

DEPARTMENT OF BOTANY

Open Elective Papers by the Department

SEMESTER-II

16BOTO1 - Plant Resource Utilization

Total Marks: 100
Semester End Exam Marks: 80
Internal Assessment Marks: 20
Time: 3 hrs.

Note: The examiner is required to set seven questions in all. Question No. 1 will be Compulsory and short answer type covering the entire syllabus. The remaining six questions will be set by selecting two questions from each unit. The candidate will be required to attempt Question 1 and four more selecting at-least one from each unit.

Course outcomes:

On the completion of this course students will be able to learn the following:

- CO1 The origin of agriculture, domestication of plants and its diversity centre
- CO2 Know about the morphology, cultivation and uses of major cereal, pulses, vegetables and horticultural crops
- CO3 Familiar about the spices, beverages, fibres and medicinal plants used in daily life.
- CO4 Gain the knowledge about the plants (different types of wood) and plant products such as gums, tannins and dye of commercial importance

UNIT-I

Origin of Agriculture, World Centres of Primary diversity of domesticated plants: Plant Introductions and Secondary Centres.

Botany, Cultivation, Harvesting and uses of Wheat and Rice.

Botany, Cultivation and uses of following fruits and vegetables: Mango, Apple, Banana, Potato, Alliums, Cabbage, Spinach and Tomato

UNIT-II

General Account of the Spices: Ginger, Turmeric, Cinnamon, Clove,

Beverage Plants: Source and general account of Tea and Coffee.

Legumes: Origin, Botany, Cultivation and uses of Pigeon pea, Chick pea, Cluster bean

Medicinal Plants: Plants as sources of drugs, parts used and uses.

Fibres: Types of fibres - Soft fibres, Hard fibres, Surface fibres, Brush fibres and Braiding fibres.

UNIT-III

Gums: Important commercial gums and their uses.

Tannins and Dyes: Sources and their uses.

Vegetable Oils and Fats: Distinction between fatty and essential oils. Drying (Soyabean and linseed), nondrying (Groundnut and Mustard oil) and Semi drying (cottonseed and Sunflower oil) oils and their uses.

Wood and its Uses: Soft woods and hard woods, wood as fuel, construction material Genetic Resources and their conservation.

Suggested readings:

- Anonymous. *National Gene Bank: Indian Heritage on Plant Genetic resources* (Booklet). National Bureau of Plant Genetic Resource, New Delhi. 1997.
- Cobley, L.S. and W.M. Steels. *An Introduction to the Botany of Tropical Crop Plants. 3rd Ed.* The English Language Book Society and Longman, London. 1979.
- Bole, P.V. and Y. Vaghani. *Field Guide to Common Indian Trees.* Oxford University Press, Mumbai. 1991.
- Chandel, K.P.S., G. Shukla and N. Sharma. *Biodiversity in Medicinal and Aromatic Plants in India: Conservation and Utilization.* National Bureau of Plant Genetic Resources, New Delhi. 1996.
- Conway, G. and V.W. Rattan. *The Doubly Green Revolution. Food for all in the 21st Century.* Cornell Univ. Press. 1999.
- Dastur, J.F. *Medicinal Plants of India and Pakistan.* 3rd Ed. Meyerbooks. 1985.
- Hill, A.F. *Economic Botany.* McGraw Hill Book Co. Inc., New York. 1986.
- Kirtikar, K.R. & D.D. Basu. *Indian Medicinal Plants.* Vols. I & II. 2nd Ed. Lalit Mohan Basu, Allahabad. 1953.
- Kochhar, S.L. *Economic Botany of the Tropics.* 2nd Ed. MacMillan India Ltd., Delhi.
- Leonard, W.H. & J.H. Martin. *Cereal Crops.* MacMillan Co., New York, USA. 824 pp. 1

DEPARTMENT OF BOTANY

SEMESTER-III

17BOTO2 - Plants: Source of Food and Health

Course outcomes:

On the completion of this course students will be able to learn the following:

- CO1 know the origin and diversity of plant domestication
- CO2 know about the history of agriculture, challenges and possible solution for sustainable agriculture
- CO3 know about the practices, utilization and management of horticultural (fruits and vegetables) crops in India
- CO4 Gain the knowledge about the plants of traditional medicine, diversity, conservation and Management

Total Marks: 100
Semester End Exam Marks: 80
Internal Assessment Marks: 20
Time: 3 hrs.

Note: The examiner is required to set even questions in all. Question No. 1 will be compulsory and short answer type covering the entire syllabus. The remaining six questions will be set with two questions from each unit. The candidate will be required to attempt four questions - Question 1 and three more questions selecting one from each unit.

UNIT- I

Agriculture: origin, history, world centres of primary diversity of domesticated plants, major crops of India, benefits and adverse consequences of green revolution, emerging problems of agriculture sector of India and their possible solutions, concept of organic farming and sustainable agriculture

UNIT- II

Horticulture: scope, classification and importance; Important commercial horticultural crops of India and Haryana, some underutilized fruits and vegetables of Haryana, Home gardening and their relevance in present time, Factors affecting horticulture in India, Issues in post harvest management of fruits and vegetables in India

UNIT- III

Medicinal Plant: Diversity and distribution, General account of local plants of medicinal importance, Drugs developed from traditional medicines, Bioprospection and biopiracy of medicinal plants, Indian initiatives for promoting the use of medicinal plants, Factors affecting medicinal plants diversity, conservation and management

Suggested readings:

- Chandel, K.P.S., G. Shukla and N. Sharma. *Biodiversity in Medicinal and Aromatic Plants in India: Conservation and Utilization*. National Bureau of Plant Genetic Resources, New Delhi. 1996
- Conway, G. and V.W.Rattan. *The Doubly Green Revolution. Food for all in the 21st Century*. Cornell Univ. Press. 1999.
- Dastur, J.F. *Medicinal Plants of India and Pakistan*. 3rd Ed. Meyerbooks. 1985.
- Hill, A.F. *Economic Botany*. McGraw Hill Book Co. Inc., New York. 1986.
- Kirtikar, K.R. & D.D. Basu. *Indian Medicinal Plants*. Vols. I & II. 2nd Ed. Lalit Mohan Basu, Allahabad. 1953.
- Kochhar, S.L. *Economic Botany of the Tropics*. 2nd Ed. MacMillan India Ltd., Delhi.
- Leonard, W.H. & J.H. Martin. *Cereal Crops*. MacMillan Co., New York, USA.