

## Note:

1. All the questions are compulsory.
2. Draw neat & suitable diagrams wherever necessary.
3. Figures to the right indicate full marks.
4. Use of non-programmable calculators is permitted.

## Q.1A Choose the correct option &amp; rewrite the statements

(10 marks)

1. An appropriate plant for the purpose of fencing is \_\_\_\_\_  
a. *Rosa* b. *Petunia* c. *Poa* d. *Ziziphus*
2. A garden having a geometric and symmetrical pattern is called as \_\_\_\_\_ garden  
a. formal b. informal c. monumental d. landscape
3. \_\_\_\_\_ is a plant example for growing in avenue.  
a. *Delonix regia* b. *Duranta plumeri* c. *Hydrilla verticillata* d. *Lantana camara*
4. Higher cytokinin levels in the nutrient medium lead to the formation of \_\_\_\_\_  
a. shoots b. root c. embryo d. root hairs
5. Restriction enzymes are used to \_\_\_\_\_ DNA.  
a. modify b. cut c. join d. hybridize
6. \_\_\_\_\_ is known as the father of tissue culture.  
a. Morgan b. De Robertis c. G. Haberlandt d. Schwann
7. \_\_\_\_\_ is the branch of science which derives principles from information technology to apply in the field of biology,  
a. Biotechnology b. Bioinformatics c. Genetics d. Computer science
8. DDBJ stands for \_\_\_\_\_  
a. DNA database in Japan b. DNA Data bank of Japan c. DNA Database of Jordan d. DNA database of Jaipur
9. \_\_\_\_\_ statistical tool is used to determine the relationship between two variables  
a. coefficient of correlation b. regression c. z- test d. t- test
10. \_\_\_\_\_ statistical test is positively skewed.  
a. correlation b. chi-square test c. regression d. Z- test

## Q.1B Answer the following in one sentence

(10 marks)

- a. Describe two characteristic features of a flower bed.
- b. Mention the botanical names and families of any two important plants used in a water garden.
- c. Define Callus.
- d. What are vectors?
- e. What is a perfect positive correlation?

## Q.2 Answer any two from the following

(20 marks)

- a. What is a botanical garden? Discuss its importance.
- b. Write an essay on Veermata Jijabai Bhonsle Udyan (VJBU).
- c. Discuss avenues and pathway in detail.
- d. Write an essay on National Park with special reference to plants.



**Q.3 Answer any two of the following****(20 marks)**

- What is organogenesis? Comment on factors affecting the same. Add a note on its significance.
- Give a detailed account of the different enzymes used in the gene cloning process.
- Give an account of the laboratory organization for plant tissue culture.
- Elaborate on the process of rDNA technology.

**Q.4 Answer any two from the following****(20 marks)**

- What is BLAST, give its different types
- Elaborate on the chi-square test and its significance in biological studies.
- Calculate the coefficient of correlation of the following data -

X	1	2	3	4	5
Y	10	11	12	14	13

- Solve using the chi-square test whether there is a significant relationship between diet and outcome.

Diet	Outcome		
	Cancers	Fatal Heart Disease	Total
Unbalanced	55	25	80
Balanced	5	15	20
Total	60	40	100

(Given at Degree of freedom 1 and 5% significance, tabulated  $X^2=3.84$  and at Degree of freedom 3 and 5% significance, tabulated  $X^2=7.82$ )

**Q.5 Write short notes on (any four)****(20 marks)**

- Lawn
- Floriculture
- pBR322
- Importance of anther or pollen culture
- Internet and its uses
- Types of correlation.

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