

[65/A12]

Roll No. \_\_\_\_\_

No. of Printed Pages : 2

**SARDAR PATEL UNIVERSITY**

**B. Sc. - Microbiology**

**Semester - V**

**US05CMIC03 - Microbial Physiology & Enzymology**

Date: 26/10/2018, Friday.

Time: 10:00 A.M To 1:00 P.M

Marks: 70

Note: Figures to the right indicate full marks.

**Q.1 Multiple choice questions.**

(10)

- Which of the following is a donor of phosphoryl group in bacterial phosphotransferase system ?
  - ATP
  - Phosphoenol pyruvate
  - GDP
  - ADP
- How many number of  $\text{Na}^+$  &  $\text{K}^+$  are exchanged across the membrane in Sodium – Potassium pump.
  - $1 \text{ Na}^+$  &  $1 \text{ K}^+$
  - $2 \text{ Na}^+$  &  $2 \text{ K}^+$
  - $3 \text{ Na}^+$  &  $2 \text{ K}^+$
  - $3 \text{ Na}^+$  &  $3 \text{ K}^+$
- Which of the following antibiotic inhibits the protein synthesis?
  - Streptomycin
  - Chloramphenicol
  - Tetracycline
  - All of the above
- Streptomycin antibiotic was discovered by :
  - S. Waksman
  - Rene Dubos
  - A. Flaming
  - G. Domagk
- AZT is used in the treatment of :
  - Typhoid
  - AIDS
  - Hepatitis B
  - Tuberculosis
- Enzyme having multiple molecular form is known as :
  - Co- enzyme
  - Apoenzyme
  - Isoenzyme
  - Zymogen
- Purification process for UMP Synthase was set out by :
  - Ron Kaback
  - James Sumner
  - Kuhne
  - Mary Ellen Jones
- Which of the following kinetic parameter can be determined from intercept on Y axis of Line- Weaver Burk plot.
  - $V_{\text{max}}$
  - $K_i$
  - $K_s$
  - $K_m$
- Name the type of reaction in which Biotin is used as co-enzyme.
  - Carboxylation
  - Phosphorylation
  - Alkylation
  - Oxidation – Reduction
- Which of the following covalent modification leads to activation of glycogen phosphorylase ?
  - Acetylation
  - Phosphorylation
  - Adenylation
  - Methylation

(1)

(P.T.O)

**Q.2 Short answer questions. (attempt any Ten)**

(20)

1. Draw schematic diagram of a cytoplasmic membrane section with label & explain it according to fluid mosaic model.
2. Enlist various factors affecting the rate of passive diffusion.
3. What is siderophore? Give two functions of siderophore.
4. List the advantages of semi synthetic penicillin over natural penicillin.
5. What is germination? List the different stages of germination of Endospore ?
6. Explain the term Antibiotic and give two examples of broad spectrum antibiotics.
7. Write Six classes of enzymes according to the IUB system of enzyme classification.
8. Define : Zymogen & Co-enzyme
9. Define : Turn Over Number & Q10 value
10. Explain first order reaction.
11. Explain Ping Pong mechanism of multi substrate reaction.
12. Give the significance of double reciprocal plot.

**Q.3** Write notes on:

(i) Group translocation

(05)

(ii) Signal peptides

(05)

**OR**

**Q.3** What is passive transport ? Discuss the passive transport processes of solute transport across the membrane.

(10)

**Q.4** (a) Explain the mode of action of:

(05)

(i) Penicillin

(ii) Sulphonamides

(b) Explain the mechanism of flagellar movement

(05)

**OR**

**Q.4** What is Endospore ? Discuss the process of Sporulation in detail.

(10)

**Q.5** List and describe various factors affecting enzyme activity.

(10)

**OR**

**Q.5** Discuss the following.

(a) Mechanism of Enzymes action.

(05)

(b) Active site of an Enzyme.

(05)

**Q.6** What is  $K_m$  ? Derive the equation to calculate  $K_m$  value.

(10)

**OR**

**Q.6** Discuss the following.

(a) Regulatory mechanism of glycogen phosphorylase enzyme.

(05)

(b) Allosteric Enzyme

(05)