

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086**  
**(For candidates admitted during the academic year 2006 – 07 & thereafter)**

**SUBJECT CODE: BY/PC/ET35**

**M. Sc. DEGREE EXAMINATION, NOVEMBER 2008**  
**BIOTECHNOLOGY**  
**THIRD SEMESTER**

**COURSE : CORE**  
**PAPER : ENZYME TECHNOLOGY**  
**TIME : 3 HOURS**

**MAX. MARKS: 100**

**SECTION – A**

**Answer all questions:**

**(20 x 1 = 20 )**

1. What are constitutive enzymes?
2. Apoenzyme – Explain.
3. What is the significance of  $K_m$ ?
4. What are allosteric enzymes?
5. What are zymogens? Give an example.
6. Differentiate between coenzyme and prosthetic group.
7. What are metalloenzymes? Mention the cofactor required for DNA Polymerase activity.
8. List the factors affecting catalytic activity of enzyme.
9. Define Damkohler number.
10. What are substrate analogues? Give an example.
11. What is Turnover number?
12. What are spargers?
13. Name the first enzyme to be immobilized.
14. What is solid substrate fermentation?
15. What is microencapsulation?
16. What are artificial enzymes?
17. What are abzymes?
18. What are optical biosensors? Give an example.
19. Write the merits of immobilized enzymes?
20. What is mixed inhibition?

**SECTION – B****Answer any four questions in about 600 words :****(4 x 10 = 40 )**

21. Derive the rate equation of a complex reaction with a suitable example by King and Altman procedure.
22. Describe the methods to investigate the active site structure.
23. Explain the external mass-transfer resistance of immobilized enzymes.
24. Give a detailed account on the industrial applications of Enzymes.
25. Write in detail about the various methods of immobilization of enzymes.
26. Discuss the various approaches employed for the industrial production of enzymes.

**SECTION – C****Answer any two questions each in about 1500 words:****(2 x 20 = 40)**

27. Derive the Michaelis-Menten equation of the steady-state enzyme catalyzed reaction in the presence of reversible and irreversible inhibitors.
28. Write in detail about the design of a fermentor. Also add a note on the types of enzyme reactors.
29. Write notes on:
  - i) Pre-steady state kinetics of enzyme catalyzed reaction.
  - ii) Relaxation Kinetics.
30. What are biosensors? Explain in detail about the different types of biosensors with a suitable example.

**\*\*\*\*\***