Avinashilingam Institute of Home Science and Higher education for Women,
(Deemed to be University) Coimbatore -641043

Master's Degree Examination – November 2018

III Semester

Class: II PG **Max Marks: 60**
Major: Biochemistry **Time: 3 Hours**

17MBCC15- PHYSIOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY OF PLANTS

Part A **10 x ½ =5**

Choose the correct answer

1. The amount of ATP required for the synthesis of one glucose molecule in C4 pathway is
   a) 18 ATP b) 30 ATP c) 12 ATP d) 24 ATP
2. The process of respiration in green plants occurs in
   a) Only when stomata are open c) Only photosynthesis ceases
   b) Only when photosynthesis d) All at times
3. In which of the following forms of glucose stored in plants
   a) Starch b) Dextrins c) Glycogen d) Cellulose
4. Crytochrome absorbs the light rays mostly in .....region of spectrum.
   a) Violet –blue region c) Red –blue region
   b) Violet –green region d) None of the above
5. Ammonia or ammonium is oxidized to nitrite followed by the oxidation of nitrite to nitrate is called as
   a) Nitrogen fixation b) Nitrification c) Denitrification d) Nitrogen assimilation
6. Which of the following conditions decreases the level of denitrification?
   a) Abundance of organic matter b) Acidic pH
   c) Elevated temperatures d) Availability of oxygen
7. The set of DNAs generated by using random primers in PCR reaction is called
   a) RAPD b) RFLP c) AFLP d) insitu hybridization
8. The International Rice Genome Sequencing Project began in
   a) Sep 1997 b) Oct 1999 c) Sep 1998 d) Dec 1997
9. Which of the following plant cell will show totipotency?
   a) Xylem Vessels b) Sieve tube c) Meristem d) Corkcells
10. Ti plasmid vectors include
    a) Binary vectors and cointegrate vectors
    b) Cointegrate vectors and Multiple vectors
    c) Ti plasmid based vectors
    d) Binary vectors and Multiple vectors

Part B **5 x 4 = 20**

Answer ALL questions

Each answer should not exceed 200 words or one page

11.a) Give a Note on Photorespiration.

(Or)

11.b) Explain about chemiosmotic theory.

12.a) Write the classification of Storage proteins.

(Or)

12.b) What are the secondary metabolites and mention about the properties of alkaloids.

13.a) Differentiate on biotic and Abiotic stresses.

(Or)

13.b) Discuss about basic concept of Nitrogen Fixation.

14.a) Mention about the significance of any three Molecular markers.

(Or)

14.b) Explain the strategies of NGS(Next Generation Sequencing).

15.a) Compare and contrast about the protoplast culture and protoplast fusion.

(Or)

15.b) Brief a note on plant Transformation vectors.

Part C **5 x 7 = 35**

Answer ALL questions

Each answer should not exceed 600 words or three pages

16. a) Describe the photosynthetic electron transport and generation of NADH & ATP.

(Or)

16.b) List out the effect produced by CO_2 and Green house gases on biodiversity.

17.a) Explain the structure and functions of Polysacccharides.

(Or)

17.b) Discuss on the significance of phytochromes and cryptochromes.

18.a) Explain about the biochemical and molecular changes that take place during seed development with specific example.

(Or)

18.b) Write in detail about the properties of nif genes and its regulation .

19.a) Give a detailed account on the salient findings of rice genome project.

(Or)

19.b) List out the applications of genome projects.

20.a) Give a detail note on any two types of culture techniques used to culture plants *invitro*

(Or)

20.b) Explain the transformation technique done in *Oryza sativa* and *Arabidopsis thaliana*.