



# BRAINWARE UNIVERSITY

**Term End Examination 2022**  
**Programme – M.Sc.(BT)-2022**  
**Course Name – Microbial Biology**  
**Course Code - MBTC102**  
**( Semester I )**

**Full Marks : 60**

**Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

## Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) According to Bergeys Manual of Systematic Bacteriology, label the prokaryotes that lack a cell wall belong to the group
- |                 |                 |
|-----------------|-----------------|
| a) Gracilicutes | b) Firmicutes   |
| c) Tenericutes  | d) Mendosicutes |
- (ii) Select from the following that refers to photosynthesis performed by bacteria with the use of water as the donor of electrons
- |                  |                 |
|------------------|-----------------|
| a) oxygenic      | b) anoxygenic   |
| c) heterotrophic | d) phototrophic |
- (iii) Choose the phase that shows the reproduction rate equal to the equivalent death rate
- |                |                     |
|----------------|---------------------|
| a) Log phase   | b) Stationary phase |
| c) Death phase | d) Lag phase        |
- (iv) Choose what is septum
- |                      |                      |
|----------------------|----------------------|
| a) chromosomal part  | b) Part of cytoplasm |
| c) new dividing wall | d) none of them      |
- (v) Select the bacteria that thrive in extreme environmental conditions, such as high temperature and acidic pH, the absence of oxygen and high salt concentration
- |                    |                     |
|--------------------|---------------------|
| a) Eubacteria      | b) Cyanobacteria    |
| c) Archaeobacteria | d) All of the above |
- (vi) Recall, type strain is used for referring to
- |            |             |
|------------|-------------|
| a) species | b) genus    |
| c) family  | d) division |
- (vii) Tell by which method % Similarity (%S) of each strain to every other strain is calculated
- |                        |                             |
|------------------------|-----------------------------|
| a) Intuitive Method    | b) Numerical Taxonomy       |
| c) Genetic Relatedness | d) DNA homology experiments |
- (viii) Generalize that Hfr chromosome is transferred to the F- cell in a \_\_\_\_\_ fashion.

- a) circular  
c) dimer
- b) coiled  
d) linear
- (ix) Identify the integral parts of ribosomes  
a) lipid+DNA  
c) glycerol+carbohydrate
- b) carbohydrate+Lipid  
d) RNA+Protein
- (x) Choose how bacteria reproduce asexually  
a) Conjugation  
c) Meiosis
- b) Amitosis  
d) Transformation
- (xi) Select the portion of the growth curve where rapid growth of bacteria is observed  
\_\_\_\_\_
- a) Lag phase  
c) Stationary phase
- b) Logarithmic phase  
d) Decline phase
- (xii) Interpret "n", In the growth equation:  $n = 3.3 (\log_{10} N - \log_{10} N_0)$   
a) total population  
c) number of generations
- b) initial population  
d) growth constant
- (xiii) Choose what Lag phase is known as \_\_\_\_\_  
a) period of initial adjustment  
c) generation time
- b) transitional period  
d) period of rapid growth
- (xiv) Validate the Specialized transduction by  
a) Lytic phage  
c) 1 & 2
- b) lysogenic phage  
d) T4 phage
- (xv) Select from the following gene that deduced the evolutionary relationship between the taxonomic groups  
a) 16S rRNA  
c) 5S rRNA
- b) 23S rRNA  
d) 18S rRNA

### Group-B

(Short Answer Type Questions)

3 x 5=15

2. Name the enzymes and the coenzymes involved in of PDH complex (3)
3. Write about the following techniques that are utilized for the measurement of microbial growth: coulter counter and flowcytometer (3)
4. Write down the NADH producing steps of the TCA cycle. Where does it occur (3)
5. Explain the two terms specific growth and generation time (3)

OR

- Explain three types of reproductions in bacteria (3)
6. write about Lytic Cycle and the Lysogenic Cycle (3)

OR

- Write about microbial food spoilage and microbes associated with food spoilage (3)

### Group-C

(Long Answer Type Questions)

5 x 6=30

7. Describe the 4 phases of the bacterial growth curve. Explain (5)
8. Differentiate between bacteriostatic and bactericidal methods of food preparation with each example (5)
9. Explain food quality attributes. Analyze that food has been affected by pathogens. (5)
10. Dissect the factors contributing to food poisoning and mention how food poisoning is transmitted (5)
11. Mention Major criteria on which five-kingdom classification is based mentioning MONERA PROTISTA ,PLANTAE, FUNGI, ANIMALIA (with figure) (5)

**OR**

Write the maintenance of quality control of food (5)

12. Consider about the complexes present in ETC and mention why the pentose phosphate pathway called as shunt and relate the two main functions of the pentose phosphate pathway. (5)

**OR**

Consider prevention methods of food from contamination (5)

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