gram-negative cell walls are partially completely destroyed, and the remaining cellular contents are referred as  
i. spheroplast    ii. tonoplast    iii. Protoplast    iv. None of the above
- c) The active microbial growth phase in which the primary metabolites are produced;  
i. trophophase    ii. Logarithmic phase,  
iii. None of the above                                      iv. All of the above.
- d) Which of the following compounds has the greatest amount of energy for a cell?  
i. CO<sub>2</sub>    ii. ATP    iii. Glucose    iv. O<sub>2</sub>, e. Lactic acid
- e) Growth of organism is limited by some components of the medium, is the characteristic of;  
i. batch culture,    ii. continues culture,  
iii. Fed-batch culture,                                      iv. All of the above
- f) Plasmids differ from transposons as  
i. become inserted into chromosomes  
ii. are self-replicated outside the chromosome,  
iii. intrachromosomal motility,  
iv. carry genes for antibiotic resistance
- g) An example of lysogeny in animals could be  
i. slow viral infections                                      ii. latent viral infections  
iii. T-even bacteriophages                                      iv. infections resulting in cell death,
- h) \_\_\_\_\_ microscope uses a special condenser with an opaque disk that blocks light from entering the objective lens directly; light reflected by specimen enters the objective lens.
- i) Chloramphenicol binds to the 50S portion of a ribosome, which will interfere with  
i. transcription in prokaryotic cells                      ii. transcription in eukaryotic cells  
iii. translation in prokaryotic cells                      iv. DNA synthesis.
- j) Which type of radiation is used to preserve foods?  
i. ionizing,    ii. Nonionizing    iii. radiowaves,    iv. all of the above

**Q2 Answer the following questions: *Short answer type* (2x10)**

- a) Explain Ziehl-neelsen staining.
- b) Differentiate between synthetic and selective media.
- c) What is conjugation? Mention importance of conjugation.
- d) Define generalized transduction.
- e) Give a schematic representation of lytic cycle.
- f) State two food preservation method used in your home.
- g) Give a ray diagrammatic illustration of compound bright field light microscope.
- h) Define nitrification with example of bacteria involved in it.

- i) A chef accidentally inoculated a pastry with 06 nos of *P. aeruginosa*. If *P. aeruginosa* has a generation time of 45 min, how many cells would be in the pastry after 5 hrs?  
j) Define synchronous growth.

- Q3** a) Describe the ultra structure of bacterial cell. (10)  
b) Differentiate between Gram +ve and Gram –ve bacteria. (5)
- Q4** a) Give a brief account of food spoilage microorganisms. (10)  
b) Suggest methods of food preservation for food spoilage microorganism. (5)
- Q5** a) Give a detail account on Entner-Doudoroff (ED) pathway? (10)  
b) Give energetics of ED pathway. (5)
- Q6** a) Briefly describe organization of bacterial genome. (10)  
b) Differentiate between plasmids and episomes. (5)
- Q7** a) Define microbial growth? Describe briefly standard curve of bacterial growth (10)  
b) Assume that after washing your hands, you leave 10 bacterial cells on soap. You then decide to do a plate count of the soap after it was left in the soap dish for 24 hrs. You dilute 1g of the soap 1:10<sup>6</sup> and plate it on heterotrophic plate count agar. After 24 hrs of incubation, there are 168 colonies. How many bacteria were on the soap? (5)
- Q8** a) Define sterilization? Describe various types of sterilization methods used in microbiological laboratory. (10)  
b) Give details on micrometry. (5)
- Q9** a) Define mutagens. Give details on site directed mutagenesis. (10)  
b) Give a brief description on halophiles. (5)