2018

BOTANY

BOT -403

PLANT PHYSIOLOGY AND BIOCHEMISTRY-III

Full Marks: 80

Time: 3 Hours

The figures in the margin indicates full marksfor the questions :

Q1. Choose correct answer for the following MCQs: 1x9=9

a. Inorganic catalyst are different from enzymes in
   i. Not being used up in the reaction
   ii. Being proteinaceous
   iii. Functional at high temperature
   iv. Having high rate of diffusion

b. Which of the following is not a photomorphogenetic response?
   i. Expansion of leaves
   ii. Etiolation
   iii. Maturation of chlorophyll
   iv. All of these

c. Hormone that induces cell division is
   i. Gibberellin
   ii. Auxin
   iii. Cytokinin
   iv. ABA

d. Enzymes are
   i. Thermolabile
   ii. Thermostable
   iii. Thermophile
   iv. All of these

e. Senescence is induced by
   i. Auxin
   ii. Gibberellins
   iii. ABA
   iv. Cytokinin

f. Photoreceptor responsible for phototropic movements is
   i. Phytochrome
   ii. Phototropin
   iii. Cryptochrome
   iv. All of these

g. Which of the following is also called gibberellic acid?
   i. GA_3 ii. GA_5 iii. GA_7 iv. GA_{12}

h. CCC regulates synthesis of which hormone
   i. Auxin ii. Gibberellin
   iii. Cytokinin iv. None of the above

i. Co-factor involved in ethylene signaling is
   i. Nickel ii. Cobalt iii. Copper iv. Zinc

Q2. Answer the following questions (*any six*): 2x6=12

a. Define enzyme. How does it differ from catalyst? 1+1=2

b. Name the two photoreceptors involved in the development of photomorphogenesis. 2

c. What is the function of microbial DNA photolyase? Name the photoreceptor that shares a similar structure with microbial DNA photolyase. 1+1=2

d. State the functional role of jasmonates in plants. 2

e. What do you mean by growth retardant? Give examples. 1+1=2

f. What do you mean by chloroplast movement? Why is it important? 1+1=2

g. What is abyzyme? How does it differ from ribozyme? 1+1=2

h. Name the endogenous hormone that leads to ripening of fruit. Give an example of the chemical that is most commonly used by horticulturist for artificial fruit ripening. 1+1=2

Q3. Answer *any three* of the following broad questions:

a. What is the basis of tissue culture? Give a brief description of the various steps involved in tissue culture. State its physiological significances. 1+4+4=9

b. Discuss the various ways by which the activity of enzymes is regulated. 9

c. Name the photoreceptor that perceives red and far-red light. Give an account of its structure and various morphogenetic responses regulated by them. 1+4+4=9

d. What does two component regulatory system means? How will you relate this system to cytokinin? Write about the various responses regulated by cytokinin. 2+5+2=9

Q4. Write notes on (*any four*): 5×4=20

a. Biochemical changes during seed development

b. Program cell death

c. Brassinosteroids

d. Industrial applications of enzymes

e. Salicylic acid

Q5. Answer the following questions (*any one*): 12

a. Write explanatory notes on the biosynthesis and physiological effects of gibberellins in plants.

Or

b. Illustrate the various theories explaining the mechanism of enzyme action. What are the various factors that affect the rate of enzyme action? 10+2=12

★★★★★