**QP Code: U25C019**

**Reg. No : .....................**
**Name : .....................**

# ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

## III SEMESTER (FYUGP) DEGREE EXAMINATIONS, OCTOBER 2025
## BCH3MN201 : ENZYMOLOGY AND METABOLISM
## 2024 Admission Onwards
## (Credits: 4)

**Time: 2 Hours** **Maximum Marks: 70**

### Section A

*Answer* ***all****. Each question carries* ***3*** *Marks* ***(Ceiling: 24 Marks)***

1. How are enzymes used in the food industry? Give two examples.
2. What is phosphate potential? Why is it important?
3. Explain how uncouplers affect ATP synthesis without stopping electron transport.
4. Discuss on the energetics of β-oxidation.
5. Give one example for each of the following enzyme classes:(a) Oxidoreductases (b) Transferases(c) Hydrolases.
6. What are zymogens (proenzymes)? Give two examples.
7. Describe the fate of pyruvate in alcoholic fermentation with the enzymes involved.
8. Calculate the ATP yield from complete aerobic oxidation of one molecule of glucose.
9. State the site of biosynthesis and one physiological function each of thyroxine and insulin.
10. Name any two high-energy phosphate compounds other than ATP.

### Section B

*Answer* ***all****. Each question carries* ***6*** *Marks* ***(Ceiling: 36 Marks)***

11. Explain the oxidative decarboxylation of pyruvate and its significance in linking glycolysis with the TCA cycle.
12. Describe the reactions of the glycolytic pathway, mentioning enzymes and intermediates.
13. Describe the urea cycle and its regulation.
14. Discuss on the classification of aminoacids based on catabolism.

**Turn Over**

15. Differentiate between different reversible enzyme inhibitions with LB plot.
16. Explain enzyme specificity with reference to: (i) geometrical specificity, (ii) cofactor specificity, (iii) optical specificity.
17. Explain the glycogenesis reaction.
18. Explain the TCA cycle and its regulation.

## Section C

*Answer* ***any one****. Each question carries* ***10*** *Marks* ***(1x10=10marks)***

19. Describe Gluconeogenesis and explain the steps in which different substrates enter the Gluconeogenic pathway.
20. Explain the structure of mitochondria and the electron carriers in the Electron Transport Chain coupled with oxidative phosphorylation.

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