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17/4/26



GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR
(Established by State Legislature Act 17 of 1995)
'A+' Grade, NAAC Accredited State Govt. University

Acad./AC-III/Fac.-8/2026/ 2230
Dated: 17/4/26

To

The Controller of Examinations
GJUST, Hisar.

Sub: Approval of scheme of examinations and syllabi of pool of Minor Courses (MIC) for B.A. B.Ed. and B.Sc. B.Ed. programme under (ITEP) w.e.f. academic session 2025-26 (batch 2024) onwards being run in University Teaching Department.

Sir,

I am directed to inform you that the Vice-Chancellor, on the recommendations of Dean, Faculty of Education, on dated 28.03.2026, is pleased to approve the scheme of examinations and syllabi of pool of Minor Courses (MIC) of "History" and "Political Science" for B.A. B.Ed. and Botany for B.Sc. B.Ed. programme under (ITEP) w.e.f. academic session 2025-26 (batch 2024) onwards being run in University Teaching Department, under Section 11(5) of the University Act, 1995 in anticipation of approval of the Academic Council.

A copy of the scheme of examinations and syllabi of above said course is enclosed herewith. You are therefore, requested to take further necessary action accordingly.

Yours faithfully,

Aurini
17.4.26

Assistant Registrar (Academic)
for Dean Academic Affairs

DA: As above

Endst. No. Acad./AC-III/Fac.-8/2026/ 2231-34

Dated: 17/4/26

A copy of the above is forwarded to the following for information and necessary action:-

1. Dean, Faculty of Education, GJUST, Hisar.
2. ✓ Chairperson, Department of Education, GJUST, Hisar. She is requested to get upload the scheme of examinations and syllabi of above said course being run by University Teaching Department on the website of the University on the priority basis.
3. OSD to Vice-Chancellor (for kind information of the Vice-Chancellor), GJUST, Hisar.
4. P.A. to Registrar (for kind information of the Registrar), GJUST, Hisar.

Aurini
17.4.26

Assistant Registrar (Academic)



Guru Jambheshwar University of Science and Technology
Hisar-125001, Haryana
(‘A+’ NAAC Accredited State Govt. University)



Scheme for Integrated Teacher Education Programme
Name of the Programme: B.Sc. B.Ed.
According to NCTE and National Education Policy-2020

Pool of Minor Courses

Semester	Course Code	Nomenclature of Paper/Course	Credits	Contact Hours	Internal Marks	External Marks	Total Marks	Duration of Exam (Hrs)
2 nd Sem	24MIC0233T	Introduction of Non-Chordates	4	4	30	70	100	3
	24MIC0234T	Basics of Botany	4	4	30	70	100	3
3 rd Sem	24MIC0347T	Introduction of Chordates	4	4	30	70	100	3
	24MIC0348T	Plant Biotechnology and Economic Botany	4	4	30	70	100	3
4 th Sem	24MIC0447T	Ecology and Environment	4	4	30	70	100	3
	24MIC0448T	Diversity of Lower and Higher Cryptogams	4	4	30	70	100	3
5 th Sem	24MIC0547T	Applied Zoology	4	4	30	70	100	3
	24MIC0548T	Floriculture and Medicinal Plants	4	4	30	70	100	3

Hand

Guru Jambheshwar University of Science and Technology
Hisar-125001, Haryana
(‘A+’ NAAC Accredited State Govt. University)

Scheme for Integrated Teacher Education Programme
Name of the Programme: B.A. B.Ed.
According to NCTE and National Education Policy-2020

Pool of Minor Courses

Semester	Course Code	Nomenclature of Paper/Course	Credits	Contact Hours	Internal Marks	External Marks	Total Marks	Duration of Exam (Hrs)
Even Semesters	24MIN0212T	Introduction to Phonetics and Linguistics ✓	4	4	30	70	100	3
	24MIN0213T	Basic and Contemporary Study of Human Geography ✓	4	4	30	70	100	3
	24MIN0214T	Principles of Microeconomics	4	4	30	70	100	3
	24MIN0215T	Basic Psychology Processes ✓	4	4	30	70	100	3
	24MIN0231T	History of India from the Earliest Times Up to 300CE.	4	4	30	70	100	3
	24MIC0445T	History of India from the CE.1206 to 1707	4	4	30	70	100	3
	24MIC0232T	Principles of Political Science	4	4	30	70	100	3
	24MIC0446T	Political Theory	4	4	30	70	100	3
	24MIC0441T	Introduction to Prose and Basic Composition ✓	4	4	30	70	100	3
	24MIC0442T	Cognitive Psychology ✓	4	4	30	70	100	3
	24MIC0443T	Indian Economy	4	4	30	70	100	3
	24MIC0444T	Geography of India	4	4	30	70	100	3
Odd Semesters	24MIC0341T	History of Modern Drama	4	4	30	70	100	3
	24MIC0342T	Individual Differences and Social Psychology ✓	4	4	30	70	100	3
	24MIC0343T	Indian Economy ✓	4	4	30	70	100	3
	24MIC0344T	Environment and Resource Geography ✓	4	4	30	70	100	3
	24MICO345T	History of India from the CE.300 to 1206	4		30	70	100	3
	24MIC0545T	History of India from the CE. 1707 to 1950	4	4	30	70	100	3
	24MIC0346T	Foreign Policy of India	4	4	30	70	100	3
	24MIC0546T	Indian Political System	4	4	30	70	100	3

***Note: Students can take one minor subject from the pool of available subjects. The selection of the minor subject is subject to faculty availability and timetable feasibility.**

COURSE CODE: 24M7K0233T
Introduction of Non-Chordates

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessments: 70

Credits: 4

Note: The examiner is required to set 9 questions in all. The first question will be compulsory consisting of 07 short questions covering the entire syllabus consisting of 02 marks each. In addition to that, 8 questions will be set consisting of two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit in addition and the compulsory question no. 1. All questions shall carry equal marks.

Learning Outcomes: After completing the course, students will be able to:

- Explain and classify major invertebrate phyla from Protozoa to Hemichordata based on their general characteristics.
- Describe structure and morphology of representative organisms such as Amoeba, sponge, earthworm, insects, snail, and starfish.
- Analyze ecological roles of different invertebrates in soil fertility, marine ecosystems, and biodiversity maintenance.
- Evaluate economic importance of invertebrates including beneficial forms (honey bee, earthworm) and harmful pests or parasites (grasshopper, snails, helminths).
- Apply biological knowledge to understand environmental balance, agriculture, and human welfare.

UNIT I

Phylum Protozoa: General characters and classification of Protozoa with their ecological and economic importance. Study of Amoeba with special reference to its structure and economic importance.

Phylum Porifera: General characters and classification of Porifera with their ecological and economic importance. Study of Sponges with special reference to its structure and economic importance.

UNIT II

Phylum Coelentrata: General characters and classification of Coelenterate with their ecological and economic importance with special reference to corals.

Phylum Platyhelminthes and Aschelminths: General characters and classification of Helminthes with their ecological and economic importance.

UNIT III

Phylum Annelida: General characters and classification of Annelida with their ecological and economic importance. Morphology of earthworm and its ecological role, Economic importance of Leech.

Phylum Arthropoda: General characters and classification of Arthropods with their ecological and economic importance. Study of basic characters of insects, Insects as pest: Grasshopper, Economic importance of Honey Bee.

UNIT IV

Phylum Mollusca: General characters and classification of Mollusca with their ecological and economic importance. Study of basic characters of snails. Snails as pest in Paddy fields.

Phylum Echinodermata: General characters and classification of Echinoderms with their ecological and economic importance with special reference to study of basic characters of Star fish.

Phylum Hemichordata: General characters of Hemichordates with examples.

Suggested Readings:

- Jordan, E.L and Verma, P.S. 2009. Invertebrate Zoology, S.Chand and Co. Ltd. New Delhi.
- Ayyar, F.K and Ananthkrishnan, T.1992. Manual of Zoology Vol.1, Invertebrates Part I and II, S.Viswanathan Printers and Publishers Pvt. Ltd. Madras.
- Kotpal, R.L. 2021. Zoology Invertebrates. Rastogi Publications, Meerut.
- Nair, N.C., Arumugam, N., Soundarapandian, N., Murugan, T. and Leelavathy, S.2010. A textbook of Invertebrates. Saras Publication, Nagercoil.
- Rastogi V.B. 2021. Invertebrate Zoology. Kedar Nath Ram Nath, Meerut
- Lal S.S. (2019) Practical Zoology Invertebrates. Rastogi Publications, Meerut
- Anderson D.T. (1999) Invertebrate Zoology, Oxford University Press
- Edward, E., Ruppert, Robert, D. and Barnes (1994). Invertebrate Zoology; Saunders College Pub.

COURSE CODE: 24MIC0234T

Basics of Botany

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessments: 70

Credits: 4

Note: The examiner is required to set 9 questions in all. The first question will be compulsory consisting of 07 short questions covering the entire syllabus consisting of 02 marks each. In addition to that, 8 questions will be set consisting of two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit in addition and the compulsory question no. 1. All questions shall carry equal marks.

Learning Outcomes: After completing the course, students will be able to:

- Explain the scope of botany, plant diversity, and morphology of major plant parts and their functions.
- Describe basic plant physiological processes including osmosis, diffusion, imbibition, photosynthesis, and transpiration.
- Analyze plant adaptations and ecological relationships, including pollination, xerophytes, hydrophytes, and abiotic factors affecting plants.
- Evaluate ecological and economic importance of plants and the need for conservation and botanical gardens.
- Understand plant nutrition, respiration, and growth regulation through major plant hormones and their functions

Unit 1

Definition, Aim and Scope of Botany, Plant Diversity, Plant and Human Life. Different forms of plants, General account on Habit, Plant parts and their functions.

Morphology of plant parts in reference to Stem, Root, Leaf, Flower and Fruit.

UNIT II

Basics of Plant Physiology, Osmosis, Diffusion, Imbibition

Introduction to Photosynthesis, Its Site and Products, Importance of Photosynthesis, Transpiration and its Significance

UNIT III

Pollination and pollinating agents, Xerophytes and Hydrophytes plants with common examples, Abiotic factors affecting the Plants.

Conservation, Botanical Garden, Ecological and Economic Importance of Plants.

UNIT IV

Introduction to Plant Physiology, Basic concept and Importance of Photosynthesis Respiration. Mineral nutrition in Plants, Plant Growth Hormone: Auxin, Gibberellin, Abscisic acid and Ethylene.

Suggested Readings:

- *College Botany, Vol. I & II Ed. 2011, Gangule, Das & Datta, Publisher New Central Book Agency (P) Ltd., New Delhi*
- *Elementary Botany, Ed. 1898. Percy Groom, George Bell & Sons, London.*
- *A text Book of Botany, Ed. 12th 2015, P.S. Trivedi & S.N. Pandey, Vikas Publishing.*
- *Elementary Botany, Ed. I, 2020, Pushp Sharma: Agrobios.*
- *A Text Book of Botany Vol I & II, by Pandey B.N., Mishra R.P. & Trivedi P.B.*
- *College Botany, by B.P. Pandey*
- *Hopkins, W. G., & Hüner, N. P. A. (2009). Introduction to Plant Physiology, 4th edition. New Delhi, Delhi: Wiley India Pvt. Ltd.*
- *Agharya (2022), Basic Botany (in Hindi), Ram Prasad Publications*

COURSE CODE: 24MIC0347T
Introduction of Chordates

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessments: 70

Credits: 4

Note: The examiner is required to set 9 questions in all. The first question will be compulsory consisting of 07 short questions covering the entire syllabus consisting of 02 marks each. In addition to that, 8 questions will be set consisting of two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit in addition and the compulsory question no. 1. All questions shall carry equal marks.

Learner Outcome: After completing the course, learners will be able to:

- Explain the origin, evolution, and classification of chordates, including protochordates and vertebrate groups.
- Describe morphological and anatomical features of major vertebrate classes such as Cyclostomata, Pisces, Amphibia, Reptilia, Aves, and Mammals.
- Identify important species of fishes, amphibians, reptiles, birds, and mammals with reference to Indian biodiversity.
- Analyze ecological roles and adaptations such as parental care, flight adaptation, aquatic adaptations, and adaptive radiation.
- Evaluate economic and ecological importance of vertebrates in agriculture, fisheries, and human welfare.

UNIT I

Chordates: Salient features of chordates, Principles of classification, Origin and evolutionary tree of chordates.

Protochordates: Urochordata & Cephalochordates: Systematic position, distribution, ecology, morphology and affinities.

UNIT II

Cyclostomata: General characters and classification up to order level, Ecological significance of cyclostomes.

Pisces: General characters and classification up to sub-classes with examples emphasizing their biodiversity, Scales & Fins. Characteristic features of freshwater and marine fishes, Edible fishes of India, Composite fish culture.

UNIT III

Amphibia: General Characters of class Amphibia. Parental care in amphibians, Role of amphibians in ecosystem, Identification of turtles and tortoise, Frog and Toad.

Reptilia: General Characters of class Reptilia, Extinct reptiles, Poisonous apparatus in snakes. Common reptiles of India, Identification of Poisonous and non-poisonous snakes, Difference between Crocodile and Gharial.

UNIT IV

Aves: General Characters of class Aves. Flight/Aerial adaptation in birds, Archaeopteryx as missing link. Common birds of India, Migration in birds, Commercial uses of birds, Role of birds in agriculture.

Mammals: General Characters and economic importance of Mammals, Adaptive radiations of mammals, dentition in mammals.

Suggested Readings:

- Kotpal R. L. Modern Textbook of Zoology
- Jordan, E.L. and Verma. Chordate Zoology.
- Barrington, E. J. W. The Biology of Hemichordata and Protochordata. Oliver and Boyd, Edinburgh.
- Walters, H.E. and Sayles, L.D. Biology of vertebrates. MacMillan & Co., New York.
- Kent C.G. Comparative anatomy of vertebrates.
- Lal S. S. Practical Zoology Vertebrate.

COURSE CODE: 24MIC03487

Plant Biotechnology and Economic Botany

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessments: 70

Credits: 4

Note: The examiner is required to set 9 questions in all. The first question will be compulsory consisting of 07 short questions covering the entire syllabus consisting of 02 marks each. In addition to that, 8 questions will be set consisting of two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit in addition and the compulsory question no. 1. All questions shall carry equal marks.

Learning Outcomes: After completing the course, students will be able to:

- Explain principles and applications of recombinant DNA technology including PCR, cloning vectors, DNA fingerprinting, blotting techniques, and molecular markers.
- Describe plant biotechnology techniques such as plant tissue culture, micropropagation, haploid production, and the role of *Agrobacterium* in genetic engineering.
- Understand centres of origin of crops and classify major cereals, pulses, vegetables, and spices based on morphology and economic uses.
- Identify economically important plants including beverages, oil-yielding crops, fibres, medicinal plants, and rubber with their processing and applications.
- Evaluate the agricultural, industrial, and medicinal importance of plant resources in human welfare and sustainable development.

UNIT - I

Recombinant DNA Technology, Restriction endonucleases, Cloning vector - Plasmid, Bacterial artificial chromosome (BACs), Yeast artificial chromosome (YACs), cDNA library, PCR and its application, Blotting techniques - Northern, Southern and Western blotting, DNA fingerprinting

UNIT - II

Molecular DNA marker (RAPD and RFLP), DNA sequencing; Plant tissue culture, Cellular totipotency, Micropropagation, Haploid production (Androgenesis & Gynogenesis), Brief account of Embryo culture, Biology of Agro-bacterium

UNIT - III

Concept of centres of origin, their importance with reference to Vavilov's work. Cereals: Wheat and Rice-Origin, morphology, uses; Vegetables: Potato and Tomato (Origin, morphology, uses); Pulses: Gram, Pea, and Soybean (Botanical name, family, part used, morphology and uses); Spices: Clove, Ginger, Turmeric and Black pepper (Botanical name, family, part used, morphology and uses).

UNIT - IV

Beverages: Tea and Coffee (morphology, processing, and uses); Oils: Groundnut, mustard and coconut (Botanical name, family, part used, morphology and uses); Fibres: Cotton and Jute (morphology, processing, and uses); Medicinal plants: Cinchona, Rauwolfia and Opium (Botanical name, family, part used, morphology and uses); Rubber: Hevea (morphology, processing, and uses).

Suggested Readings:

- Kochhar, S.L. (2011). Economic Botany in the Tropics, MacMillan Publishers India Ltd., New Delhi. 4th edition.
- Ashok Bendre and Ashok Kumar, 2000. Economic Botany, Rastogi Publications, U.P.
- Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
- Balasubramanian, D., C. F. A. Bryce, K. Dharmalingam, J. Green and K. Jayaraman. 2004. Biotechnology. Universities Press (India) Private Limited, Hyderabad.
- Channarayappa. 2007. Molecular Biotechnology – Principles and Practices. Universities Press (India) Private Limited, Hyderabad.
- Chawala, H. S. 2002. Introduction to Plant Biotechnology. Oxford & IBH Publishing Company, New Delhi.
- Dubey, R. C. 2001. A Textbook of Biotechnology. S. Chand & Company Ltd., New Delhi.
- Jha, T.B. and B. Ghosh, 2005. Plant Tissue Culture – Basic and Applied. Universities Press (India) Private Limited, Hyderabad.
- P.K Gupta, 2019. Elements of Biotechnology. Rastogi Publications, U.P.
- Verma V, 1974. A Textbook of Economic Botany. Emkay Publications, Delhi.
- Plummer, D.T. (1996). An Introduction to Practical Biochemistry. Tata McGraw- Hill Publishing Co. Ltd. New Delhi. 3rd edition.

COURSE CODE: 24MIC0447T
Ecology and Environment

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessments: 70

Credits: 4

Note: The examiner is required to set 9 questions in all. The first question will be compulsory consisting of 07 short questions covering the entire syllabus consisting of 02 marks each. In addition to that, 8 questions will be set consisting of two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit in addition and the compulsory question no. 1. All questions shall carry equal marks.

Learning Outcomes: After completing the course, students will be able to:

- Explain environmental components and ecological concepts including habitat, niche, biomes, and biogeographical zones of India.
- Analyze population and community ecology, species interactions, biodiversity patterns, and community structure.
- Describe ecosystem structure and functioning, energy flow, nutrient cycling, productivity, and ecological succession.
- Evaluate ecological processes in terrestrial and aquatic ecosystems with reference to Indian environments.
- Apply principles of applied ecology and conservation biology to understand biodiversity conservation, environmental pollution, and management strategies

UNIT I

Environmental components: biotic and abiotic components and their interactions.
Concept of habitat and niche; Major terrestrial biomes; Biogeographical zones of India.
Population and Community ecology:
Characteristics of a population; life history strategies (r and K selection); concept of metapopulation – demes and dispersal.

UNIT II

Species Interactions: Types of interactions, interspecific competition.
Community Ecology: Nature of communities; community structure and attributes; levels of species diversity and its measurement; edges and ecotones.

UNIT III

Ecosystem: structure and function; energy flow and mineral cycling (C, N, P); primary production and decomposition; structure and function of some Indian ecosystems: terrestrial and aquatic.

Ecological Successions:

Types; mechanisms; changes involved in succession; concept of climax.

UNIT IV

Applied Ecology and Conservation Biology:

Environmental pollution; biodiversity: status, monitoring and documentation; biodiversity management approaches; Principles of conservation and its management; Project Tiger; Biosphere reserves.

Suggested Readings:

- H.R. Singh & Neeraj Kumar (2014) "Ecology and Environmental Science" Vishal Publishing Co.
- P D Sharma (2017) "Ecology and Environment" Rastogi Publications
- Eugene Odum (2017) "Fundamentals of Ecology" Cengage India Private Limited Publishers, Noida
- Pranav Kumar and Usha Mina (2021) "Fundamentals of Ecology and Environment" 3rd Edition, Pathfinder Academy
- N. Arumugam "Concepts of Ecology" Saras Publication.

COURSE CODE: 24X11E0448T

Diversity of Lower and Higher Cryptogams

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessments: 70

Credits: 4

Note: The examiner is required to set 9 questions in all. The first question will be compulsory consisting of 07 short questions covering the entire syllabus consisting of 02 marks each. In addition to that, 8 questions will be set consisting of two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit in addition and the compulsory question no. 1. All questions shall carry equal marks.

Learning Outcomes: After completing the course, students will be able to:

- Explain general characteristics and classification of Algae, Fungi, Bryophytes, and Pteridophytes.
- Describe structure and life cycles of representative genera such as *Nostoc*, *Volvox*, *Ectocarpus*, *Phytophthora*, *Penicillium*, *Puccinia*, *Marchantia*, *Funaria*, *Selaginella*, and *Pteris*.
- Understand ecological and economic importance of lower plant groups including algae, fungi, lichens, bryophytes, and pteridophytes.
- Analyze evolutionary trends in early land plants, including fossil plant *Rhynia*.
- Apply knowledge of plant diversity to understand plant evolution and ecological adaptations.

UNIT - I

Algae: General characters, Classification up to classes (G.M. Smith, 1955), Economic Importance, and Life Cycle (excluding development) of *Nostoc* (Cyanophyceae), *Volvox* (Chlorophyceae), *Ectocarpus* (Phaeophyceae).

UNIT - II

Fungi: General characters, Classification up to classes (Alexopoulos and Mims, 1979), Economic Importance, and Life Cycle (excluding development) of *Phytophthora* (Mastigomycotina), *Penicillium* (Ascomycotina), *Puccinia* (Basidiomycotina). General account of Lichens.

UNIT - III

Bryophyta: General characteristics, Classification up to classes (Smith), Structure and Reproduction (excluding development) of *Marchantia* (Hepaticopsida) and *Funaria* (Bryopsida), Ecological and Economic Importance of Bryophytes.

UNIT - IV

Pteridophyta: General characters, Classification up to classes (Smith), Structure and Reproduction (excluding development) of *Selaginella* (Lycopsida) and *Pteris* (Pteropsida), Ecological and Economic Importance of Pteridophytes. Fossil Plant: *Rhynia*.

Suggested Readings:

- Thakur, A.K. and Bassi, S.K. (2008). Diversity of Microbes and Cryptogams. S. Chand & Co., Delhi.
- Willey, J.M., Sherwood, L., Woolverton, C.J, Prescott, L.M. and Willey, J.M. (2011). Prescott's Microbiology. New York, McGraw-Hill.

COURSE CODE: 24MICO547T
Applied Zoology

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessments: 70

Credits: 4

Note: The examiner is required to set 9 questions in all. The first question will be compulsory consisting of 07 short questions covering the entire syllabus consisting of 02 marks each. In addition to that, 8 questions will be set consisting of two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit in addition and the compulsory question no. 1. All questions shall carry equal marks.

Learning Outcomes: After completing the course, students will be able to:

- Explain principles and practices of animal-based industries including apiculture, sericulture, prawn culture, pearl culture, and pisciculture.
- Describe life cycles, rearing techniques, and management methods of economically important species used in agriculture and aquaculture.
- Analyze production processes and products such as honey, silk, pearls, fish products, poultry products, fur, and leather.
- Evaluate economic importance and commercial applications of animal resources in food production, industry, and pharmaceuticals.
- Apply scientific knowledge of animal husbandry and culture techniques for sustainable utilization of biological resources.

UNIT I

Apiculture: History and introduction; Honey bee and kinds; Social organization and colony nests; Lifecycle; Bee keeping, selection, methods, products; Honey composition, quality and importance.

Sericulture: Silkworm moth species and their life cycle; Rearing of silkworm, silk reeling, twisting and weaving; Silk composition, kind and uses; Diseases and pests of silkworm.

UNIT II

Prawn Culture: Introduction to prawns, species; Prawn farming methods, processing and preservation of prawns.

Pearl Culture: Historical background, species; Pearl formation, composition, quality and commercial value; Artificial culturing, synthetic pearl types and their manufacturing, methods of harvesting.

UNIT III

Pisciculture: Economically important fresh water and marine fishes; Fish culture, Fish farming technologies; Problems of seed collection from natural resources; Induced breeding methods; Products and by-products from pisciculture.

Poultry: Nomenclature and breeds of poultry birds; Egg structure and quality, nutritive values, factors affecting size and egg processing; Poultry products and by-products.

COURSE CODE: 24MIC05487

Floriculture and Medicinal Plants

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessments: 70

Credits: 4

Note: The examiner is required to set 9 questions in all. The first question will be compulsory consisting of 07 short questions covering the entire syllabus consisting of 02 marks each. In addition to that, 8 questions will be set consisting of two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit in addition and the compulsory question no. 1. All questions shall carry equal marks

Learning Outcomes: After completing the course, students will be able to:

- Explain the scope and importance of floriculture and demonstrate nursery management techniques including seed and vegetative propagation and routine garden operations.
- Apply principles of garden design and management, and analyze environmental factors affecting flower production and cut-flower handling.
- Identify common ornamental plants, cacti, and succulents and understand their cultivation and horticultural value.
- Understand the importance of medicinal plants and traditional medicinal systems, including their cultivation and plantation practices.
- Describe morphology and medicinal uses of important medicinal plants and evaluate their role in health care and economic development.

UNIT-I

History, Importance and Scope of Floriculture; Nursery management: Seed and Vegetative propagation.

Some routine garden operations: Soil sterilization, Seed sowing, Pricking, Planting and Transplanting, Shading.

Common Garden Flowering plants: Dianthus, Gladiolus, Chrysanthemum, Bougainvillea, Dahlia, China Rose; Cacti and Succulents.

UNIT-II

Principles of garden design: English and Mughal; Features of Garden (Garden wall, Fencing, Hedge, Edging, Lawn, Borders).

Factors affecting flower production (Soil, Temperature, Light); Production and packaging of cut flowers.

Gardens of India (Acharya JC Bose Indian Botanical Garden, Kolkata; Amrit Udyan, Delhi)

UNIT III

Introduction to Medicinal plants - Definition, Importance, Present and Future needs of Medicinal plants.

Brief account of Traditional Medicinal Systems - Ayurveda, Siddha, Unani and Homeopathy. Cultivation, Nursery Raising and Plantation of Medicinal Plant.

UNIT IV

Morphology and Medicinal importance of Turmeric, Ginger, Clove, Elaichi.
Morphology and Medicinal importance of Tulsi, Aloe, Giloy, Ashwagandha.
Morphology and Medicinal importance of Amla, Neem, Mulethi, Swanjana.

Suggested Readings:

- Panda H., Handbook of Ayurvedic Medicines, National Institute of Industrial Research, Delhi 7.
- CSIR – Cultivation and Utilization of Medicinal Plants, Vedmata Gayatri Trust, Shaktikunj Hardwar 2004.
- Brahmavarchas, Ayurveda ka Pran: Vanoshadhi vigyan, Vedmata Gayatri Trust, Shaktikunj Hardwar 2004.
- Atal C. K. and Kapoor B.M., Cultivation and Utilization of Medicinal Plants, RRL Jammu Tawi, 1982.
- Dutt Ashwin, An Introduction to Medicinal Plants, Adhyayan Publishers and distributors, 2009.
- S.K. Bhattacharjee and Lakshman Chandran De. 2010. Advanced Commercial Floriculture, Vols. I and II Aavishkar Pub.; Second Revised and Enlarged Edition, 798.
- S. Prasad and U. Kumar. 2010. A Handbook of Floriculture). Agrobios (India)
- John M. Dole and Harold F. Wilkins. 2004. Floriculture: Principles and Species : Prentice Hall; 2 edition (2nd Edition)
- Allan M. Armitage and Judy M. Laushman. 2008 Speciality Cut Flowers: The Production of Annuals, Perennials, Bulbs and Woody Plants for Fresh and Dried Cut Flowers. Timber Press; REV
- Advances in ornamental Horticulture, S.K. Bhattacharjee. 2006, Pointer Publishers.

Course Code : 24MIN0231T

HISTORY OF INDIA FROM THE EARLIEST TIMES UPTO 300 CE

Maximum Marks: 100

Time Allowed: 3 hours

Internal Assessment: 30

Credits: 4

External Assessment: 70

Note: The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus. In addition to that eight more questions will be set. Two questions from each unit. The students will be required to attempt five questions in all selecting one question from each unit in addition to compulsory question No 1. All questions shall carry equal marks.

Learner outcomes: The students will be able to:

- Explain the nature and importance of literary and archaeological sources in reconstructing ancient Indian history.
- Describe the development of pre-historic and proto-historic cultures, including the Harappan Civilization.
- Analyze the socio-political and economic transformations during the Vedic and Mahajanapada periods, including the rise of Magadha.
- Evaluate the impact of religious movements such as Jainism and Buddhism, and assess the significance of Alexander the Great's invasion.
- Examine the rise, administration, and decline of the Mauryan Empire and assess developments during the post-Mauryan and Sangam periods.

Unit 1.

Sources and pre-historic cultures: Sources of ancient Indian history: Literary and Archaeological. Pre-historic Cultures: Paleolithic, Mesolithic and Neolithic.

Unit 2.

Proto-historic culture: Harappan civilization-origin, extent, dominant features and decline
Early and Later Vedic Period: literature, political institution, social and economic condition, religious practices and ideas.

Unit 3

Mahajanpada age and Religious movements, Alexander's invasion: Sixteen Mahajanpada and rise of Magadha (Bimbisara to Nanda dynasty) Religious movement: Jainism and Buddhism, Alexander's invasion and its impact.

Unit 4.

Mauryan & Post Mauryan age: Rise of Mauryan empire, Ashoka dharma, administration & decline. Political history of Sunga, Satavahana and Kushana, Sangam age: literature, society, economy and polity

References:

1. R. S. Sharma. *India's Ancient Past*. New Delhi: Oxford University Press, 2006.
2. Upinder Singh. *A History of Ancient and Early Medieval India*. New Delhi: Pearson, 2015.
3. Uma Chakravarti. *The Social Dimensions of Early Buddhism*. New Delhi: Oxford University Press, 1997.
4. Bridget Allchin, and F. Raymond Allchin. *The Rise of Civilization in India and Pakistan*. New Delhi: Cambridge University Press, 2009.
5. R. C. Majumdar, and A. D. Pusalker, eds. *The Vedic Age*. Bombay: Bharatiya Vidya Bhavan, 1951.

6. R. S. Sharma. *Aspects of Political Ideas and Institutions in Ancient India*. Delhi: Motilal Banarsidass, 1959.
7. Gregory L. Possehl. *The Indus Civilization: A Contemporary Perspective*. New Delhi: Vistaar Publications, 2001.
8. B. N. Mukherjee. *The Rise and Fall of the Kushana Empire*. Calcutta: Firma KLM Private Limited, 1988.
9. Romila Thapar. *Recent Perspectives of Early Indian History*. Bombay: Popular Prakashan, 1995

Course Code: 24MHC0445J

HISTORY OF INDIA FROM THE C.1206 TO 1707

Maximum Marks: 100

Time Allowed: 3 hours

Internal Assessment: 30

Credits: 4

External Assessment: 70

Note: The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus. In addition to that eight more questions will be set. Two questions from each unit. The students will be required to attempt five questions in all selecting one question from each unit in addition to compulsory question No 1. All questions shall carry equal marks.

Learner outcomes: After successful completion of the course, learners will be able to:

- Explain the foundation, expansion, administration, and socio-economic structure of the Delhi Sultanate, including the Iqta system.
- Analyze the political developments of provincial kingdoms such as the Vijayanagara Empire, Bahmani Sultanate, and the Sur Empire.
- Evaluate the impact of Bhakti and Sufi movements and examine religious policies under the Mughal Empire from Akbar to Aurangzeb.
- Assess the administrative, economic, and religious features of the Mughal state and its consolidation.
- Analyze the rise of Maratha power under Shivaji and the Peshwas, and explain the decline of Mughal authority and emergence of regional powers.

Unit 1

The Sultanate Period: Foundation, Expansion, & Consolidation, The Iqta System. Administrative & Economic & Religious life during Sultanate Period.

Unit 2

The Provincial Kingdoms: Vijaynagar and Behmani kingdoms, The Second Afghan State (Sur Kingdom)

Unit 3

Socio-Religious Movements: Bhakti & Sufi movements, Religion under the Mughals (Akbar to Aurangzeb)

Unit 4

The Mughal Dynasty & the Maratha Power: Emergence and Consolidation of the State. Akbar to Aurangzeb; Administrative, Economic and Religious life. The Maratha Power: Shivaji, Peshwas and the Maratha Confederacy

References:

1. M. Habib, and K. A. Nizami, eds. *Comprehensive History of India: The Delhi Sultanate (AD 1206–1526)*. New Delhi: People's Publishing House, 1970.
2. S. A. A. Rizvi. *A History of Sufism in India, Vol. I*. New Delhi: Munshiram Manoharlal, 2003.
3. Sunil Kumar. *The Emergence of the Delhi Sultanate*. Delhi: Permanent Black, 2007.
4. Henry Heras. *South India under the Vijayanagar Empire*. Vols. I–II. New Delhi: Asian Educational Services, 1988 (reprint).
5. Satish Chandra. *Historiography, Religion and State in Medieval India*. New Delhi: Har-Anand Publications, 1996.
6. Satish Chandra. *Medieval India: From Sultanate to the Mughals*. 2 vols. New Delhi: Har-Anand Publications, 1997–2005.
7. H. K. Sherwani. *The Bahmani Kingdom*. Hyderabad: Munshiram Manoharlal, 1953.

COURSE CODE: 24MIC0232T

Principles of Political Science

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

External Assessment: 70

Credits: 4

Note: The examiner is required to set nine questions in all. The first question will be compulsory consisting of five short questions covering the entire syllabus. In addition to that eight more questions will be set. Two questions from each unit. The students will be required to attempt five questions in all selecting one question from each unit in addition to compulsory question No 1. All questions shall carry equal marks.

Course Outcome:

- Explain the meaning nature and scope political science
- Understand the concept of State
- Explain the various theories of origin of state

Unit 1

- Political Science: Meaning, Nature and Scope, Traditional & Modern View.
- Relationship of Political Science with Economics, History, Sociology and Psychology.

Unit 2

- State: Definition, Elements and its distinction from Government and Society.
- Theories of the Origin of State: Social Contract, Historical/Evolutionary and Marxian Theory.

Unit 3

- State: Marxian Perspective, Gandhian Perspective.
- Nature of State: Welfare State, Developmental State

Unit 4

- Sovereignty: Definition, Attributes and Types of Sovereignty.
- Theories of Sovereignty: Monistic and Pluralistic.
- Determinants of Political Participation, Types of Political representation

Suggested Readings:

1. J. C. Johari, *Principles of Political Science*, Sterling Publishers, New Delhi.
2. S.P. Verma, *Political Theory*, Geetanjali Publishing House, New Delhi.
3. A.C. Kapur, *Principles of Political Science*, S. Chand & Company, New Delhi.
4. E. Asirvatham, *Political Theory*, S. Chand & Company, New Delhi.
5. M.P. Jain, *Political Theory*, Authors Guild Publication, Delhi, (Punjabi & Hindi).
6. David Easton, *The Political System*, Scientific Book Agency, Calcutta.
7. D.C. Bhattacharya, *Political Theory*, Vijay Publishing House, Calcutta.
8. O.P. Gauba, *An Introduction to Political Theory*, Macmillan Indian Ltd., New Delhi.
9. Satish Kumar Sharma, *Adhunik Rajnitik Vishleshan*, Publication Bureau, Punjabi University, Patiala.
10. Andrew Heywood, *An Introduction to Political Theory*, New Delhi, Palgrave Publications, 2004.

COURSE CODE: 24MIC0446T
Political Theory

Maximum Marks: 100

Internal Assessment: 30

Time Allowed: 3 hours

Credits: 4

External Assessment: 70

Note: The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus. In addition to that eight more questions will be set. Two questions from each unit. The students will be required to attempt five questions in all selecting one question from each unit in addition to compulsory question No 1. All questions shall carry equal marks.

Course Outcome: After the completion of the course the students will be able to

- Understand the Political system and culture
- Analyse the difference between major political concepts

Unit 1

- Political System: Meaning, Characteristics and Functions
- Political Culture: Meaning, Characteristics and Types
- Political Socialisation: Meaning, Characteristics and Agencies

Unit 2

- Power, Meaning, Nature and Features
- Authority: Meaning, Nature and Types
- Legitimacy: Meaning, Nature and Types

Unit 3

- Rights and Duties: Meaning, Types and Relationship between the rights and duties
- Liberty: Meaning, Types and its Safeguards
- Equality: Meaning, Types and Relationship between Liberty and Equality

Unit 4

- Justice: Meaning and its various Dimensions
- Democracy: Meaning, Characteristics and Types
- Theories of Democracy: Liberal, Marxian and Elitist Theory

Recommended Books:-

1. J. C. Johari, *Principles of Political Science*, Sterling Publishers, New Delhi.
2. S.P. Verma, *Political Theory*, Geetanjali Publishing House, New Delhi.
3. A.C. Kapur, *Principles of Political Science*, S. Chand & Company, New Delhi.
4. E. Ashirvatham, *Political Theory*, S. Chand & Company, New Delhi.
5. M.P. Jain, *Political Theory*, Authors Guild Publication, Delhi, (Punjabi & Hindi).
6. David Easton, *The Political System*, Scientific Book Agency, Calcutta.
7. D.C. Bhattacharya, *Political Theory*, Vijay Publishing House, Calcutta.
8. O.P. Gauba, *An Introduction to Political Theory*, Macmillan Indian Ltd., New Delhi

Course Code: 24MIC0345T
HISTORY OF INDIA FROM THE C.300 TO 1206

Maximum Marks: 100

Time Allowed: 3 hours

Internal Assessment: 30

Credits: 4

External Assessment: 70

Note: The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus. In addition to that eight more questions will be set. Two questions from each unit. The students will be required to attempt five questions in all selecting one question from each unit in addition to compulsory question No 1. All questions shall carry equal marks

Learner outcomes: After successful completion of the course, learners will be able to:

- Explain the origin, rise, administration, cultural achievements, and decline of the Gupta Empire and assess its historical significance.
- Analyze the political developments under Harsha and evaluate the impact of the Hunas invasion on North India.
- Examine the polity and administrative systems of major South Indian dynasties including the Pallava dynasty, Rashtrakuta dynasty, and Chola dynasty.
- Describe the political structure of Rajput states and the role of the Pala, Pratihara, and Chahmana dynasties in North India.
- Evaluate the causes and consequences of Arab and Turkish invasions and analyze the political conditions leading to the establishment of the Delhi Sultanate.

Unit 1

The Gupta Age: Origin, Rise and decline, Administration, Literature, Science and Technology

Unit 2

Harsha and His Times: Harsha's Kingdom and Administration, Hunas invasion and its impact

Unit 3

South India: Polity of Pallavas and Rashtrakutas, Polity and administration of Cholas

Unit 4

North India & Establishment of the Sultanate: Origin of Rajputas, Polity of Pala, Pratiharas and Chahmans, Arabs and Turkish invasion and its impacts, Struggle for Power in Northern India.

References:

1. Upinder Singh. *A History of Ancient and Early Medieval India*. New Delhi: Pearson, 2015.
2. B. D. Chattopadhyaya. *The Making of Early Medieval India*. New Delhi: Oxford University Press, 1994.
3. R. S. Sharma. *Material Culture and Social Formation in Ancient India*. New Delhi: Macmillan, 1983.
4. R. S. Sharma. *India's Ancient Past*. New Delhi: Oxford University Press, 2006.
5. R. C. Majumdar, and A. D. Pusalker, eds. *The Classical Age*. Bombay: Bharatiya Vidya Bhavan, 1954.
6. R. C. Majumdar, and A. D. Pusalker, eds. *The Struggle for Empire*. Bombay: Bharatiya Vidya Bhavan, 1957.
7. R. C. Majumdar, and A. D. Pusalker, eds. *The Age of Imperial Kanauj*. Bombay: Bharatiya Vidya Bhavan, 1955.
8. Romila Thapar. *Recent Perspectives of Early Indian History*. Bombay: Popular Prakashan, 1995.

Course Code: 24 N/C 0545 T
HISTORY OF INDIA FROM THE C.1707 TO 1950

Maximum Marks: 100

Time Allowed: 3 hours

Internal Assessment: 30

Credits: 4

External Assessment: 70

Note: The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus. In addition to that eight more questions will be set. Two questions from each unit. The students will be required to attempt five questions in all selecting one question from each unit in addition to compulsory question No 1. All questions shall carry equal marks.

Learner outcomes: After successful completion of the course, learners will be able to:

- Explain the foundation, expansion, and administrative structure of the Delhi Sultanate and assess its socio-economic impact.
- Analyze the political and administrative systems of major regional kingdoms including the Vijayanagara Empire, Bahmani Sultanate, and the Sur Empire.
- Evaluate the nature and impact of Bhakti and Sufi movements and examine religious developments under the Mughal Empire.
- Examine the administrative, economic, and religious policies of the Mughal state from Akbar to Aurangzeb.
- Assess the rise of Maratha power under Shivaji and the Peshwas, and analyze the decline of Mughal authority and emergence of regional powers.

Unit 1

Establishment of Colonial power: Interpreting the 18th Century, Colonial economy: Agriculture, Trade & Industry

Unit 2

Uprising of 1857: Causes, Nature, Results and Aftermath.

Unit 3

Socio-Religious Movements in the 19th century: Indian Nationalism, Emergence & Growth Nationalism with focus on Gandhian nationalism

Unit 4

Communalism and Road to Freedom: Communalism; Genesis, Growth and Partition. Freedom, Constituent Assembly, Establishment of the Republic.

References:

1. Ranajit Guha. *Elementary Aspects of Peasant Insurgency in Colonial India*. Delhi: Oxford University Press, 1983.
2. Dadabhai Naoroji. *Poverty and Un-British Rule in India*. London: Swan Sonnenschein & Co., 1901.
3. B. D. Basu. *The Ruin of Indian Trade and Industries*. Calcutta: R. Cambay & Co., 1880.
4. R. C. Dutt. *The Economic History of India under Early British Rule*. London: Kegan Paul, Trench, Trübner & Co., 1902.
5. R. C. Majumdar. *History of the Freedom Movement in India*. 3 vols. Calcutta: Firma K. L. Mukhopadhyay, 1962-1963.
6. V. P. S. Raghuvanshi. *The Indian National Movement*. Delhi: S. Chand & Co., 1966.
7. K. M. Panikkar. *The Foundations of New India*. London: George Allen & Unwin, 1947.
8. S. N. Sen. *History of the Freedom Movement in India*. New Delhi: Publications Division, Government of India, 1957.

COURSE CODE: 24MIC0346T
Foreign Policy of India

Maximum Marks: 100

Internal Assessment: 30

External Assessment: 70

Time Allowed: 3 hours

Credits: 4

Note: The examiner is required to set nine questions in all. The first question will be compulsory consisting of seven short questions covering the entire syllabus. In addition to that eight more questions will be set. Two questions from each unit. The students will be required to attempt five questions in all selecting one question from each unit in addition to compulsory question No 1. All questions shall carry equal marks.

Learner outcomes: By end of this course, learners will be able to:

- Define and describe the core principles guiding India's foreign policy.
- Identify and explain the internal and external factors influencing India's foreign relations.
- Summarize India's historical and contemporary positions in international organizations.
- Analyse India's diplomatic strategies in relation to key countries and regions (e.g., U.S., China, Pakistan, West Asia).
- Evaluate India's policies and responses to global challenges such as nuclear security, terrorism, and climate change.
- Develop critical perspectives on India's evolving role in regional and global politics.

Unit 1

- Meaning & Principles of Foreign Policy. Determinants of India's Foreign Policy, Geographical, Historical, Cultural & Social
- External Factors of India's Foreign Policy- Regional & Global

Unit II

- Continuity & Change in India Foreign Policy.
- India & Non-Alignment Movement. India & United Nations.

Unit III

- India's Act East Policy and West Asia Policy 8. India & US Relations
- Indo- China Relations

Unit IV

- India's Policy Towards Pakistan, Nuclear Weapons & Indian Perspective
- India's Approach to Terrorism & Climate Change.

Suggested Readings:

- K. P. Misra ed. Foreign Policy of India: A Book of Reading (Delhi: Thompson Press, 1977)
- Bimal Prasad India's Foreign Policy: Continuity and Change (New Delhi: Vikas, 1971)
- S.S. Bindra India-Pak Relations (New Delhi: Deep & Deep 1981)
- V.P. Dutt India's Foreign Policy (New Delhi: Vikas, 1984)
- M.S. Rajan India and World Affairs, Asia Publishing House, (Bombay: 1984)
- Appadorai (ed.) Essays in Indian Politics and Foreign Policy (Delhi: Vikas, 1971).
- J. Bandyopadhyaya The Making of India's Foreign Policy (Bombay: Allied 1970)
- Sisir Gupta Kashmir: A Study in India-Pakistan Relations (Allahabad: Orient Publishers, 1972)

COURSE CODE: 24M/C0546T
Indian Political System

Maximum Marks: 100
Internal Assessment: 30
Time Allowed: 3 hours

External Assessment: 70
Credits: 4

Note: The examiner is required to set nine questions in all. The first question will be compulsory consisting of five short questions covering the entire syllabus. In addition to that eight more questions will be set. Two questions from each unit. The students will be required to attempt five questions in all selecting one question from each unit in addition to compulsory question No 1. All questions shall carry equal marks.

Course Outcome: After the completion of the course the students will be able to

- Understand the theory and practice of Federalism in India and process and dynamics of elections in India
- Nature and role of political parties, interest and pressure groups in India

Unit I

Federalism and its Working with reference to Centre-State Relations, Demand For State Autonomy; Emerging Trends in Indian Federalism.

Unit-II

Election Commission, Electoral Process and its Defects and Voting Behavior, Electoral Reforms, Problem of Defection.

Unit-III

Party System in India: National and Regional Political Parties, Interest and Pressure Groups.

Unit-IV

Role of Caste, Religion, Language, Regionalism in India, Politics of Reservation, Emerging Trends and Challenges Before Indian Political System.

Suggested Readings

- G. Austin, The Indian Constitution: Corner Stone of a Nation, Oxford, Oxford University Press, 1966.
- G. Austin, Working a Democratic Constitution: The Indian Experience, Delhi, Oxford University Press, 2000.
- D.D. Basu, An Introduction to the Constitution of India, New Delhi, Prentice Hall, 1994.
- D.D. Basu and B. Parekh (ed.), Crisis and Change in Contemporary India, New Delhi, Sage 1994.
- C.P. Bhambhri, The Indian State: fifty years, New Delhi, Shipra, 1997.
- P. Brass, Politics of India Since Independence, Hyderabad, Orient Longman, 1990.
- P. Brass, Language, Religion and Politics in North India, London, Cambridge University Press, 1974.
- Chanda, Federalism in India: A Study of Union-State Relations, London, George Allen & Unwin, 1965.
- S. Cobridge and J. Harriss, Reinventing India: Liberalization, Hindu Nationalism and Popular Democracy, Delhi, Oxford University Press, 2001.
- B.L. Fadia, State Politics in India, 2 vols. New Delhi, Radiant Publishers, 1984