Registration No: | | | | | | | | | | |

Total Number of Pages: 02 **B.Tech.**
PBT3I104

3rd 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. Logarithimic 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_2 ii. ATP iii. Glucose iv. O_2, 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 diagramatic 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 $1:10^6$ 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)**