

M.SC. BOTANY
Second Semester
Biochemistry and Advanced Physiology
(MSB-06)

Duration: 3Hrs.

Full Marks: 70

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

1. Write answers of any five questions in short.

5 × 2=10

- a) Explain mutarotation in carbohydrates.
- b) Short note on sucrose.
- c) What is oligopeptide? How it is different from polypeptide.
- d) Differentiate between apoplast and symplast pathways of movement of water in plants.
- e) Leghemoglobin.
- f) Deficiency symptoms in plants due to Phosphorous inadequacy.
- g) Chemiosmotic theory.

2. Write short notes on any five.

5 × 3=15

- a) α - helix structure of protein.
- b) Phospholipid.
- c) Classification of enzymes.
- d) Factors effecting rate of transpiration.
- e) What are the objections to the root pressure theory of ascent of sap?
- f) Differentiate between oxidative phosphorylation and photophosphorylation.
- g) Sphingolipid.

3. Answer the following (any five)

5 × 5=25

- a) CAM cycle.
- b) Mechanism of mineral salt absorption in support of cytochrome-pump hypothesis.
- c) Mechanism of gibberellin action in mobilizing endosperm reserves in barley seeds.
- d) What are the factors responsible for seed dormancy? How the dormancy can be broken?
- e) Gluconeogenesis includes many steps which are reversal of glycolysis steps except for few. Explain those steps showing proper biochemical pathways.
- f) Cyclic pathway of light reaction of photosynthesis.
- g) Physiological effects of ethylene on plant.

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(The figures in the margin indicate full marks for the questions)

Duration: 20 minutes

Marks – 20

(PART A- Objective)

Write correct answer in the bracket ()

1×20=20

1. The polysaccharide found in the exoskeleton of invertebrate is
a) Pectin ()
b) Chitin
c) Cellulose
d) Chondroitin sulphate
2. A polysaccharide which is often called animal starch is
a) Glycogen ()
b) Starch
c) Inulin
d) Dextrin
3. Repeating unit of hyaluronic acid are
a) N- acetyl glucosamine and D- glucuronic acid ()
b) N- acetyl galactosamine and D- glucuronic acid
c) N- acetyl glucosamine and galactose
d) N- acetyl galactosamine and L-iduronic acid
4. Which of the following is not a fibrous protein
a) Carbonic anhydrase ()
b) Collagen
c) Fibrinogen
d) Keratin
5. Hemoglobin has
a) Primary structure ()
b) Secondary structure
c) Tertiary structure
d) Quaternary structure

6. Tertiary structure is maintained by
 a) Peptide bond ()
 b) Hydrogen bond
 c) d-sulphide bond
 d) All of the above
7. Hydrolysis of fats by alkalis into fatty acid and glycerol is called
 a) Coagulation ()
 b) Saponification
 c) Suspension
 d) Colloidal
8. The following is not a phospholipid
 a) Sphingomylin ()
 b) Lecithin
 c) Cephalin
 d) Cerebroside
9. Examples of monounsaturated fatty acids are
 a) Oleic acid ()
 b) Arachidonic acid
 c) Palmitic acid
 d) Linolenic acid

10. In the enzyme catalyzed reaction shown below, what will be the effect on substances A, B, C & D of inactivating the enzyme labelled E₂.



- a) A, B, C & D will all still be produced ()
 b) A, B & C will still be produced but not D
 c) A & B will still be produced but not C or D
 d) A will still be produced but not B, C, or D
11. Cooling of plants is caused by
 a) Guttation ()
 b) Photorespiration
 c) Transpiration
 d) Assimilation
12. The hormone which signals the closure of stomata is
 a) Auxins ()
 b) Cytokinin
 c) Gibberellin
 d) Absicic acid
13. Nodule formation is induced by
 a) IBA ()
 b) IAA
 c) Both a & b
 d) NAA

14. Cytokinins are
a) Adenine derivatives ()
b) Guanine derivatives
c) Cytidine derivatives
d) Thymine derivatives
15. Dark reaction of photosynthesis was worked out by
a) Hatch & Slack ()
b) Melvin Clavin
c) Arno
d) Emerson
16. Photosynthetic pigments are located in
a) Stroma ()
b) Grana
c) Cytoplasm
d) Thylakoids
17. Photosynthetic pigments absorb
a) UV radiation ()
b) Visible radiation
c) IR radiation
d) Gamma radiation
18. The final acceptor of electrons in the electron transport chain is
a) Water ()
b) Oxygen
c) Hydrogen
d) Cytochrome b
19. The end product of citric acid cycle is
a) Citric acid ()
b) Pyruvic acid
c) Lactic acid
d) CO₂ and H₂O
20. The correct sequence of cytochrome carriers in respiratory chain is
a) Cyt b → Cyt c → Cyt c1 → Cyt aa3 ()
b) Cyt aa3 → Cyt b → Cyt c → Cyt c1
c) Cyt b → Cyt c1 → Cyt c → Cyt aa3
d) Cyt b → cyt aa3 → Cyt c1 → Cyt c
