

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2022
(Fourth Semester)

Branch – BOTANY

PLANT PHYSIOLOGY AND BIOCHEMISTRY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

- 1 Choose the correct one to refer special kind of activity of Osmosis.
(i) Regulation (ii) Absorption
(iii) Diffusion (iv) Adsorption
- 2 In the plants, when the turgor of guard cell changes that causes the opening of
(i) Stomata (ii) Xylem
(iii) Phloem (iv) cambium
- 3 Which of the following relates to enzymes?
(i) Carbohydrate (ii) RNA
(iii) Proteins (iv) Fats
- 4 Indicate the possession of this to allosteric enzymes
(i) Active site and an allosteric site
(ii) Active site and two types of allosteric sites
(iii) Active site and three types of allosteric sites
(iv) Three types of allosteric sites
- 5 Find the primary pigment in photosynthesis
(i) Chl *a* (ii) Chl *b*
(iii) Chl *a* and Chl *b* (iv) Chl *a*, Chl *b* and carotenoids
- 6 Where the photosynthetic pigments are located?
(i) Chloroplast (ii) Grana
(iii) Stroma (iv) Thylakoid
- 7 Oxidative phosphorylation usually refers to _____.
(i) Anaerobic production of ATP (ii) Citric acid cycle production of ATP
(iii) Alcoholic fermentation (iv) None of the above
- 8 In which area the process of vernalization is practiced.
(i) Cold countries (ii) Hot countries
(iii) Only in sub-tropical countries (iv) Only in tropical countries
- 9 Gibberellins can facilitate seed germination due to their influence on
(i) synthesis of abscisic acid
(ii) rate of cell division
(iii) production of hydrolyzing enzymes
(iv) absorption of water through the hard seed coat
- 10 Which of the following is not a free living N₂ fixers?
(i) Rhizobium (ii) Azotobacter
(iii) Rhodospirillum (iv) Clostridium

Cont...

SECTION - B (35 Marks)

Answer **ALL** Questions

ALL Questions Carry EQUAL Marks (5 x 7 = 35)

- 11 a Explain the Phenomenon of ascent of sap.
OR
b Analyse the role of phytochrome and highlight its significance.
- 12 a Evaluate the factors affecting enzyme action.
OR
b Classify the properties of enzymes.
- 13 a Explain the pigment system-II.
OR
b Determine how various factors affect the rate of photosynthesis.
- 14 a Illustrate the oxidative phosphorylation.
OR
b Explain the respiratory quotient.
- 15 a Show the stages of transamination.
OR
b Justify that the salinity stress affects the productivity of plants.

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

- 16 Analyse on the properties of circadian rhythm and their relations with biological clock.
- 17 Design a method on isolation and purification of enzyme.
- 18 Assess the reactions of C₃ cycle with neat diagram.
- 19 Construct the TCA cycle ^{and} explain the reactions.
- 20 Evaluate the method of breaking seed dormancy.

Z-Z-Z

END