

BOTANY

Time: 3 hours

Full Marks:200

Note: Question No 1 is compulsory and answer any four from the remaining seven questions. Figures in the margin indicate full marks for the questions.

1. Write short answers of any 10 (ten)

10x4=40

- (A) Who and on what context the "*Theory of Directed Panspermia*" was proposed?
- (B) How do you correlate the '*Recapitulation theory*' with the occurrence of two types of leaves in *Acacia* plant?
- (C) What are *Glyoxysomes*? What specific functions do these organelles perform?
- (D) Who proposed the Physiological basis of differentiation of *apical meristem*? Explain.
- (E) Define and explain '*The Theory of Unit Character*'?
- (F) Briefly describe the five kingdom system of Whittaker.
- (G) What is *Rule of Priority*? Explain with example
- (H) What is *Sequential Senescence*? Mention the different theories of senescence.
- (I) What is *Self Sterility*? Discuss the significance of self sterility in plant breeding.
- (J) Discuss the role of metabolic inhibitors of transpiration.
- (K) What is the need of generating of Gene Bank?
- (L) What is *VAM*? Discuss its importance in nutrient intake.

2. Attempt any 8 (eight)

8x5=40

- (A) What are Polysomes? What specific functions do they perform?
- (B) What is inflexibility? Illustrate the distribution of mechanical tissue in a monocot leaf as seen in CS.
- (C) Induction of chromosome doubling has helped in the production of artificial plants-justify the statement with the help of a suitable example.
- (D) Pteridophytes serve as evolutionary link between higher Cryptogams and phanerogams – Explain
- (E) Define biosystematics. Explain the relative importance of vegetative and reproductive characters in plants.
- (F) What are *Coenzymes*? Discuss the roles played by nucleotides.
- (G) What is triple fusion? Discuss the significance of the process with suitable diagrams.
- (H) Discuss the process of *non-symbiotic nitrogen fixation* with examples.
- (I) What is Restoration ecology? Explain
- (J) Discuss in brief prospect of growing non-alcoholic beverage plants in Arunachal Pradesh

3. Attempt any 5 (five)

5x8=40

- (A) Illustrate Taylor's *Centipede model* of organization of DNA in chromosome.
- (B) In wheat inheritance of kernel colour is a *Polygenic effect*-Explain the phenomenon with help of checkerboard method.

- (C) The greatest blunder in Bentham and Hooker's system of classification was the creation of an artificial group-Explain and mention the other demerits of the system.
- (D) What are physiological functions of *Potassium* in plants ?
- (E) Explain 'Red Drop' and Emersion exhaust effect'.
- (F) Discuss critically characteristic features of plants in *Temperate zone*.
- (G) Discuss in brief the role of *Reproductive barrier in Speciation*.

4. Attempt any 4 (four) 4x10=40

- (A) What is Climax community ? Explain the theories associated with the concept of climax community.
- (B) Name (botanical) two important spices grown in your locality with a note on cultivation practice and marketing prospect.
- (C) What are *Bio pesticides* ? Classify different pesticides of plant and microbial origin with special reference to their applications.
- (D) What is Organogenesis ? Discuss the steps involved in the initiation of callus tissue in plants.
- (E) Discuss the following :
 - i. Role of *Gibberellins*
 - ii. *Growth Curve*

5. Attempt any 2 (two) 2x20=40

- (A) What is *Water potential* ? Discuss with suitable illustrations the theories of *Active* and *Passive* Mechanism of water absorption in plants.
- (B) Explain how Chemical mutagens alter nucleotide sequence during replication of nucleic acids. What is Suppressor mutation ?
- (C) What are Advance characteristics of flowering plants ? What are the basic differences between *Phylogenetic Systems* of Hutchinson and that of *Engler & Prantl*

6. Explain the following : 4x10=40

- (A) *Assimilatory power*
- (B) *Photorespiration*
- (C) *CAM plants*
- (D) *Law of Limiting Factors*

7. Write explanatory notes on the following : 4x10=40

- (A) *Florigen theory*
- (B) *Seed Dormancy*
- (C) *Short Day Plants*
- (D) *Green House effect*

8. Answer the following question :

- (A) What are Cash crops ? Write down the cultivation practice of one cash crop commonly grown in northeast India ? 5+15=20
- (B) Describe the symptoms of different fungal diseases of potato. Also suggest control measures of potato diseases. 10+10=20