Name: **Enrolment No:**	

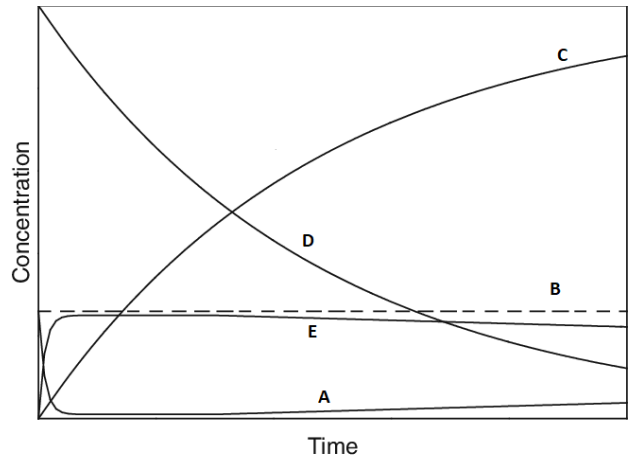
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2024

Course: Enzymology — **Semester : VI**
Program: Int BSc MSc Microbiology — **Duration : 3 Hours**
Course Code: HSMB3020 — **Max. Marks: 100**

Instructions:

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q 1	What is an Isozyme? (A) Same structure, different function (B) Different structure, the same function (C) Same structure, the same function (D) Different structure, different function	1.5	CO1
Q 2	A sigmoidal curve of substrate concentration [S] Vs reaction velocity (V) may indicate (A) Michaelis -Menten kinetics (B) Co-operativity binding (C) Competitive inhibition (D) Non-competitive inhibition	1.5	CO1
Q 3	Which bond is not associated with Enzyme-substrate interaction (A) Hydrogen bonds (B) Ionic bonds (C) Di-sulfide bonds (D) Van deer Waal's force of attraction	1.5	CO1
Q 4	What information does a Lineweaver-Burk plot provide that a typical Michaelis-Menten plot does not? (A) Vi (B) Km (C) Kcat (D) None of these answers	1.5	CO1
Q 5	Which of the following is INCORRECT for the lock-and-key model? (A) It is used to describe the binding process (B) The active site of the enzyme is complementary to the substrate (C) It demonstrates enzyme-substrate complex (D) The binding of the substrate produces a conformational change in enzyme	1.5	CO1

Q 6	**When the velocity of enzyme reaction equals to Vmax, substrate concentration [S] is** **(A) Half of Km** **(B) Equal to Km** **(C) Twice the Km** **(D) Far above the Km**	**1.5**	**CO1**
Q 7	**Regulation of some enzymes by covalent modification involves addition or removal of** **(A) Acetate** **(B) Sulfate** **(C) Phosphate** **(D) Nitrogen**	**1.5**	**CO1**
Q 8	**Memorize the formula of specific activity.**	**1.5**	**CO1**
Q 9	**Lineweaver-Burk plot is also known as_____** **(A) Double reciprocal plot, (B) Hanes-Woolf plot** **(C) Eadie-Hofstee plot, (D) Steady-state equation**	**1.5**	**CO1**
Q 10	**Recall name of enzyme used for detergent industry.**	**1.5**	**CO1**
Q 11	**Recall the name of a scientist who found that gastric juice can digest dietary proteins.**	**1.5**	**CO2**
Q 12	**Memorize the name of any enzyme with its cofactor.**	**1.5**	**CO2**
Q 13	**In enzyme substrate interactions, Enzyme led to change in reaction equilibrium (True/False)**	**1.5**	**CO2**
Q 14	**Amylase is the enzyme that breaks down_____ into _____.**	**1.5**	**CO2**
Q 15	**For a spontaneous reaction to occur, $\Delta G>0$ (True/False) Explain.**	**1.5**	**CO2**
Q 16	**Recall the formula of specificity constant.**	**1.5**	**CO2**
Q 17	**Enlist name of enzyme and its microbial source used in poultry industry.**	**1.5**	**CO2**
Q 18	**Explain exothermic reaction with example.**	**1.5**	**CO2**
Q 19	**Define turnover number (kcat).**	**1.5**	**CO2**
Q 20	**Define ribozymes with an example.**	**1.5**	**CO2**
Section B **(4Qx5M=20 Marks)**			
Q 1	**Define enzyme immobilization? Why there is need of immobilization of enzymes.**	**2+3**	**CO1**
Q 2	**Write postulations based on which Michael-Menten equation is derived. Label the below given diagram:**	**2.5+2.5**	**CO1**

			
Q 3	**Explain the role of enzymes in diagnostics with an example.**	**5**	**CO2**
Q 4	**Differentiate between metal activated and metalloenzymes.**	**3+2**	**CO2**
	Section C **(2Qx15M=30 Marks)**		
Q 1	**Compare and contrast different kinds of enzyme inhibitions (reversible and irreversible) with suitable examples.**	**2+3+10**	**CO3**
Q 2	**Derive Michalis-Menten equation and discuss the significance of Km and Vmax.**	**10+5**	**CO4**
	Section D **(2Qx10M=20 Marks)**		
Q 1	**Define allosteric enzymes. How they differ from enzymes which follow Michaelis-Menten equation. Describe sequential model to explain cooperativity.** **or** **Derive Lineweaver-Burk plot and Hanes plot from Michaelis-Menten equation and write their significances.**	**3+2+5** **5+5**	**CO3**
Q 2	**Define isozymes. Describe feedback inhibition with example. Write different factors which affect enzyme activity.**	**2+5+3**	**CO4**