

**PARUL UNIVERSITY**  
**COLLEGE OF AGRICULTURE**  
**B.Sc. (Hons.) Agriculture summer 2018 - 19 Examination**

**Semester: 1**  
**Subject Code:20110101**  
**Subject Name:Fundamentals of Plant Biochemistry**  
**and Biotechnology**

**Date:12/04/2019**  
**Time:02:00pm to 4:30pm**  
**Total Marks: 50**

**Instructions**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Do as Directed.****A. Fill in the blanks. (Each of 0.5 marks)****(05)**

1. \_\_\_\_\_ is a branch of biomedical science that covers the study of all aspects of the immune system in all organisms.
2. Protein shape is determined by sequence of \_\_\_\_\_.
3. \_\_\_\_\_ is found as structural constituent of membranes in yeast and fungi.
4. The fatty acids that cannot be synthesized by the body and therefore should be supplied in the diet are known as \_\_\_\_\_.
5. \_\_\_\_\_ is used as flavouring agent in food industry and Chinese food.
6. \_\_\_\_\_ is the site where the DNA is cut by a restriction endonuclease.
7. \_\_\_\_\_ is technique for detection of specific RNA Sequence.
8. Development of hybrid plants through the fusion of somatic protoplasts of two different plant species/varieties is called somatic hybridization
9. Glucose+Galactose=\_\_\_\_\_.
10. Steroids are the compounds containing a cyclic steroid nucleus namely \_\_\_\_\_.

**B. Multiple choice type questions. (Each of 0.5 mark)****(10)**

1. \_\_\_\_\_ is not the reducing sugar.
 

a) Sucrose	c) Maltose
b) Ribose	d) Glucose
2. Table sugar is \_\_\_\_\_.
 

a) Sucrose	c) Glucose
b) Fructose	d) Lactose
3. How many molecules of fatty acid occur in a lipid (fat) molecule \_\_\_\_\_.
 

a) 1	c) 3
b) 2	d) 4
4. Which is the following is saturated fatty acids \_\_\_\_\_.
 

a) Stearic acid	c) Lauric acid
b) Palmitic acid	d) All of the above
5. Proteins conjugated with pigment is known as \_\_\_\_\_.
 

a) Chromoproteins	c) Nucleoproteins
b) Metalloproteins	d) None of the above
6. \_\_\_\_\_ is Hydrophilic in nature.
 

a) Hemoglobin	c) Albumin
b) Myoglobin	d) Globulin
7. Which of the following is Acidic amino acids \_\_\_\_\_.
 

a) Glutamic acid	c) Lysine
b) Aspartic acid	d) Both (a) and (b)
8. Which of the following is ketogenic amino acids \_\_\_\_\_.
 

a) Lysine	c) Tryptophan
b) Tyrosine	d) None of the above
9. \_\_\_\_\_ developed an in vitro anther culture technique for the production of haploid *Datura innoxia* plants.
 

a) Bergner	c) Kasha
b) Kao	d) Guha and Maheshwari

10. Which of the following is use as a cryoprotectant \_\_\_\_\_.
- a) NAA  
b) DMSO  
c) IBA  
d) Cytokinines
11. The technique \_\_\_\_\_ which contain Primary antibody as a probe.
- a) Northern blotting  
b) Southern blotting  
c) Both (a) and (d)  
d) Western blotting
12. Development of plants from the male gametophyte by the culture of anthers or microspores is known as \_\_\_\_\_.
- a) Embryogenesis  
b) Morphogenesis  
c) Friability  
d) Androgenesis
13. Hanstein introduced the term 'Protoplast'.
- a) Cooking  
b) Power  
c) Hanstein  
d) Klercker
14. Which of the following is ketose sugar \_\_\_\_\_.
- a) Fructose  
b) Glucose  
c) Xylose  
d) Ribose
15. \_\_\_\_\_ is known as "Fruit Sugar".
- a) Maltose  
b) Fructose  
c) Glucose  
d) Galactose
16. Changes in parts of chromosome sets is known as \_\_\_\_\_.
- a) Aneuploidy  
b) Monoploidy  
c) Polyploidy  
d) Euploidy
17. Lipids are \_\_\_\_\_.
- a) Insoluble in water  
b) Important constitute of biological membrane  
c) Readily soluble in organic solvent  
d) All the above
18. Which of the following is sweetest sugar \_\_\_\_\_.
- a) Sucrose  
b) Fructose  
c) Glucose  
d) Lactose
19. Which method is suitable for the transfer of DNA via a vector \_\_\_\_\_.
- a) Agrobacterium  
b) Microinjection  
c) Electroporation  
d) None of the above
20. \_\_\_\_\_ seeds are encapsulated by protective gel like calcium alginate against microbes and dessication.
- a) Synthetic  
b) Globular  
c) Round  
d) All of the above

**Q.2 Do as Directed.**

**A. Define the following. (Any five)**

1. Biochemistry
2. Haploids
3. Micropropagation
4. Pollen
5. Recombinant DNA technology
6. Somaclonal Variation
7. Somatic Hybridization

**(05)**

**B. Answer the following. (Any Five)**

1. Explain: Cryopreservation.
2. Write down the characteristics of synthetic seeds.
3. What is Plant Biotechnology ?
4. Explain: Zwitter ion.
5. Give the limitations of the anther culture.
6. Explain: Parthenogenesis.
7. Enlist the steps of Micropropagation.

**(05)**

**Q.3 Write short notes. (Any five)**

1. Enlist the steps of mechanism of cryopreservation.
2. Write down the advantages of ovule culture.
3. Give the characteristics of Restriction Enzymes.
4. Write down the steps involved in induction and selection of Somaclonal Variations.
5. Give the difference between amylose and amylopectin.

**(10)**

6. Give the difference between reducing and non reducing sugars.

**Q.4 Attempt any Three/Long Questions/Example**

**(15)**

1. Explain the structural organization of protein with diagram.
2. Explain the Southern blotting method with diagram.
3. Explain the agrobacterium method of gene transfer.
4. Give the detailed classification of Lipids.