

2021

**BIOCHEMISTRY — HONOURS****Paper : DSE-B-2****(Plant Biochemistry)****Full Marks : 50***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** questions : 2×5
  - (a) What is the difference between protoplast and protoplasm?
  - (b) What is the role of cellulose in cell wall?
  - (c) What are the functional importance of peroxisomes?
  - (d) Mention the major differences between primary and secondary cell wall of plants.
  - (e) What do tannins do for plants?
  - (f) What are plasmodesmata?
  - (g) What is photorespiration?
  - (h) Why plants produce secondary metabolites?
  
2. Answer **any two** questions :
  - (a)
    - (i) What are C3 plants?
    - (ii) State the photosynthesis reaction and where does it occur. 2+3
  - (b)
    - (i) What is the function of the tonoplast?
    - (ii) What is the difference between tonoplast and vacuole?
    - (iii) What are protoplasts? 2+2+1
  - (c)
    - (i) What are the factors that affect photorespiration?
    - (ii) Write down the functions of alkaloids in plants? Give one example of plant alkaloid. 2+(2+1)
  - (d)
    - (i) How adenylyltransferase (AT) enzyme regulates glutamine synthetase activity?
    - (ii) What are phytochromes? 3+2
  
3. Answer **any three** questions :
  - (a)
    - (i) What conditions are required for the cells to grow in tissue culture?
    - (ii) What is the advantage of using tissue culture to grow plants?
    - (iii) Do tissue culture plants grow fast?
    - (iv) What is the major outcome of plant tissue culture? 3+4+2+1

**Please Turn Over**

- (b) (i) What is plant growth regulator?  
(ii) Which pigment is associated with photomorphogenesis? How are photomorphogenic events regulated in plants?  
(iii) What is the difference between plant hormones and plant growth regulators? 3+(1+3)+3
- (c) (i) Briefly outline how you can demonstrate the fluid mosaic state of plasma membrane.  
(ii) What is/are the fact/facts about cell wall of the plant cell?  
(A) It is non-living and permeable in nature.  
(B) Cell wall formation begins at the interphase stage.  
(C) Cell wall consists of middle-lamella, primary wall and secondary wall.  
(iii) Write down the differences between internal membrane protein and peripheral membrane protein. 4+2+4
- (d) (i) What is ammonification in plants? Give two examples of ammonifying bacteria.  
(ii) What are the two steps of nitrification? What is the optimum pH for nitrification?  
(iii) What is the difference between nitrogen fixation and denitrification in terms of nitrogen availability to plants? (2+2)+(2+1)+3
- (e) (i) What are plant phenolics?  
(ii) What is the role of secondary metabolites as phenolic compounds? Which secondary metabolite is a toxin?  
(iii) What is the difference between primary and secondary metabolites in plants?  
(iv) How do terpenoids protect plants? 2+(3+1)+2+2
- (f) (i) What is glyoxylate cycle? Where does it occur?  
(ii) How is photorespiration different from respiration?  
(iii) What are the components of nitrogenase enzyme? Why is nitrogenase sensitive to oxygen? (2+1)+4+(2+1)
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