(Theory Paper)

Paper Code : BOT 403 (Opt.-5)

(Advanced Plant Physiology and Biochemistry-III)

Full Marks – 80

Pass Marks – 32

Time – Three hours

The figures in the margin indicate full marks
for the questions.

1. Choose the correct answers for the following
questions :   1×6=6

(a) Monochromatic light more suitable for
growth and development of plants is/are

(i) Red

(ii) Red, Far-red light

(iii) Blue, Red light

(iv) Red, Blue, Far red

(b) Photoreceptor not bounded to chromo
phores is

(i) Phytochrome   (ii) Cryptochrome

(iii) Phototropin   (iv) UVR8

(c) Concentration of which of the following hormone increases during stress ?

(i) Auxin   (ii) Gibberellins

(iii) ABA   (iv) Cytokinin

(d) Which of the following is not true for biocatalysts ?

(i) Increases the activation energy

(ii) Substrate specific

(iii) Lowers the entropy of the reaction

(iv) Thermostable

(e) Which of the following acts as a precursor for all other gibberellins ?

(i) GA_3 (ii) GA_5

(iii) GA_7 (iv) GA_{12}

(f) Deteriorative processes in plants that naturally terminate their functional life are collectively called ____.

(i) Plasmolysis   (ii) Wilting

(iii) Abscission   (iv) Senescence

2. Answer the following questions in brief : 2×5=10

(a) State the role of phototropins in photomorphogenesis.   2

(b) What is Skotomorphogenesis ? Give an example.   1+1=2

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

(d) Define enzyme. How does it differ from catalyst ?   1+1=2

(e) What is the causal organism of bakanae disease of rice ? Write its symptoms.   1+1=2

3. Answer any *two* of the following broad questions :   10×2=20

(a) Mention an effective technique for conserving an endangered plant species. Discuss in details the steps involved in this technique. Write about the do's and don'ts of this technique.   1+7+2=10

(b) Highlight the various kinds of movements found in plants. Write about its importance in plants. 8+2=10

(c) Name the photoreceptor that perceives red and far-red light. Give an account of its structure and various morphogenetic responses regulated by them. 2+4+4=10

4. Write short notes on any *six* : 5×6=30

(a) ABA

(b) Enzymes

(c) Cytokinin

(d) Plant growth retardants

(e) Program cell death

(f) Salicylic acid

(g) Feedback regulations on enzyme activity

(h) Biochemical changes during seed development.

5. Answer any *one* of the following questions : 14×1=14

(a) Define senescence. What are its types ? How is it different from abscission ? Discuss the various cytological and biochemical events that occur during senescence. Mention the significance of senescence in plants. 2+3+2+5+2=14

Or

(b) Write explanatory notes on the biosynthesis and physiological effects of gibberellins in plants. 14