

U.G. 5th Semester Examination - 2020

BOTANY

[HONOURS]

Course Code : BOT-H-CC-T-12

(Plant Metabolism)

Full Marks : 40

Time : 2½ Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **five** questions: 2×5=10
- a) How solar energy is transferred from accessory pigment to chlorophyll a?
 - b) Why is CO₂ compensation point low in C₄ plants?
 - c) How many ATP molecules are generated upon complete oxidation of a glucose molecule?
 - d) What are nod genes?
 - e) What do you understand by amphibolic nature of TCA cycle?
 - f) What are isozymes?
 - g) What is chemiosmotic theory?
 - h) Write down the significance of CAM.

2. Answer any **two** of the following: 5×2=10
- a) Mention the dual role of Rubisco with chemical reactions. 5
 - b) Describe the role of Ca²⁺ as second messenger with reference to signal transduction pathway. 5
 - c) How does carotenoid differ from xanthophyll? Mention the biological significance of carotenoid pigments. 2+3
 - d) Write a short note on regulatory role of allosteric enzymes. 5
3. Answer any **two** of the following: 10×2=20
- a) What are nitrification and denitrification? Describe the reactions of nitrate assimilation. 10
 - b) Write down the biochemical steps involved in photo respiration along with their locales. Comment on negative and positive impact of photorespiration in plants. 8+2
 - c) Describe the formation of pyruvic acid in an aerobic cell. 10
 - d) Write down the biochemical reactions of fatty acids. Why is it called B-oxidation? 8+2