

B.Sc. 3rd Semester (Honours) Examination, 2018 (CBCS)

Subject : Botany

Paper : SEC-I

Time: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

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

*Candidates are instructed to attempt either **Section-A, Section-B,
Section-C, Section-D or Section-E***

Section-A

(Ethnobotany)

1. Answer any five questions from the following: 2×5=10
- (a) Define ethnobotany. Who first coined this term?
 - (b) Define a Tribe. How does it differ from a caste?
 - (c) Cite two major and two minor ethnic groups of India.
 - (d) Mention two importance of studying ethnobotany.
 - (e) Name the Indian states to which the following tribes belong:
 - (i) Bhils tribe
 - (ii) Dang tribe
 - (iii) Khasi tribe
 - (iv) Santhals
 - (f) Give the full forms of the following:
 - (i) AYUSH
 - (ii) NBA
 - (iii) TKDL
 - (g) Mention two uses of *Withania somnifera* in modern medicine.
 - (h) Give one example each of the following:
 - (i) An ancient literature on Ethnobotany
 - (ii) An archaeological place related to ethnobotanical studies.
 - (iii) An endangered medicinal plant
 - (iv) An intoxicant
2. Write short notes on the following (any two): 5×2=10
- (a) Intellectual Property Rights
 - (b) Temples and sacred places related to ethnobotanical studies
 - (c) *Azadirachta indica*
 - (d) Food plants used by tribals

3. Answer the following questions (*any two*): 10×2=20
- (a) Distinguish between ethnobotany and economic botany. Write the botanical name, family, important plant parts and uses of Sarpagandha. 2+1+1+2+4=10
- (b) Explain the role of ethnic groups in conservation of plant genetic resources. What is biopiracy? Give a brief account on biopiracy. 5+2+3=10
- (c) Give a short account on intoxicants and beverages used by tribal people. Mention the habitat, morphology and ethnobotanical uses of *Indigofera tinctoria*. 2½+2½+1+2+2=10
- (d) What do you understand by traditional healers? Who are considered aborigines? Mention the role of *Ocimum sanctum* in ethnobotanical studies. 2+2+6=10

Section-B

(Agricultural Botany)

1. Answer *any five* of the following: 2×5=10
- (a) Define water potential. What are the components of water potential?
- (b) What is antitranspirant? Give Example.
- (c) What is patent law? Name the patenting authority in India.
- (d) What is vernalization?
- (e) What is VAM? Give example.
- (f) Write the full form of PGPR. What is rhizosphere?
- (g) Name the metals used in Biolistics.
- (h) Give two examples of DNA based markers.
2. Answer *any two* of the following: 5×2=10
- (a) What is nitrogenase? Write the components of nitrogenase. How many ATP is needed per molecules of N₂ reduced? 1+3+1=5
- (b) What is photoperiodism? Briefly discuss the role of phytochrome in flowering. 1+4=5
- (c) Discuss with example, the role of cyanobacteria as biofertilizer. 5
- (d) Discuss the role of plant hormones in agriculture of horticulture. 5
3. Answer *any two* of the following: 10×2=20
- (a) Describe the anatomical speciality found in the leaves of C4 plants. Schematically describe CO₂ fixation in C4 plants. What are the differences between C4 and CAM plants? 2+6+2=10
- (b) What is totipotency? Define somatic embryogenesis. What are the artificial seeds? What is the importance of meristem culture? Describe briefly the advantages and disadvantages of micropropagation. 1+2+2+2+3=10
- (c) What is transgenic plant? Name the compound that induces *Agrobacterium vir* genes. What are chimeric selectable marker genes? Give one example. Represent Ti plasmid diagrammatically. 1+1+2+1+5=10
- (d) What is heterosis? What are the differences between mass selection of pure line selection? Discuss the utility of heterosis in plant breeding. 2+4+4=10

Section-C
(Medicinal Botany)

1. Answer *any five* from the following: 2×5=10
- (a) What do you mean by polyherbal formulation? Give an example. 1+1=2
- (b) What is meant by 'tridosha'? Name the three energies of tridosha. 1+1=2
- (c) What is meant by 'Pancha Maha Bhoota'? Name any two elements under it. 1+1=2
- (d) What is nursery? What is the purpose of greenhouses in a nursery? 1+1=2
- (e) What are endemic plants? Name two endemic medicinal plants from India. 1+1=2
- (f) What is *ex-situ* conservation? Mention one drawback of such conservation. 1+1=2
- (g) Define palaeo-ethnobotany. Name two ethnic communities of India. 1+1=2
- (h) What is folk medicine? Cite an example. 1+1=2
2. Answer *any two* from the following: 5×2=10
- (a) What is meant by 'Saptadhatu'? Name the components of Saptadhatu. What is 'Dhatu Kshaya'? 1+3+1=5
- (b) Briefly discuss the concept of Unani medicine. Compare it with Ayurveda. 3+2=5
- (c) Mention the role of nursery in propagation of medicinal plants. Describe the methods of propagation of medicinal plants through cuttings. 2+3=5
- (d) Define ethnobotany. Discuss its applications in modern era. 2+3=5
3. Answer *any two* from the following: 10×2=20
- (a) What is *in-situ* conservation? Describe National Park as one of the *in-situ* conservation facilities. Distinguish between National Park and Biosphere Reserve. What is sacred grove? 2+4+2+2=10
- (b) Discuss the role of plants in tumor treatment/therapy. Discuss the concept of Ayurveda as a traditional system of medicine. Name two plants used in Ayurvedic medicine with the name of disease cured. 4+4+2=10
- (c) Mention the nine IUCN Red List categories of organism. Name two endangered medicinal plants of India. Write down the five Red list criteria considered to define a species as critically endangered (CR). 4+2+4=10
- (d) Discuss the application of plant products to treat heart diseases. Describe the role of plants to combat diabetes. Name two plants used to treat skin diseases. 4+4+2=10

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Section-D (Mushroom Culture)

1. Answer *any five* questions of the following: 2×5=10

(a) What is caseing soil?

(b) Give two scientific names of poisonous mushrooms.

(c) What is spawn?

(d) What is pure culture?

(e) What is paddy straw mushroom? Cite an example.

(f) What is button mushroom?

(g) What is mushroom poisoning?

(h) Mention the optimum temperature for the development of *Agaricus bisporus* fruit body.2. Answer *any two* questions of the following: 5×2=10

(a) Give a short account on different types of edible mushrooms available in India.

(b) Describe the preparation of spawn.

(c) Briefly describe the low cost technology in mushroom production.

(d) Describe the short term and long term storage of mushroom after harvesting.

3. Answer *any two* questions of the following: 10×2=20

(a) Describe the mushroom cultivation procedure by using polythene bag method.

(b) Explain the nutritional and medicinal value of edible mushrooms.

(c) Describe the types of foods prepared from mushrooms. Give the names of mushroom research centres— National and Regional level. What is cost-benefit ratio in mushroom marketing. 5+3+2=10(d) What is compost. Enumerate the process of compost preparation for mushroom cultivation. What precautions should be taken during compost preparation. 2+6+2=10

Section-E (Intellectual Property Rights)

1. Answer *any five* of the following: 2×5=10

(a) What is patent?

(b) Define Intellectual Property Rights (IPR).

(c) What do you mean by concept of novelty?

(d) What is bio-Piracy?

(e) What is TRIPS?

(f) What is meant by 'sui-generis' regim?

- (g) What is breeders exemptions?
- (h) What is farmers privilege?
- (i) What is UPOV?
- (j) What is meant by copyright transfer?

2. Answer *any two* of the following: 5×2=10

- (a) Write short note on WTO.
- (b) Distinguish between product patents and process patents.
- (c) What are the obligations and implications of patenting biological materials.
- (d) Write short notes on plant variety protection.
- (e) Write short note on protection of Traditional Knowledge.

3. Answer *any two* of the following: 10×2=20

- (a) What is intellectual property? What are the rights available to protect it? Discuss the intellectual property rights briefly. 1+3+6=10
 - (b) Prepare a brief account of intellectual property rights available for plant genetic resources and crop varieties. How do plant Breeders Rights differ from patents? 6+4=10
 - (c) Distinguish between 'farmers privilege' and 'farmers rights'? What provision for these are made in 'protection of plant varieties' (PPV) and 'Farmers Rights' Act (FRA) that are approved by Indian Parliament in 2001? State the positive and negative aspects of PPV and FRA. 4+4+2=10
 - (d) Write short notes on: 5×2=10
 - (i) Computer software and its protection
 - (ii) Database and Data protection
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