Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
(Autonomous)
End Semester Examination: October 2023
Faculty: Science and Technology

Program: BScGen03 **Semester: I** **SET: B**
Program (Specific): Microbiology **Course Type: Core**
Class: S.Y. BSc **Max. Marks: 35**
Name of the Course: Bacterial Physiology and Fermentation Technology
Course Code: 23-MB-232 **Time: 2Hr**
Paper: II

Instructions to the candidate:

1) ***There are 4 sections in the question paper. Write each section on separate page.***
2) ***All Sections are compulsory.***
3) ***Figures to the right indicate full marks.***
4) ***Draw a well labelled diagram wherever necessary.***

SECTION: A

Q1) Answer the following **5 Marks**

i) Define respiration.

ii) Gluconeogenesis involves the conversion of_____. (Choose correct Option from the following).

a) Glucose to pyruvate c) Phosphoenol pyruvate to glucose

b) Lactose to glucose d) Pyruvate to fructose

iii) Describe optimum pH of enzyme activity.

iv)Classify following into carbon sources and nitrogen sources.

1. Peptone 2. Sucrose 3.Lactose 4.Ammonium Nitrate

v) Organic acid producing microorganisms are screened by medium which contains Calcium carbonate. (State true or false).

Q2) Attempt any four of the following. **4 Marks**

i) Explain irreversible inhibitors.

ii) Catabolism is an exergonic process. Justify?

iii) Discuss cofactors.

iv) Define master culture.

v) Give any two examples of commercially used probiotics.

vi) Interpret the name of enzyme which catalyzes the movement of ions or molecules across the membranes.

SECTION: B

Q3) Attempt any four of the following. **8 Marks**

i) Explain rules for enzymes classification.

ii) Differentiate between primary metabolites and secondary metabolites.

iii) Describe the Effect of substrate concentration on enzyme activity.

iv) Discuss induced fit model of enzyme catalysis.

v) Summarize the protocol for Lyophilization.

vi) Illustrate the properties of an ideal antifoam agent.

SECTION: C

Q4) Attempt any four of the following. **8 Marks**

i) Explain the payoff phase of glycolysis.

ii) Discuss cofactors with suitable example.

iii) Correlate production of primary and secondary metabolites with growth phases. Support the answer with suitable diagram.

iv) Illustrate the amphibolic nature of TCA cycle.

v) Explain the applications of fed batch fermentation.

vi) Explain pH control in the fermenter with suitable diagram.

SECTION: D

Q5) Attempt any <u>two</u> of the following. 10 Marks

i) Delineate desirable characteristics of industrial strain.

ii) Diagrammatically represent the ED pathway.

iii) Discuss with examples oxidoreductase and transferases class of enzymes.

iv) Draw a labelled diagram of fermenter. Explain different parts of the fermenter with their functions.