

**B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)****Subject : Botany****Course : CC-XII****(Plant Metabolism)****Time: 2 Hours****Full Marks: 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* of the following questions: 2×5=10
- Define isozymes. Give example.
  - Why is photorespiration minimum in C<sub>4</sub> plants?
  - Mention the internal factors affecting respiration.
  - What do you understand by allosteric inhibition?
  - What is meant by amphibolic pathways?
  - What is the principal role of leghaemoglobin?
  - Write down a biochemical reaction where substrate level phosphorylation takes place.
  - Differentiate between  $\alpha$ -oxidation and  $\beta$ -oxidation.
2. Answer *any two* of the following questions: 5×2=10
- Describe the steps of glycolysis mentioning the enzymes for all these steps. In which phase of aerobic respiration oxygen is directly involved? 4+1=5
  - Schematically elaborate the symbiotic di-nitrogen fixation in plants. 5
  - Discuss the CO<sub>2</sub>-concentrating mechanism in CAM plants. 5
  - Write a short on cyanide-resistant respiration. Define 'Q cycle'. 4+1=5
3. Answer *any two* of the following questions: 10×2=20
- How many turns are required for  $\beta$ -oxidation of stearic acid [ $CH_3(CH_2)_{16}COOH$ ]? Describe the repeating steps of  $\beta$ -oxidation pathway. What is glyoxylate cycle? Fats are solid while oils are liquid at room temperature. —Justify with reasons. 2+4+2+2=10
  - Distinguish between absorption spectra and action spectra. Explain the mechanism of light energy processing in photosystem. How is RuBP regenerated in Calvin cycle? 2+6+2=10
  - Distinguish between oxidative phosphorylation and photophosphorylation. Write a short note on 'ATP-synthase'. What do you understand by Boyer's conformation model?
  - Briefly describe the types of secondary messengers studied by you and state their role in signal transduction. Write short notes on MAP kinase and Calcium-calmodulin in signal transduction. 5+5=10