

B.Sc. (Part-III) EXAMINATION, 2010

BOTANY

Second Paper

(Plant Physiology and Biochemistry)

Time Allowed : Three hours

Maximum marks : 50

प्रश्न-पत्र 5 इकाइयों में विभक्त है। प्रत्येक इकाई में दो प्रश्न हैं। प्रत्येक इकाई से एक प्रश्न का अनिवार्यतः चयन करते हुए, कुल पांच प्रश्नों के उत्तर दीजिए। सभी प्रश्नों के अंक समान हैं। प्रत्येक प्रश्न के भाग (a) तथा (b) एक-एक अंक के हैं तथा इन भागों के उत्तरों की सीमा 20 शब्द तक है। भाग (c) व (d) दो-दो अंकों के हैं तथा उनका उत्तर अधिकतम 75 शब्दों में देने हैं। भाग (e) चार अंकों का है तथा इसका उत्तर 300 शब्दों में देना है। निर्धारित की सीमा से अधिक शब्दों में उत्तर लिखने पर परीक्षक 5% अंक काट सकेगा, नामांकित चित्रों के प्रश्नों हेतु शब्द सीमा लागू नहीं होगी।

Unit-I

- 1.(a) Name the process of which water from plants is lost in liquid form.
 - (b) Define water potential.
 - (c) Name of factors affecting water absorption.
 - (d) Describe a simple experiment to demonstrate plasmolysis.
 - (e) What is meant by ascent of sap ? Discuss the Dixon and Jolly's theory of ascent of sap.
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2. (a) What are trace elements ?
 - (b) Give the names of essential elements.
 - (c) Write deficiency symptoms of calcium in plants.
 - (d) Write differences between Active and Passive absorption of water.
 - (e) Describe the potassium ion influx theory to explain the mechanism of stomatal movement.

Unit-II

3. (a) What is photolysis of water ?
- (b) What the source of O₂ which is evolved during photosynthesis ?
- (c) Give the structure of chlorophyll a molecule.
- (d) Write the full forms of following:

NADP,FAD,ATP,CAM

(e) What are photosystems ? Give the detailed account of Z-scheme.

4. (a) What is Emerson's effect ?

(b) Name any two CAM plants.

(c) Write short note on significance of photorespiration in plants.

(d) Describe Blackman's principle of limiting factor in photosynthesis.

(e) What are C₄ plants ? Describe the mechanism of carbon fixation in C₄ plants.

Unit-III

5. (a) Name any two unsaturated fatty acids found in plants.

(b) How many molecules of ATP are generated when one molecule of glucose is completely oxidised ?

(c) Write the difference between aerobic and anaerobic respiration.

(d) Write the general chemical formula of fat.

(e) Describe β-oxidation of fat.

6. (a) What is the meaning of Respiration substrate.

(b) How many molecules of NADH are produced from one molecule of Glucose, when it is converted to Pyruvate ?

(c) Describe Glycolysis.

(d) How does Cyanide affect cellular respiration ?

(e) What is oxidative phosphorylation ? Describe various components of electron transport system and explain the ATP production.

Unit-IV

7. (a) Name the principal Auxin common in plants.

(b) Write the structural formula of ethylene.

(c) Give two advantages of seed dormancy.

(d) Give two physiological effects of Abscisic acid.

(e) Describe the practical applications of Auxins.

8. (a) Name a plant hormone discovered from a fungus.

- (b) Name the plant hormone involved in Tropic movements and stomatal movements.
- (c) What is the importance of phytochromes in flowering.
- (d) Write a short note on cytokinins.
- (e) What is vernalisation ? Write its mechanism and significance in agriculture.

Unit-V

- 9. (a) Name any two isoenzymes found in plants.
 - (b) What is activation energy ?
 - (c) Write a note on structure of enzymes .
 - (d) Give two differences between P.C. and T.L.C.
 - (e) Describe the "Induced fit theory" of the mechanism of enzyme action.
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- 10. (a) What is pH ?
 - (b) What is RF value ?
 - (c) Write the uses of colorimeter.
 - (d) Draw a labelled diagram of calomel reference of electrode.
 - (e) Describe in detail Thin layer chromatography.

