SEAT No._____ No. of Printed Pages : 2

[79 & A-54]

SARDAR PATEL UNIVERSITY
B.Sc.(5th Semester) EXAMINATION 2018
Wednesday, April 11th, 2018
2:00 p.m. TO 5:00 p.m.
SUBJECT: MICROBIOLOGY US05CMIC03
(Microbial Physiology and Enzymology)

TOTAL MARKS: 70

Note: (1) All the questions are compulsory.
(2) Figures on the right indicate marks.

Q-1 Select the correct answer for each question from the option given below [10]

1. **In passive diffusion, rate of diffusion is directly proportional to which of the following parameter?**
   (A)Concentration gradient (B) Temperature (C) Time (D) None of these
2. **Signal peptides are predominantly composed of how many amino acids?**
   (A)10 (B) 20 (C) 30 (D) 40
3. **The stator part of the motor involves which of the following protein?**
   (A) Fla (B) FliG (C) motA (D) All of these.
4. **Which of the following antibiotic binds with 50S subunit of ribosome?**
   (A)Penicillin (B) Chloramphenicol (C) Streptomycin (D) Zidovudine
5. **Which class of enzyme does not show stereospacificity?**
   (A)Oxidoreductase (B) Transferase (C) Lyase (D) Isomerase
6. **The region on enzyme where substrate binds and participate in the catalysis is known as_____.**
   (A)Allosteric site (B) Reaction site (C) Active site (D) Allosteric site
7. **The initial velocity (v_0) will be 25% of maximum velocity V_{max} when substrate concentration [S] is _____ of Km.**
   (A)1/2 (B) 1/3 (C) ¼ (D) 2/3
8. **Which of the following kinetic parameter can be determined from X intercept of Line Weaver Burk plot?**
   (A)Vmax (B) Km (C)Ks (D) Ki
9. **Which of the following drug is an antifungal antibiotic?**
   (A)Penicillin (B) Acyclovir (C)Bacitracin(D) Amphotericin B
10. **In which of the following enzyme inhibition Km increases but Vmax does not change.**
    (A)Competitive (B) Noncompetitive (C) Uncompetitive (D) Allosteric

Q-2 Give Short answers to following questions (Any ten) [20]

[1] Give examples of various components involved in the group translocation process.
[2] Enlist the factors that are responsible for diffusion rate.
[3] Draw basic structure of bilayer lipid.
[4] Why do you think dehydration of the protoplast is an important factor in the ability of endospores to resist environmental stress?
[5] Write few advantages of semisynthetic penicillin.
[6] Enlist at least four characteristics of an ideal antimicrobial agent.

(P.T.O.)

[7] Define (a) Q_{10} (b) Zymogen
[8] Enlist at least four properties of enzymes.
[9] Enlist various strategies for purification of enzymes.
[10] Define Turn Over Number (Kcat) and comment on its significance.
[11] Derive equation for the line weaver burk plot and sketch it.
[12] How glycogen phosphorylase can be regulated by covalent modification?

Q-3 (A) **Write a brief note on- Sec dependent pathway for the secretion of protein.** [04]

(B) **Write a note on- Siderophores** [06]

OR

Q-3 **Give detail account on Active Transport Process.** [10]

Q-4 (A) **Discuss about mode of action of the following:** [06]
(a) AZT, (b)Chloramphenicol (c)Sulphonamides

(B) **Explain about germination of endospores.** [04]

OR

Q-4 (A) **Discuss the mechanism of flagellar movement in detail.** [05]

(B) **Explain with a help of suitable chemotherapeutic agent which causes inhibition of a specific enzyme system.** [05]

Q-5 **Discuss in detail IUB system of enzyme classification.** [10]

OR

Q-5 **Write detail note on- Factors affecting enzyme action.** [10]

Q-6 (A) **Explain mechanism of enzyme inhibition by reversible inhibitors with their characteristic plots and kinetic parameters.** [05]

(B) **Write a note on- Multi substrate Reaction .** [05]

OR

Q-6 **Prove that initial velocity (v_o), maximum velocity (Vmax) and substrate concentration [S] are related through Michealis- Menten constant using different assumptions.** [10]

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