Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14BT3016** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ENZYME TECHNOLOGY AND INDUSTRIAL APPLICATIONS** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | | **Questions** | **Course Outcome** | **Marks** |
| 1. | a. | | What are the important properties of enzymes? | CO1 | 4 |
| b. | | Mention classification of enzymes and their specific reactions. | CO1 | 8 |
| c. | | Define the mechanism of enzyme action. | CO1 | 8 |
|  | **(OR)** | | | | |
| 2. | a. | | What are the factors that influence the activity of enzymes? Why do all enzymes have a pH optimum? | CO2 | 8 |
| b. | | Explain enzyme inhibition. How would you know whether an inhibition is competitive or non-competitive? | CO2 | 4 |
| c. | | Give an account on toxic compound inhibition and its type. | CO2 | 8 |
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| 3. | a. | | What is Km Value? Explain its significance. | CO3 | 8 |
| b. | | Write a short note on substrate and product inhibition. | CO3 | 6 |
| c. | | Explain the regulation of allosteric enzyme through metabolic pathway. | CO3 | 6 |
|  | **(OR)** | | | | |
| 4. | a. | | Elaborate on the strategies of purification and characterization of enzymes. | CO1 | 6 |
| b. | | Describe the food and pharmaceutical application of enzymes. | CO1 | 8 |
| c. | | Explain the industrial production process of enzymes that are used as drugs with suitable examples. | CO1 | 6 |
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| 5. | a. | | Briefly describe the various methods to immobilize enzyme. | CO2 | 10 |
| b. | | Write an account on the design and configuration of immobilized enzyme reactors with example. | CO2 | 10 |
|  | **(OR)** | | | | |
| 6. | a. | | Discuss on internal and external diffusion effect of porous support immobilized kinetics. | CO3 | 10 |
| b. | | Graphically explain the calculation of effectiveness factors. | CO3 | 10 |
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| 7. | a. | | Explain the metabolic pathway of enzymes production and its application. | CO1 | 10 |
| b. | | Diagrammatically illustrate an electrode design and its importance. | CO1 | 10 |
|  | **(OR)** | | | | |
| 8. | a. | | What is biosensor? How to approach the biological application? | CO2 | 10 |
| b. | | Write short note on the following sensors:  i) Potentiometric biosensor  ii) Amperometric biosensor  iii) Piezoelectric biosensor  iv) Calorimetric biosensor | CO2 | 10 |
|  | | | **Compulsory:** |  |  |
| 9. | | a. | What are artificial enzymes? Give an example. | CO3 | 4 |
| b. | Compare lock and key model, with an induced fit model for enzyme substrate binding. | CO3 | 8 |
| c. | Describe the kinetics of enzyme catalyzed reaction and explain the initial velocity studies. | CO3 | 8 |