Name: **Enrolment No:**	

UPES

End Semester Examination, May 2024

Course: Bioenergetics and Enzyme Technology — **Semester : IV**

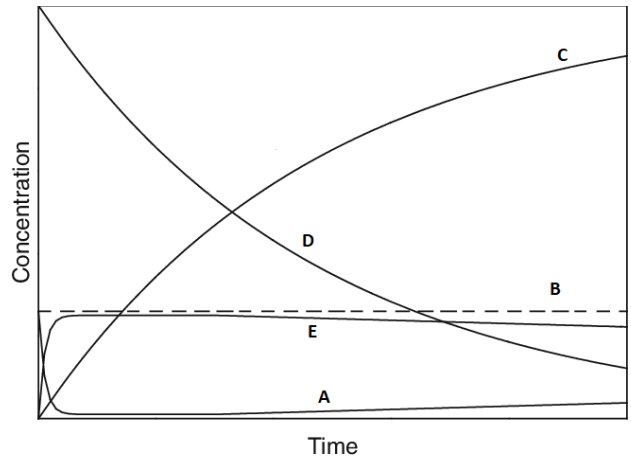
Program: B.Tech. Biotechnology — **Duration : 3 Hours**

Course Code: HSBT 2007 — **Max. Marks: 100**

Instructions: Read and attempt all questions carefully.

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q 1	Multiple forms of the same enzymes are known as (A) Zymogens (B) Isoenzymes (C) Proenzymes (D) Pre-enzymes	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	Induced fit model of enzyme action was proposed by (A) Emil Fischer (B) Daniel Koshland (C) Peter Mitchel (D) Marie Curie	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	1.5	CO1

	(C) Twice the Km **(D) Far above the Km**		
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	**Isomerases are the enzymes which catalyze transfer of functional groups (True/False).**	**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	**What is binding energy?** **(A) Free energy released in the formation of enzyme-substrate interaction** **(B) The energy required to form a bond** **(C) The energy required to bind substrate** **(D) It is the activation energy**	**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 is there need of immobilization of enzymes?**	**2+3**	**CO1**
Q 2	**Label the below given diagram:**	**5**	**CO1**

			
Q 3	**Explain the role of enzymes in diagnostics with an example.**	**5**	**CO2**
Q 4	**Discuss the regulation of enzyme activity by feedback inhibition with an example.** **Or** **Derive Lineweaver-Burk plot from Michaelis- Menten equation and write it's a significance.**	**3+2**	**CO2**
Section C **(2Qx15M=30 Marks)**			
Q 1	**Define isozymes. Define the role of active site in enzyme substrate interactions. Differentiate between lock and key hypothesis and induced fit model.**	**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 do allosteric enzymes differ from enzymes which follow Michaelis-Menten equation? Discuss the sequential model to explain co-operativity mechanism.**	**3+2+5**	**CO3**
Q 2	**Compare and contrast different kinds of enzyme inhibitions with suitable examples.**	**10**	**CO4**