SUBJECT - BOTANY

SYLLABUS - MINOR VOC.

SEMESTER - II

PAPER- BOT-MN -02A-T Natural Resource Management

CREDITS:- 03 + 1 (PRAC) **60 LECTURES**

MARKS: 75 **PASS MARKS:**
30

INSTRUCTIONS FOR QUESTION SETTER

End semester exam (ESE): 3hrs

There will be 2 groups of questions

GROUP-A is compulsory and will contain 3 questions. Q.No-1 (A) will be multiple choice10 questions of 1 mark each.

Q. No-1 (B) will contain 2 short answers type questions (max. 50 words) each of 2½ marks

22/4/2024 23/4/2024 23/4/2024

Natural Resource Management

UNIT 1: Natural resources, Definition, types, Sustainable utilization- Concept,approaches, (Economical, Socio- cultural, Ecological).

UNIT 2: Land- Soil degradation and management- Water- Fresh water estuaries,wet lands, threats, and management strategies.

UNIT 3: Biological Resource - Biodiversity- Definition and types,Significance, threat and management. **Forest-** Definition, Importance and management.

UNIT 4: Energy- Renewable and Non renewable sources.

UNIT 5: National and International efforts in resource management.

Suggested Readings-

1.**Natural Resource Management**-by Debajit Sakia and DR. Pradip Kumar Baruah,Mahaveer Publication.

2. **Natural Resource Management Oppotunities & Technological Options** By M MuruGanandham, D Mandal, R Kaushal, PK Mishra, OP Chaturvedi, NK Sharma, PR Ojasvi, Lakhan Singh and Sangeeta N. Sharma

3. **Natural Resources Conservation & Management**, August 2008 by K. K. Singh (Author)

PAPER- **BOT-MN -02A-P Natural Resource Management**

CREDITS:- 01 PRAC.

MARKS: 25

30 LECTURES

PASS MARKS: 10

Instruction to Question Setter for
End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment = 15 marks
Practical record notebook = 05 marks
Viva-voce = 05 marks

1. Study of biodiversity of college campus
2. Soil analysis- physical and chemical properties of soil samples
3. Project on renewable source of energy (example- solar) used in college campus
4. Study of plant based enterprise development-case study (example-bamboo products)
5. Project on reused, reduced and recycle

SEMESTER – IV

PAPER- BOT-MN -02B-T MINOR FOREST PRODUCE

CREDITS:- 03 + 1 (PRAC.) **60 LECTURES**

MARKS: 75 **PASS MARKS: 30**

INSTRUCTIONS FOR QUESTION SETTER

End semester exam (ESE): 3hrs

There will be 2 groups of questions

GROUP-A is compulsory and will contain 3 questions.

Q. No-1 (A) will be multiple choice10 questions of 1 mark each.

Q. No-1 (B) will contain 2 short answers type questions (max. 50 words) each of 2½ marks.

MINOR FOREST PRODUCE

Unit 1: Introduction: Forest of Jharkhand and Minor Forest Produce.

Unit 2: Forest produce of Jharkhand:

Aromatic and Medicinal Plants: Neem, Karanj, Giloy, Munga, Pudina, Van Tulsi, Tulsi, Sweet flag,Kalmegh, Satavar, Lemon grass

Nutritional Plants: Mushroom, Mahua flower, Imli, Chironjee, Kathal

Oil Yielding Plants: Sal Seed, Mahua Seed, Neem Seed, Karanj Seed, Kusum, Castor

Fruit Trees: Kendu, Ber, Sahtoot, Mango, Jamun, Piyar, Karonda, Carombola

Leafy Vegetables: Chakor Sag, Beng Sag, Konar Sag

Unit 3: Source and Use of Minor Forest Products (MFPs): Gums and Resins, Katha, Dyes, Tannins, Oils. Technologies for extraction of Gums, Resins, Katha, Dyes, Tannins, Oils and other products.

Unit 5: Post Harvest Technology: Cleaning, Packing, Storage and Processing.

Unit 6: Marketing of Minor Forest Produce: Primary Agriculture Credit Society (PACS), Vyapaar Mandal Sahyog Samity (VMSS), Primary Minor Forest Produce Co-Operative Societies (PMFPCS), Women SHG or Repudiated NGO.

Unit 7: Livelihood based on Minor Forest Produce of Jharkhand: Bamboos, Canes and Grass.

Unit 8: Role of Minor Forest Produce in Sustainable development.

Reference Books:

1. Importance of Minor forest produces in tribal life- Manoshi Das (2018).
2. The Significance of Minor forest produce in the Indian tribal economy- K. Mohan Reddy (2018).
3. Tribal settlement and minor forest produce- D. Thakur (2009).
4. Procurement and Marketing of Minor Forest Produce in Tribal Areas- G. Parthasarathy and K. U. Shankar Patnaik(2003).

PAPER- BOT-MN -02B-P MINOR FOREST PRODUCE

CREDITS:- 01 (PRAC.) **30 LECTURES**

MARKS: 25 **PASS MARKS: 10**

Instruction to Question Setter for
End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment = 15 marks
Practical record notebook = 05 marks
Viva-voce = 05 marks

PRACTICAL

1. Study of gum and resin yielding trees of your area.
2. Study of edible forest products found in your locality.
3. Project work – visit to local SHG or NGO.
4. Visit to local market to identified minor forest produce.

P. Parveen

SEMESTER – VI

PAPER- BOT-MN -02C-T NURSERY AND GARDENING

CREDITS:- 03 +1C PRAC)

MARKS: 75

60 LECTURES

PASS MARKS: 30

INSTRUCTIONS FOR QUESTION SETTER

End semester exam (ESE): 3hrs
There will be 2 groups of questions

GROUP-A is compulsory and will contain 3 questions.
Q. No-1 (A) will be multiple choice10 questions of 1 mark each.
Q. No-1 (B) will contain 2 short answers type questions (max. 50 words) each of 2½ marks

P. Parveen

NURSERY AND GARDENING

Unit 1: Nursery: definition, objectives and scope and building up of infrastructure for nursery, planning and seasonal activities - Planting - direct seeding and transplants.

Unit 2: Seed: Structure and types - Seed dormancy; causes and methods of breaking dormancy - Seed storage: Seed banks, factors affecting seed viability, genetic erosion - Seed production technology - seed testing and certification.

Unit 3: Vegetative propagation: air-layering, cutting, selection of cutting, collecting season, treatment of cutting, rooting medium and planting of cuttings - Hardening of plants - green house - mist chamber, shed root, shade house and glass house.

Unit 4: Gardening: definition, objectives and scope - different types of gardening - landscape and home gardening - parks and its components - plant materials and design - computer Applications in landscaping - Gardening operations: soil laying, manuring, watering, Management of pests and diseases and harvesting.

Unit 5: Sowing/raising of seeds and seedlings - Transplanting of seedlings - Study of cultivation of different vegetables: cabbage, brinjal, lady's finger, onion, garlic, tomatoes, and carrots - Storage and marketing procedures.

Suggested Readings

1. Bose T.K. & Mukherjee, D., 1972, Gardening in India, Oxford & IBH Publishing Co., New Delhi.
2. Sandhu, M.K., 1989, Plant Propagation, Wile Eastern Ltd., Bangalore, Madras.
3. Kumar, N., 1997, Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
4. Edmond Musser & Andres, Fundamentals of Horticulture, McGraw Hill Book Co., New Delhi.
5. Agrawal, P.K. 1993, Hand Book of Seed Technology, Dept. of Agriculture and Cooperation, National Seed Corporation Ltd., New Delhi.
6. Janick Jules. 1979. Horticultural Science. (3rd Ed.), W.H. Freeman and Co., San Francisco, USA.

PAPER- BOT-MN -02C-P NURSERY AND GARDENING

CREDITS:- 01 (E PRAC)

MARKS: 25

30 LECTURES

PASS MARKS: 10

Instruction to Question Setter for
End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment = 15 marks
Practical record notebook = 05 marks
Viva-voce = 05 marks

(NURSERY AND GARDENING) PRACTICAL -25 **MARKS**

01. Study of vegetative propapagation
a. Natural method- In bryophyllum,
b. Artificial methods- cutting (china rose), grafting(mango), layering (rose) , "gootee" (lemon)
02. Study of seed dormancy.
03. Computer applications in landscaping.

SEMESTER – VIII

BOT-MN -02D-T HERBAL TECHNOLOGY

CREDITS:- 03 + 1 (PRAC)

MARKS: 75

60 LECTURES

PASS MARKS: 30

INSTRUCTIONS FOR QUESTION SETTER

End semester exam (ESE): 3hrs
There will be 2 groups of questions

GROUP-A is compulsory and will contain 3 questions.
Q. No-1 (A) will be multiple choice10 questions of 1 mark each.
Q. No-1 (B) will contain 2 short answers type questions (max. 50 words) each of 2½ mark

HERBAL TECHNOLOGY

Unit 1: Herbal medicines: history and scope - definition of medical terms - role of medicinal plants in Siddha systems of medicine; cultivation - harvesting - processing - storage - marketing and utilization of medicinal plants.

Unit 2: Pharmacognosy - systematic position m edicinal uses of the following herbs in curing various ailments; Tulsi, Ginger, Fenugreek, Indian Goose berry and Ashoka

Unit 3: Phytochemistry - active principles and methods of their testing - identification and utilization of the medicinal herbs; *Catharanthus roseus* (cardiotonic), *Withania somnifera* (drugs acting on nervous system), *Clerodendron phlomoides* (anti-rheumatic) and *Centella asiatica* (memory booster).

Unit 4: Analytical pharmacognosy: Drug adulteration - types, methods of drug evaluation - Biological testing of herbal drugs - Phytochemical screening tests for secondary metabolites (alkaloids, flavonoids, steroids, triterpenoids, phenolic compounds)

Unit 5: Medicinal plant banks micro propagation of important species (*Withania somnifera*, neem and tulsi- Herbal foods-future of pharmacognosy)

Suggested Readings

1. Glossary of Indian medicinal plants, R.N.Chopra, S.L.Nayar and I.C.Chopra, 1956. C.S.I.R, New Delhi.
2. The indigenous drugs of India, Kanny, Lall, Dey and Raj Bahadur, 1984. International Book Distributors.
3. Herbal plants and Drugs Agnes Arber, 1999. Mangal Deep Publications.
4. Ayurvedic drugs and their plant source. V.V. Sivarajan and Balachandran Indra 1994. Oxford IBH publishing Co.
5. Ayurveda and Aromatherapy. Miller, Light and Miller, Bryan, 1998. Banarsidass, Delhi.
6. Principles of Ayurveda, Anne Green, 2000. Thomsons, London.
7. Pharmacognosy, Dr.C.K.Kokate et al. 1999. Nirali Prakashan.

P. Perumeen

PAPER- BOT-MN -02D-P HERBAL TECHNOLOGY

CREDITS:- 01 (PRAC)

MARKS: 25

30 LECTURES

PASS MARKS: 10

Instruction to Question Setter for
End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment = 15 marks
Practical record notebook = 05 marks
Viva-voce = 05 marks

HERBAL TECHNOLOGY PRACTICAL **MARKS -25**

01. Culture of any medicinal plant mentioned in the syllabus.
02. Determination of secondary metabolites by TLC methods.
03. Systematic positioned uses of tulsi, ginger, fenugreek and Indian goose berry

P. Parveen