

**B.Sc. MICROBIOLOGY**  
**THIRD SEMESTER**  
**MICROBIAL PHYSIOLOGY AND METABOLISM**  
**BMB-301 (IDMj)**  
[USE OMR SHEET FOR OBJECTIVE PART]

**SET**  
**A**

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

( Objective )

*Choose the correct answer from the following:*

*1×20=20*

- Which group of bacteria follows the mixed acid fermentation?
  - Klebsiella, Erwinia, Enterobacter
  - Escherichiae, Salmonella, Shigella
  - Escherichiae, Klebsiella, Erwinia
  - Klebsiella, Salmonella, Erwinia
- The reaction, where small precursor molecules are assembled into larger organic molecules is referred as:
  - Anabolism
  - Catabolism
  - Metabolism
  - None
- When acetate is the sole source of carbon for some microorganism the cycle which is used is called:
  - Pentose phosphate pathway
  - Glycolytic pathway
  - Glyoxylate pathway
  - Oxaloacetate pathway
- Find out the dilution factor when Flowrate is 10ml where volume of the vessel is 1000ml.
  - 0.01L/h
  - 10L/h
  - 0.05L/h
  - 20L/h
- The enzyme involved in the conversion of 6 phosphogluconate to 2 keto-3 deoxy 6 phospho gluconate:
  - Glucose 6 phosphate
  - 6- Phospho gluconate hydratase
  - 6- Phospho gluconate dehydratase
  - 2 keto 3 deoxy 6 phosphogluconate aldolase
- In aerobic respiration, the terminal electron acceptor is:
  - Oxygen
  - Nitrogen
  - Hydrogen
  - Nitrate
- In the passive diffusion, solute molecules cross the membrane as a result of:
  - Concentration difference
  - Pressure difference
  - Ionic difference
  - All of these
- The iron chelating compounds present in bacteria is known as:
  - Phenolates
  - Hydroxamates
  - Siderophores
  - Enterobactin
- In group translocation system the non specific components are:
  - EII & EI
  - HPr & EI
  - HPr & EII
  - EI & EII

0. In anaerobic respiration the most terminal electron acceptor is:
  - a. Nitrate
  - b. Sulphate
  - c. Carbon dioxide
  - d. All of the above
1. The specific enzyme of the glyoxylate cycle is:
  - a. Isocitrate dehydrogenase
  - b. Isocitrate lyase
  - c. Malate synthase
  - d. Both b & c
2. Chemostat is an eg of which type of bacterial growth culture?
  - a. Batch
  - b. Continuous
  - c. Fed batch
  - d. None
3. Hexose monophosphate pathway is also known as:
  - a. Phosphogluconate pathway
  - b. Oxaloactate pathway
  - c. Malate pathway
  - d. Fumarate pathway
4. TCA cycle functions in:
  - a. Catabolic reactions
  - b. Anabolic reactions
  - c. Amphibolic reactions
  - d. None
5. Incorporation of atmospheric Nitrogen to Ammonia occurs via the process of:
  - a. Assimilatory nitrate reduction
  - b. Transamination
  - c. Deamination
  - d. Nitrogen fixation
6. When molecules are modified before transport inside the cell follows which type of transport?
  - a. Active Transport
  - b. Passive Transport
  - c. Glyoxylate pathway
  - d. Transport via ATP
7. Production of Ethanol takes place in:
  - a. Aerobic phase
  - b. Anoxic phase
  - c. Anaerobic phase
  - d. None
8. Potassium and calcium ion transport follows:
  - a. Symport
  - b. Uniport
  - c. Antiport
  - d. Passive
9. Diauxic growth phase follows how many phases?
  - a. 2
  - b. 4
  - c. 5
  - d. 6
0. Secondary metabolite is produced in which phase of bacterial growth curve?
  - a. Lag
  - b. Log
  - c. Stationary
  - d. Death

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**( Descriptive )**

Time : 2 hr. 30 mins.

Marks : 50

[ Answer question no.1 & any four (4) from the rest ]

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|--|--------|
| 1. Describe anaerobic respiration with a neat diagram.   | 10     |
| 2. Define continuous and batch culture. Explain the kinetics of continuous culture with a neat diagram.    | 2+8=10 |
| 3. Explain the ED and EMP pathway with a neat diagram.   | 5+5=10 |
| 4. Describe group translocation system with a neat diagram.  | 10     |
| 5. Explain Iron transport system in bacteria.  | 10     |
| 6. Define oxidative phosphorylation. Explain the process of Electron Transport system with a neat diagram. | 2+8=10 |
| 7. Define fermentation. Explain the various types of fermentation.   | 2+8=10 |
| 8. Explain the TCA cycle with a neat diagram.  | 10     |

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