

M.Sc. BOTANY
SECOND SEMESTER
PLANT PHYSIOLOGY AND BIOCHEMISTRY
MSB-202

SET
A

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

(Objective)

Marks: 20

Choose the correct answer from the following:

1 × 20 = 20

- Which of the following does not have sulphuric acid groups?
 - Heparin
 - Kerato sulfate
 - Hyaluronic acid
 - Chondroitin sulfate
- Which of the following has reducing properties?
 - Gluconic acid
 - Glucuronic acid
 - Glucaric acid
 - Mucic acid
- Pulses are deficient in:
 - Lysine
 - Threonine
 - Methionine
 - Tryptophan
- Thermal denaturation of protein involves:
 - Conformational change in the protein
 - Covalent modification of certain amino acids
 - Random cleavage of the peptide bonds
 - Increase in its isoelectric point
- When you boil an egg, you convert the albumin into a white solid mass. In chemical terms you would say that:
 - The protein was dehydrated by heat
 - The protein was cross-linked by heat
 - The protein was denatured by heat
 - The protein was degraded by heat
- The decreased rate of photosynthesis at high concentration of oxygen is referred to as:
 - Pasture effects
 - Emerson effects
 - Warburg effects
 - Red drop
- Which of the following is known as assimilatory power of dark reaction?
 - Water and oxygen
 - NADH
 - ATP and NADPH
 - Carbon dioxide
- Dimorphic chloroplasts are found in leaves of:
 - C₄ plants
 - C₃ plants
 - CAM plants
 - All plants
- Which one is the beneficial mineral nutrient?
 - B
 - Na
 - Zn
 - Mn
- Principal cation in establishing cell turgor:
 - Mn
 - Na
 - K
 - Fe

11. In early embryogenesis which of the following hormones will be abundant?
- Gibberellins and Ethylene
 - Auxin and Gibberellins
 - ABA and cytokinin
 - Cytokinin and Ethylene
12. The process of seed germination is the critical stage in plants life cycle and therefore plants have evolved precise mechanism for its regulation. Therefore there are few statements regarding this. Select the incorrect statement/statements.
- Gibberellic acid (GA) and ABA are the main phytohormones that participate in the regulation of seed germination process.
 - GA and cytokinin are the main phytohormones that participate in the regulation of seed germination process.
 - The increase of GA during seed germination is associated with a decrease in ABA because GA functionally destabilizes ABA.
 - Increase of GA in seed germination is associated with decrease in ABA due to presence of Cytochrome P-450 which helps in ABA catabolism.
- I only
 - II only
 - I and IV
 - II and III
13. Which of the following is the component of nitrogenase?
- Fe-Mo protien
 - Mo protien
 - Fe- protien
 - Mn protein
14. Nitrate is reduced and ultimately produces N_2 through a series of intermediate gaseous nitrogen oxide products is called as:
- Nitrogen fixation
 - Nitrification
 - Denitrification
 - Nitrogen assimilation
15. Which of the hormone regulates cell division and differentiation?
- Gibberellin
 - Auxin
 - Ethylene
 - Cytokinin
16. The process seed germination starts with:
- Imbibation
 - Osmosis
 - Diffusion
 - Both b and c
17. Inorganic nutrients are present in the soil as:
- Atoms
 - Molecules
 - Electrically charged ions
 - Electron
18. Dark period is critical for:
- Long day plants
 - Short day plants
 - Day Neutral plant
 - Both a and b
19. On oxidation of 1 molecule of glucose, _____ ATP is produced through aerobic respiration.
- 10
 - 25
 - 30
 - 38
20. Which of the following is an important precursor of gluconeogenesis?
- Lactate
 - Glycerol
 - Pyruvate
 - Glucose 6 phosphate

-- --- --

(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

- | | |
|--|----------|
| 1. Write short notes on: (<i>any two</i>) | 5+5=10 |
| a) Collagen triple helix structure | |
| b) Starch | |
| c) Phospholipids | |
| 2. Define Ramachandran's plot. Discuss about different structures of proteins. | 2+8=10 |
| 3. What is Kranz anatomy? Write the differences between C_3 and C_4 pathways of carbon fixation. | 2+8=10 |
| 4. What is flower and ripeness to flowering? Write the differences between short day and long day plants. | 10 |
| 5. Physiological effect of ABA and its mechanism of action. | 6+4=10 |
| 6. a) Describe the physiological responses of plants to gibberellins. | 6+4=10 |
| b) Discuss the relationship between gibberellins production and hydrolytic enzyme synthesis and release in germinating barley grain. | |
| 7. Write the function of phosphorus and potassium and deficiency symptom of nitrogen and magnesium. | 2.5×4=10 |
| 8. Describe: | 5+5=10 |
| a) The regeneration of RUBP in Calvin Cycle | |
| b) ATP formation in respiration | |

== *** ==