

2024

**BOTANY — HONOURS**

**Paper : DSE-A-3 and DSE-A-4**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**Paper : DSE-A-3**

**(Medicinal and Ethnobotany)**

**Full Marks : 50**

1. Answer *any five* questions : 2×5
- (a) What are unorganized drugs? Give an example.
  - (b) What do you mean by polyherbal synergism?
  - (c) Who is the father of Indian Ethnobotany?
  - (d) What are the biological humors in Unani System of medicine?
  - (e) What is 'gutta-percha'?
  - (f) What is 'AYUSH' in Medical Science?
  - (g) What are pseudoalkaloids? Give an example.
  - (h) What is Paleo-ethnobotany?
2. Answer *any two* questions :
- (a) Define Ethnoecology. Discuss the role of Ethnoecology in the field of agriculture. Write two ethnic communities found in India. 1+3+1
  - (b) What is the building block of terpenoids? Write the carbon numbers of sesquiterpenes. Give a suitable example of sesquiterpene. Name the pungent principle of chilli fruits. Mention the medicinal uses of some terpenoids. 1+1+1+1+1
  - (c) Write the chemical properties of alkaloids. Mention the source plants of strychnine and reserpine. 3+2
3. Answer *any three* questions :
- (a) Mention the chemical nature, scientific names, family of the source plants, parts used and therapeutic applications of the following plant drugs : (i) Curcuminoids (ii) Digitoxin (iii) Pilocarpine (iv) Sennosides.  $(\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2})\times 4$
  - (b) State the goal of research in Ethnomedicine. Write some remedies from natural sources for the treatment of diabetes, hypertension and skin disorder. 1+3+3+3

**Please Turn Over**

- (c) What is the role of secondary metabolites in plant defence mechanisms? Describe the protective action of flavonoids and alkaloids against pathogenic microbes and herbivores. 2+4+4
- (d) Mention the basic metabolic pathways involved in the formation of plant secondary metabolites. Schematically represent the interrelationships among these pathways. Define pharmacodynamics. 3+5+2
- (e) Discuss the classification of drugs on the basis of its chemical nature and pharmacological actions. What are the merits and demerits of these types of classification? 3+4+1½+1½

**Paper : DSE-A-4****(Stress Biology)****Full Marks : 50**

1. Answer **any five** questions of the following in few words : 2×5
- What is the function of calmodulin?
  - Write the name of signal molecules of SAR and ISR.
  - What is singlet oxygen?
  - Mention the name of two ROS scavenging enzymes in plants.
  - What are the differences between stress avoidance and stress tolerance response in plants?
  - Differentiate between biotic and abiotic stress with one example each.
  - What is eustress?
  - What is physiologically dry soil?
2. Answer **any two** questions of the following :
- Write a note on Frost injury in plants. 5
  - What are heat shock proteins (HSP)? How does it beneficial to plants? 2+3
  - How does compatible solute production help in overcoming environmental stress? 5
3. Answer **any three** questions of the following :
- What do you mean by acclimation? State the name of two Reactive Oxygen Species. Discuss briefly on different adaptive features during water logging and low temperature stress. 2+2+6
  - Describe the different types of physiological mechanisms that protect plants against environmental stress. 10
  - What are the different morphological and physiological symptoms which occur during salinity stress in plants? Describe, in brief, the mechanisms by which plants can withstand high salinity stress. 5+5
  - What is systematic acquired resistance? Discuss briefly the mechanism of development of local acquired resistance. 2+8
  - How do jasmonates protect plants from pathogen induced stress? Write the name of two PR proteins found in plants. 8+2
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