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101

2008

BOTANY (Optional)

वनस्पतीशास्त्र (वैकल्पिक)

Time : 3 hours **Maximum Marks : 200**

Note :

(i) *In all attempt **Five** questions.*

(ii) *Question No. **1** is **compulsory**.*

(iii) *Of the remaining Questions, Attempt **Any four** by selecting **one question** from each section.*

(iv) *Number of optional questions upto the prescribed number in the order in which questions have been solved, will only be assessed and excess answers of the question/s will not be assessed.*

(v) *Candidate should not write roll number, any names (including his/her own), signature, address or any indication of his/her identity anywhere inside the answer book otherwise he/she will be penalised.*

1. Answer ***any four*** of the following questions : **40**

(a) What is coding dictionary ? Discuss in brief its salient features.

(b) What is Geologic Time Scale ? Write in brief about palaeoenvironment and flora of each era. (Tabular form may be given)

(c) Define "Sterilization". Describe the methods of sterilization commonly used in microbiology and tissue culture laboratory. (Illustrations may be given)

(d) What are plant growth regulators ? Give role and functions of Gibberellins in plant growth and development.

(e) Define gene cloning. Give a general protocol for generation of a recombinant DNA and obtaining copies of gene-of-interest (GOI). (Graphic presentation expected)

SECTION - A

2. Answer the following questions :

(a) Compare the structure of a generalized plant cell with that of a bacterial cell with the help of fully labeled diagrams. Point out the important structural and functional differences between the two. **20**

(b) What is chromosomal mapping ? Describe the three-point-test-cross method with a suitable example. **20**

P.T.O.

3. Answer the following questions :

(a) Define standard deviation and coefficient of variation. Find out the SD and COV for the given data. (Use "machine formula" for calculator)

Problem : Given below is the weight in grams (g) of the rice grains.

Sample (I)	Sample (II)
X_i (g)	X_i (g)
1.2	1.2
1.4	1.6
1.6	1.7
1.8	1.8
2.0	1.9
2.2	2.0
2.4	2.4
$\Sigma x_i = 12.6$ g	$\Sigma x_i = 12.6$ g

(b) Define the term "tissue". How do primary and secondary tissues originate in a dicot stem ? Illustrate your answer with suitable labeled diagrams. **20**

SECTION - B

4. Answer the following questions :

(a) Give general characters of Bryophytes. Compare the sporogonium of Anthocerotopsida with that of Bryopsida (diagrams expected). **20**

(b) Define "Heterospory" and "Seed Habit". How was Seed Habit developed (causes of evolution of Seed Habit). **20**

5. Answer the following questions :

(a) What is Botanical Nomenclature ? Explain in brief the rules and principles of botanical nomenclature with suitable examples. **20**

(b) Define pollination. Give different types and mechanism and contrivances for cross pollination. **20**

SECTION - C

6. Answer the following questions :

(a) Viruses are "knocking the door of life". Justify. Describe the ultrastructure of Tobacco-Mosaic-Virus (TMV) with the help of suitable diagrams. **20**

(b) What do you understand by "plant water relations" ? Describe the role of diffusion, osmosis and water potential in plasmolysis and deplasmolysis (illustrate your answer with suitable diagrams). **20**

7. Answer the following questions :

(a) Give a comparative account of CO_2 - fixation in C_3 and C_4 plants (Graphical illustrations enough). Add a note on significance of C_4 pathway. **20**

(b) What is photoperiodism ? Describe its role in induction of flowering. Compare Short-day plants with Long-day plants according to their photoperiodic requirement for flowering. **20**

SECTION - D

8. Answer the following questions :

(a) Define plant succession. Describe the process of primary succession on barrens rock/bare ground (diagrammatic presentation expected). **20**

(b) Define soil erosion. Describe in brief the role of deforestation and desertification, and reforestation and social forestry in soil erosion. **20**

9. Answer the following questions :

(a) Enlist at ***least two*** examples ***each*** of the forest plants being used (along with their parts), as : **20**

(i) fibres, (ii) wood and timber, (iii) rubber, (iv) beverages, (v) narcotics, (vi) spices, (vii) resins, (viii) dyes, (ix) insecticides and (x) ornamentals

(b) Define plant tissue culture. How is it used for somatic embryogenesis. **20**

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