

Roll No.

E-531**M. Sc. (Second Semester) (Main/ATKT)****EXAMINATION, May-June, 2021**

BOTANY

Paper Fourth

(Plant Metabolism)*Time : Three Hours]**[Maximum Marks : 80***Note :** Attempt all Sections as directed.**Section—A**

1 each

(Objective/Multiple Choice Questions)**Note :** Attempt all questions.

Choose the correct answer :

1. In which process carbon dioxide is fixed ?
 - (a) Light reaction
 - (b) Dark reaction
 - (c) Anaerobic respiration
 - (d) None of the above

2. CO₂ fixation during C₄ pathway occurs in the chloroplast of :
 - (a) Mesophyll cell
 - (b) Spongy parenchyma
 - (c) Guard cell
 - (d) Bundle sheath cells
3. Which one of the following is a C₄ plant ?
 - (a) Potato
 - (b) Pea
 - (c) Maize
 - (d) Papaya
4. The first stable product of C₄ plant is :
 - (a) PGA
 - (b) RuBP
 - (c) PEP
 - (d) OAA
5. Photorespiration is affected by :
 - (a) Light intensity
 - (b) Temperature
 - (c) CO₂ and O₂
 - (d) All of the above

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6. The core metal of chlorophyll is :
- (a) Fe
 - (b) Co
 - (c) Cu
 - (d) Mg
7. The process of photophosphorylation was discovered by :
- (a) Arnon
 - (b) Blackman
 - (c) Calvin
 - (d) None of the above
8. In plant cell, digestion of fat occurs with the help of :
- (a) Peroxisomes
 - (b) Lysosomes
 - (c) Glyoxisomes
 - (d) None of the above
9. The final acceptor of electrons in the electron transport chain is :
- (a) Water
 - (b) Hydrogen
 - (c) Oxygen
 - (d) All of the above

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10. Which one transfer electrons to ETS (Electron Transport System) ?
- (a) Phytochromes
 - (b) FeS
 - (c) FeS and Cytochrome
 - (d) All of the above
11. The number of carbons in pyruvic acid is :
- (a) 3
 - (b) 4
 - (c) 6
 - (d) 2
12. In glycolysis net gain in two ATP molecules and two molecules of :
- (a) $FADH_2$
 - (b) $FMNH_2$
 - (c) $NADH_2$
 - (d) $NADPH_2$
13. R. Q. is maximum, when respiratory substrate is :
- (a) Glucose
 - (b) Malic acid
 - (c) Fat
 - (d) Protein

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14. Krebs cycle takes place in :
- (a) Lysosomes
 - (b) Dictyosomes
 - (c) Mitochondrial matrix
 - (d) Endoplasmic reticulum
15. Synthesis of ATP in mitochondria takes place in :
- (a) Matrix
 - (b) Cristae
 - (c) Outer membrane
 - (d) None of the above
16. Gibberellins can be extracted from :
- (a) Fungus only
 - (b) Rice
 - (c) Germinating seed
 - (d) None of the above
17. Which one of the following hormones is not found in plants ?
- (a) 2-4 D
 - (b) Auxin
 - (c) Gibberellin
 - (d) Ethylene

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18. β oxidation of fatty acids takes place in :
- (a) Mitochondria
 - (b) Lysosomes
 - (c) Both (a) and (b)
 - (d) Cytosol
19. Glyoxylate cycle discovered by :
- (a) H. A. Krebs
 - (b) Kornberg and Krebs
 - (c) Harden and Youngs
 - (d) None of the above
20. The root nodules of legumes contain a pink pigment which has high affinity for oxygen is :
- (a) nod haemoglobin
 - (b) leghaemoglobin
 - (c) haemoglobin
 - (d) None of the above

Section—B

2 each

(Very Short Answer Type Questions)

Note : Attempt all questions.

1. What is Rubisco ?
2. What is Accessory Pigments ?
3. Which molecules act as reaction centre in photosynthesis ?

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4. Define respiratory quotient.
5. Define compensation point.
6. What is full form of IBA and NAA ?
7. Define Vernalisation.
8. Give the name and chemical structure of one gaseous plant growth regulator.

Section—C

3 each

(Short Answer Type Questions)

Note : Attempt all questions.

1. Define the *three* phases of Calvin cycle.
2. What is Photolysis ?
3. Distinguish between respiration and photorespiration.
4. Define oxidative phosphorylation.
5. Give functions of phytochrome.
6. What is bolting ? How can it be induced artificially ?
7. Define growth inhibitors with examples.
8. Define Richmand-Lang effect.

Section—D

5 each

(Long Answer Type Questions)

Note : Attempt all questions.

1. Explain Crassulation Acid Metabolism (CAM Cycle) and its significance.

Or

What is photorespiration ? Describe glycolate cycle or C₂ cycle.

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2. Describe pentose phosphate pathway.

Or

Discuss components of ETS (Electron Transport System).

3. Describe the oxidation of glycerol.

Or

Describe symbiotic nitrogen fixation in plants.

4. Write note on photoperiodism.

Or

Write a note on endogenous clock.

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