

Paper II- Indian Political System

Duration : 3 hrs.

M.M. :100

Note : The question paper will contain three sections as under –

Section-A : One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks : 10

Section-B : 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit. Answer approximately in 250 words. Total marks : 50

Section-C : 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 40

Unit- I

Framing of the Indian Constitution-Major Issues, trends and approaches in the Constituent Assembly ; Preamble of the Constitution, Nature of the federal system, Union-State Relationships, Special Status to Certain States and its implications.

Unit- II

Fundamental Rights and Duties Directive Principles of State Policy, Methods of Amendment of Constitution, Secularism.

Unit- III

Union Executive and President power Union Parliament, Supreme Court and Judicial Review.

Unit- IV

Governor, Working of parliamentary system in India, Role of leadership, Coalition Government, Political Parties, Electoral Politics and Election Commission, Electoral reforms.

Unit-V

Major problems to Indian political system : Regionalism, Communalism, Role of Caste in Indian Politics. National Integration, Politics of Reservation, Terrorism.

Selected Readings :

- | | | | |
|-----|--------------------------------|---|---|
| 1. | Alexandrawicz
Cgarles Henry | : | Constitutional Government in India |
| 2. | A.Granville | : | The Indian Consitution: Cornerstone of a Nation |
| 3. | Bose, N.K. | : | Problem of National Integration |
| 4. | Desai,A.R. (Ed.) | : | Peasant Struggle |
| 5. | Glend, Alen | : | Fundamental Rights in India |
| 6. | Kodesia | : | The Problem of National Integration |
| 7. | Kothari, Rajni (Ed.) | : | Party System and Election Studies |
| 8. | Kothari, Rajni | : | Politics in India. |
| 9. | Morris Jones W.H. | : | The Government and Politics in India |
| 10. | Palmer, N.D. | : | The Indian Political System |
| 11. | Pylee, M.V. | : | Constitutional Government in India |
| 12. | Ray, A. | : | Tension Areas in Indian Federal System. |
| 13. | Smith, D.S. | : | India as a Secular State. |
| 14. | Singhvi, L.M. | : | Union- State Relations in India. |
| 15. | Weiner, Mynor | : | State Politics in India. |
| 16. | Johari, J.C. | : | Indian Political System (English & Hindi) |

University of Kota, Kota

B.Sc.- Pt-I (Zoology) Exam.

Scheme:

Paper	Duration	Max. Marks	Min. pass Marks
Paper I	3 hrs.	50	54
Paper II	3 hrs.	50	
Paper III	3 hrs.	50	
Practical	5 hrs.	75	27

B.Sc.- Pt-II (Zoology) Exam.

Paper	Duration	Max. Marks	Min. Pass Marks
I Animal Diversity (Part-2)	3 Hours	50	18
II Endocrinology and Ethology	3 Hours	50	18
III Animal Ecology and Biostatistics	3 Hours	50	18
Practical	5 Hours	75	27

B.Sc.- Pt-III (Zoology) Exam.

Paper	Duration	Max.Marks	Min. Marks
I. Animal Diversity(Part-III , Vertebrates) and Evolution	3 Hours	50	18
II. Mammalian Physiology and Immunology	3 Hours	50	18
III. Developmental Biology	3 Hours	50	18
Practical	5 Hours	75	27

3. Second messengers: Cyclic AMP, PIP₂, IP₃, DG, G-protein, protein kinase and role of Ca⁺⁺ as messenger; cell signalling; amplification of signal.
4. Molecular mechanism of insulin action.

UNIT: III

Endocrinology: Role in reproduction

1. Hormones from testis, ovary and placenta, their structure and functions.
2. Importance of hormones in sexual differentiation in embryo.
3. Hormonal control of menstrual cycle, implantation, pregnancy, parturition and lactation.
4. Different types of contraceptives, their composition and effects.

UNIT: IV

Ethology: Introduction and basics

1. Introduction and history of behaviour, approaches and study of animal behaviour (ecological, physiological, evolutionary and neural methods) MRI and CAT scan.
2. Genetic basic of animal behaviour and evolution of ethology.
3. Biological clock; circadian and circannual rhythms.
4. Learning and imprinting, instinct behaviour.

UNIT: V

Ethology: Areas of behaviour

1. Searching of food : Honey bee , rhesus monkey and langoor.
2. Social behaviour and organization: Honey bee, termite, mammals (black-buck and monkeys).
3. Communication, fights and alarm call : Vocal, visual, tactile, olfactory and acoustic; honey bee language; pheromonal and hormonal basis of aggression, brain hormone relation in sexual behaviour.
4. Migration in fishes and birds. Orientation : Taxes and kinesis.

PAPER - III : ANIMAL ECOLOGY AND BIOSTATISTICS

Duration : 3 Hours

Maximum Marks : 50

The question paper comprises of three sections , 'A', 'B' and 'C'

Section-A: The candidates will attempt all the ten parts of Q. No.1 (consisting of two questions from each unit) in about 20 words (1/2 X10 = 5 marks).

Section- B: The candidates will attempt five questions, selecting one question from each unit, answer in about 250 words (5 X 5 = 25 marks).

Section-C: The candidates will attempt any two questions out of four, answer in 500 words (10 X 2 = 20 marks).

UNIT - I

'Ecology' as a science, its meaning and history. Modern concept, scope, components of ecosystem, abiotic physical factors : temperature, light, water, soil and soil profile, current,

pressure, gravity, biotic factors, intraspecific and interspecific relation, concept of limiting factors; Liebig's law of minimum, Shelford's law of tolerance, modern concept, importance.

UNIT - II

Population ecology : Determination of population density, factors affecting population density, demography, community ecology, characteristics of bio-community, interdependence for reproduction and protection , ecosystem homeostasis, ecosystem and productivity concept, its types and methods, energy flow, food chain and food web in ecosystem, ecological pyramids, ecological niche.

UNIT - III

Aquatic ecology, fresh water lotic and lentic fresh water habitat, fresh water biota, marine habitat, zonation, marine water biota, ecology and biota of deep sea zone, estuarine habitat and biota, terrestrial habitat, forest and desert ecosystem and biomes, ecology and human future, growth rate, role of man in modification of natural communities.

UNIT - IV

Natural resources, renewable resources (forest/wild life), non-renewable resources (water, mineral resources), aqua-culture and Mariculture, conservation, management of natural resources - renewable resources, non-renewable resources, environmental pollution, types (water, air, soil, pollution by insecticides, noise). Basic concepts of bioaccumulation, biomagnification, and biodegradation of pollutants, impact of urbanization, characteristics of urbanization in India, urban problems.

UNIT - V

Functions and importance of biostatistics, frequency - distribution, presentation of data, mean, mode, median, deviation, error, probability-distribution, correlation, significance-tests, biostatistical analysis of gene distribution in populations.

ZOOLOGY PRACTICAL SYLLABUS

1. Study of animal diversity through museum specimens :-

Arthropoda - *Peripatus* , *Limulus*, spider, *Lepas*, crab, lobster, *Balanus*, *Saculina*, butterfly, centipede, millipede, locust, cyclops.

Mollusca - *Chiton*, *Patella*, *Aplysia*, *Dentalium*, *Teredo*, slug, *Loligo*, *Octopus*, *Nautilus*, *Mytilus*, pearl oyster.

Echinodermata - *Antedon*, *Cucumaria*, *Echinus*, *Astropecten*, *Ophiothrix*, *Holothuria*.

Invertebrate chordates - *Balanoglossus*, *Herdmania*, *Doliolum*, *Salpa*, *Oikopleura*, *Amphioxus*.

2. Study of sections of organs and developmental stages :

Arthropoda - Larval stages of crustacea and insecta - *Nauplius*, *Zoea*, *Megalopa*, *Mysis*, *Cypris* larva, mosquito larvae .

Mollusca - Veliger and glochidium larvae. unio gill T.S.

Echinodermata - Pedicellaria, pluteus larva, bipinnaria larva.

Hemichordata - T.S. through proboscis, collar and trunk regions of *Balanoglossus*, tornaria larva.

Urochordata : Pharyngeal wall, spicules and tadpole larva of *Herdmania*.

Cephalochordata: T.S. of Branchiostoma through oral hood, pharynx, gonads and caudal region.

3. Dissections : Through Chart / Model / Photograph / CD

a. Major -

B.Sc. Pt. – III Botany

Scheme:

Paper	Nomenclature	Duration	Max. Marks	Min. Marks
Paper-I	PLANT PHYSIOLOGY & BIOCHEMISTRY	3 Hrs.	50	
Paper-II	ECOLOGY & PHYTOGEOGRAPHY	3 Hrs.	50	54
Paper-III	BIOTECHNOLOGY & UTILIZATION OF PLANTS	3 Hrs.	50	
Practical (One)		5 Hrs.	75	27

Paper – I - PLANT PHYSIOLOGY AND BIOCHEMISTRY

Duration 3 hrs.

Max. Marks 50

Note: The question paper will contain three sections as under –

- Section-A : One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks : 05
- Section-B : 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words. Total marks : 25
- Section-C : 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 20

Unit – 1

Plant water relations : importance of water to plant life, physical properties of water diffusion and osmosis, absorption, transport of water and transpiration.

Mineral nutrition : Essential macro and micro elements and their role, mineral uptake, deficiency and toxicity symptoms.

Transport of organic substances : Mechanism of phloem transport source sink relationship, factors affecting translocation.

Unit – II

Photosynthesis : Significance, historical aspects, photosynthetic pigments, action spectra and enhancement effects, concept of two photo systems, z-scheme. Photophosphorylation, C-3 & C-4 pathway, CAM plants, photorespiration.

Unit – III

Respiration : ATP the biological energy currency, aerobic and anaerobic respiration kreb's cycle, electron transport mechanism (chemi-osmotic theory), redox potential, oxidative phosphorylation, pentose phosphate pathway.

Basics of enzymology : Discovery and nomenclature characteristics of enzymes, concept of enzyme, apo enzyme and cofactors, regulation of enzyme activity, mechanism of action.

Unit – IV

Nitrogen and lipid metabolism : Biology of nitrogen fixation, importance of nitrate reductase and its regulation, ammonium assimilation, structure and function of lipids, fatty acid biosynthesis, α & β oxidation, saturated and un saturated fatty acids, storage and mobilization of fatty acids.

Unit – V

Growth and Development : Definitions, phases of growth and development, kinetics of growth, seed dormancy Seed germination and factors of their regulation plant movements the concept of photoperiodism, physiology of flowering, florigen concept, biological clocks. Physiology of senescence, fruit ripening, plants hormones auxins, gibberellins, cytokinins, abscissic acid, ethylene, history of their discovery, biosynthesis and mechanism of actions photomorphogenesis, phytochromes and cytochromes, their discovery, physiological role and mechanism of action.

Paper – II - ECOLOGY AND PHYTOGEOGRAPHY

Duration 3 hrs.

Max. Marks 50

Note: The question paper will contain three sections as under –

- Section-A : One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks : 05
- Section-B : 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words. Total marks : 25
- Section-C : 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 20

Unit – I

Plant and Environment : Atmosphere (gaseous composition), water (Properties of water cycle), light (global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico – chemical properties), and biota.

Unit – II

Morphological, anatomical and physiological responses of plants to water: hydrophytes, xerophytes and halophytes, temperature, light (heliophytes and sciophytes) and salinity.

Unit – III

Community ecology : Community characteristics, (analytical and synthetic). Ecological succession. (Hydoasere, lithosere, psammosere) , concept of climax.

Unit – IV

Ecosystems : structure, abiotic and biotic components, food chain, food web, ecological pyramids, energy flow, biogeochemical cycles carbon, water, nitrogen and phosphorus.

Unit – V

Biogeographical regions of India, vegetation types of India: Forests and grassland with particular reference to Rajasthan. Environmental pollution – Air, Water and Soil. WWF, Chipko movement, green house effect. Introduction to Climate change, Carbon sequestration, energy and environment, clean development mechanism (CDM).

Paper – III - BIOTECHNOLOGY AND UTILIZATION OF PLANTS

Duration 3 hrs.

Max. Marks 50

Note: The question paper will contain three sections as under –

- Section-A : One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks : 05
- Section-B : 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words. Total marks : 25
- Section-C : 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 20

Unit – I Biotechnology

Genetic Engineering : Tools and techniques of recombinant DNA technology, cloning vectors; genomic and C-DNA library, transposable element, techniques of gene mapping and chromosome walking, genetic transformation and production of bioactive molecules Basic concept of metabolic engineering, improvement of biosynthesis and accumulation of bioactive immobilization, elicitation, transgenic plants.

University of Kota, Kota

B.A.-Part -I - GEOGRAPHY -2021

Scheme:

Two Papers		Min. Pass Marks : 54	Max. Marks : 150
Paper - I	Physical Geography	Duration 3 hrs.	75 Marks
Paper - II	Geography of Environment	Duration 3 hrs.	75 Marks
Practical		Duration 6 hrs Min. Pass Marks : 18	Max. Marks : 50

B.A.-Part -II - GEOGRAPHY -2021

Scheme:

Two Papers		Min. Pass Marks : 54	Max. Marks : 150
Paper - I	Human and Economic Geography	Duration 3 hrs.	75 Marks
Paper - II	Geography of Rajasthan	Duration 3 hrs.	75 Marks
Practical		Duration 6 hrs Min. Pass Marks : 18	Max. Marks : 50

B.A.-Part -III - GEOGRAPHY -2021

Scheme:

Two Papers		Min. Pass Marks : 54	Max. Marks : 150
Paper - I	World Geography	Duration 3 hrs.	75 Marks
Paper - II	Geography of India	Duration 3 hrs.	75 Marks
Practical		Duration 6 hrs Min. Pass Marks : 18	Max. Marks : 50

A brief note on the Innovation and the Employability -

1. Now a days Geography has become a very useful subject in various competitive examinations including Civil Services and Rajasthan Administrative Services.
2. Geography not only deals with the physical. economic and social conditions of the World, India, Rajasthan but now its nature has become applied and it is helpful in solving the environmental and urban problems.
3. Geography provides a background for the regional planning in development and help in sustainable development.
4. The modern techniques of Geographical analysis such as Remote Sensing, GIS, GPS etc. are helpful in Resource and Environmental Management and Disaster Management.
5. Geography provide an opportunity of employment in various fields. The important are :
 - a. Teaching and Research ;
 - b. Town Planning Departments ;
 - c. Regional Planning ;
 - d. Remote Sensing ;
 - e. Statistical Departments ;
 - f. Urban / Rural / Agricultural Planning ;
 - g. Water Resource Departments ;
 - h. Demographic Study Departments &
 - i. Administrative Services – Central and State Governments.

- (c) Ocean currents and Tides;
- (d) Marine deposits.
- (e) Coral reefs; Types and their origin according to Murray & Daly.

Books Recommended:

1. Strahler & Strahler : Elements of Physical Geography.
2. Woolridge, S.W. : The Physical Basis of Geography, Longman's & Co., London, 1959.
3. Mathur, I.R : Climatology, Mc Graw Hill, New York.
4. Banerjee, R.C. & D.S. Upadhyaya : Mausam Vigyan, Rajasthan Hindi Granth Academy, Jaipur (In Hindi)
5. Gerald, S. : General Oceanography - An Introduction, John Willey & Sons, New York.
6. Finch & Trewartha : Elements of Physical Geography.
7. Negi, B.S. : Physical Geography.
8. Sharma, R.C. : Oceanography for Geographers, Chaitaina Publisher, Allahabad.
9. सविन्द्र सिंह : भौतिक- भूगोल, वसुन्धरा प्रकाशन, गोरखपुर (उ.प्र.)
10. भावना माथुर : भौतिक भूगोल, कल्याणी प्रकाशन
11. वी.एस. चौहान व अल्का गौतम:भौतिक भूगोल, रस्तोगी प्रकाशन, मेरठ।
12. शर्मा व शर्मा : भौतिक भूगोल, पंचशील प्रकाशन, जयपुर

Paper - II Geography of Environment

Duration 3 hrs.

Max.Marks : 75

Note : The question paper will contain three sections as under –

- Section-A :** One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks : 10
- Section-B :** 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words. Total marks : 35
- Section-C :** 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 30

Unit - I

Definition, nature and scope of Environment Geography. Concept of environment, types of environment. Biosphere and its components. Man-environment relationship - Determinism, Possibilism, Neo - determinism.

Unit - II

Ecosystem - meaning, definition, types, structure. Functions of ecosystem - food chain, energy flow in ecosystem. Study of various ecosystems - grassland, desert, marine, mountains and plateau with specific reference to Hadoti plateau.

Unit - III

Ecological crisis, energy crisis, natural hazards - floods, droughts, earthquake and volcano. Soil erosion, desertification, deforestation. Impact of green revolution on Indian environment.

Unit - IV

Environmental degradation, sustainable development. Environmental pollution - water, air, soil, noise, radioactive. Green house effect and ozone depletion, Biodiversity and its conservation.

Unit - V

Environment management - soil, forest, water, wildlife, energy. Disaster Management, Environmental awareness and education. Environmental problems in India and their planning.

Books Recommended :

1. Agarwal, A. et al :The Citizen's Fifth Report, Centre for Science & Environment,New Delhi, 1999.

2. Allen, J. L. : Student Atlas of Environmental Issues, Dushkin Pub., 1997.
3. Brown, L.R. : In the Human Interest, East-West Press, New Delhi, 1976.
4. Simmons, I.G. : The Ecology of Natural Resources, Edward Arnold, London, 1974.
5. वी. के. श्रीवास्तव: पर्यावरणीय भूगोल एवं परिस्थितिकी विकास, वसुन्धरा प्रकाशन, गोरखपुर।
6. सविन्द्र सिंह : पर्यावरणीय भूगोल, इलाहाबाद कोन्सेप्ट प्रकाशन, नई दिल्ली
7. एच. एम. सक्सेना: पर्यावरणीय एवं परिस्थितिकी भूगोल, राज. हिन्दी ग्रन्थ अकादमी, जयपुर
8. आर. के. गूर्जर व बी.सी. जाट: पर्यावरण भूगोल, पंचशील प्रकाशन, अजमेर

Geography Practical

Scheme

Practical - 6 periods per week per batch of 20 students

Duration - 6 hrs

Min. Pass Marks : 18

Max. Marks : 50

- | | | |
|----|--|----|
| 1. | Lab Work (Written Paper - three hrs duration)
(Four questions to be attempted out of six questions) | 32 |
| 2. | Record work and Viva-Voce (One hr) 12 + 06 | 18 |

Note : 1. Record work should be prepared on practical work book only.

2. Question no.1 on Chain & Tape Survey is compulsory.

		Total	50
1.	Cartography: Meaning, importance and methods.		
2.	Scales - Plain, diagonal and comparative.		
3.	Enlargement, reduction and combination of maps.		
4.	Methods of representation of relief - Hachures, Hill shading, Layer tint, Contours, Relief features, Types of slopes, Valleys, Waterfall, Gorge, Meanders, Plateaux, Conical hill, Ridge, Saddle and Pass to be drawn, with the help of contours shown in topographical sheets of different physiographic regions.		
5.	Mean, Median and Mode		
6.	Theoretical part of Chain and Tape Survey.		

Books Recommended :

1. Singh, R. L. : Practical Geography.
2. जे. पी. शर्मा : प्रायोगिक भूगोल

बी.ए.-पार्ट-प्रथम -भूगोल परीक्षा -2021

परीक्षा योजना

दो प्रश्न पत्र	न्यूनतम उत्तीर्णांक 54	अधिकतम अंक - 150
प्रथम प्रश्न पत्र	समय 3 घंटे	अंक 75
द्वितीय प्रश्न पत्र	समय 3 घंटे	अंक 75

प्रथम प्रश्न पत्र - भौतिक भूगोल

अवधि - 3 घंटे

पूर्णांक- 75

नोट : इस प्रश्न पत्र में 03 खण्ड निम्न प्रकार होंगे :

खण्ड अ

इस खण्ड में एक अनिवार्य प्रश्न जिसमें प्रत्येक इकाई से 02 लघु प्रश्न लेते हुए कुल 10 प्रश्न होंगे। प्रत्येक लघु प्रश्न का उत्तर लगभग 20 शब्दों में हो।

कुल अंक - 10

B.A. Part – III (Public Administration)-2021

Scheme: Two Papers

	Duration	Min. Pass Marks 72	Max. Marks 200
Paper - I	3hrs.	36	100 Marks
Paper-II	3hrs.	36	100 Marks

Paper – I – Administrative Thinkers

3 hrs. duration

Max. Marks : 100

Note : The question paper will contain three sections as under –

Section-A : One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks : 10

Section-B : 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words. Total marks : 50

Section-C : 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 40

Unit – I

Administrative Ideas of Kautilya, Henri Fayol and F.W. Taylor with particular reference to :

1. Kautilya :

- (i) The Machinery of Government
- (ii) Principle of Authority and Obedience

2. Henri Fayol

- (i) Managerial Activities
- (ii) Principles of Organization

3. F.W. Taylor

- (i) The Scientific Management Movement
- (ii) Impact of Taylorism on organization Theory

Unit – II

Administrative Ideas of Elton Mayo, Chester Barnard and Herbert Simon with special reference to :

1. Elton Mayo :

- (i) Hawthorne Experiments
- (ii) Human Relation Approach

2. Chester Bernard :

- (i) Organization a Consciously Coordinated Cooperative System.
- (ii) Authority and Responsibility

3. Herbert Simon :

- (i) Decision making as heart of Administration
- (ii) Stages in Decision Making Process
- (iii) Rationality in Decision Making

Unit – III

Administrative Ideas of Mc Gregor, Frederic Herzberg and Maslow with special reference to :

1. Mc Gregor :

- (i) Theory 'X' and Theory 'Y'
 - (ii) Conflict Management
2. Frederick Herzberg :
 - (i) Two factor Theory
 - (ii) Job Enrichment
 3. Abraham Maslow :
 - (i) Need – Hierarchy Theory

Unit – IV

Administrative Ideas of F.W. Riggs, Max Weber and Chris Argyris with special reference to :

1. F.W. Riggs :
 - (i) Sala Model in Prismatic Society
 - (ii) Concept of Development
2. Max Weber :
 - (i) Ideal type Model of Bureaucracy
 - (ii) Authority and Legitimacy
3. Chris Argyris
 - (i) Organizational Theory : Fusion Model
 - (ii) Organizational Changes

Unit – V

Administrative Ideas of Rensis Likert, Peter Drucker and Yehezkel Dror with special reference to :

1. Rensis Likert :
 - (i) Supervisory Style
 - (ii) Management Systems 1-4
2. Peter Drucker :
 - (i) Management by objectives
 - (ii) Concept of Effective Executive
3. Yehezkel Dror
 - (i) Policy Science

Core Books & References :

1. F.W. Taylor : Scientific Management
2. Chester Barnard: The functions of the executive
3. Tilest, Kempner and Mills: Management Thinkers
4. Herbert Simon: Administrative Behaviour
5. Simon: The new science of Management Decision
6. March and Simon: Organization
7. Riggs: Administration in Developing Countries
8. Riggs(Ed.): Frontiers of Developing Countries
9. Weidner (Ed.) : Development Administration in Asia (In items numbers and 9 only the articles of Riggs have to be studied)
10. Chandra Hirawat : Prashasanik Vicharak (Hindi)
11. S.S. Ali : Eminent Administrative Thinkers

12. S.R. Maheshwari : Administrative Thinkers
13. Henry Fayol : General & Industrial Management
14. Gullick & Urulick : Papers on the Science of Administration
15. Narendra Thori : Prashasnik Vicharak (In Hindi).
16. Prasad, Prasad & Pardha Sardi : Administrative Thinkers
- 17^ण प्रसाद, प्रसाद एवं पारदासारदी : प्रशासनिक चिन्तक
- 18^ण सुरेन्द्र कटारिया : प्रशासनिक चिन्तक

Subsidiary Readings :

1. Nicolos P. Mauzelis : Organization and Bureaucracy
2. Fermont E. East and James E. Rosenzlew : Organization and Management
3. James March and Herbert Simon : Organization
4. Katz and Kahu : The Social Psychology of Organization
5. William G. Scott : Organization Theory – A Behavioural Analysis
6. Billy Hodge and Herbert Johnson : Management of Organization Behaviour
7. Ziggs : The Ecology of Public Administration
8. Riggs : Thailand : Modernization of Bureaucratic Policy

PAPER II - LOCAL ADMINISTRATION IN INDIA

3hrs. duration

Max. Marks : 100

Note : The question paper will contain three sections as under –

Section-A : One compulsory question with 10 parts, having : parts from each unit, short answer in 20 words for each part. Total marks : 10

Section-B : 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words. Total marks : 50

Section-C : 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 40

Unit-I

Meaning, nature and significance of Local-Self government in modern state. Evolution of Local-self Government in India ,Constitutional status to local Government:Salient features of 73rd and 74th Constitutional Amendment Act.

Unit-II

The Organisational structure of Urban Local-Self Government in India with special reference to the 74th Constitutional Amendment Act. Composition, Functions, Powers and role of various kinds of local bodies, Local Administration of the Metropolitan towns, Municipal Corporation and their problems of Autonomy and Accountability. District Planning Committees.

Unit-III

Theory and practice of Democratic Decentralisation in India, Panchayati Raj Institutions-Zila parishad, Panchayat Samiti, Village Panchayats, Gram Sabha, and ward sabha : their organisation and functions in the context of 73rd Constitutional Amendment.

Unit-IV

Personnel Administration in Rural and Urban Local Self Government, Classification, Recruitment, promotion and training. Problems of Local Self Government Employees regarding service conditions.

Unit-V

Financial Administration of Local Bodies in India, strengthening of local resources with special reference to role of State Finance Commission. Mechanism of control over local bodies at state level. The role of Directorate of Local bodies and Panchayat and Development Department of State.

BOOKS RECOMMENDED:

- 1- R. Agarwal : Municipal Government in India.
- 2- S.R.Maheshwari : Local Government in India.
- 3- M.V. Mathur : Panchayati Raj in Rajasthan.
- 4- R.L.Khanna : Municipal Government and Adm
in India.
- 5- S.K. Bhoglee : Local Government in India.
- 6- H.C. Sharma : Bharat Main Esthaniya Sasan
(in Hindi)
- 7- Ashok Sharma : Bharat main Sthaniya Prashasan (Hindi)

SUBSIDIARY READINGS:

- 1- S.C. Jain : Community Development and Panchayati Raj.
- 2- Government of Rajasthan :Sadik Ali Report : 1964
- 3- Government of Rajasthan :Village Panchayat Act, 1953.
- 4- Government of Rajasthan : Panchayat Samities and Zila Parishads Act 1959.
- 5- Government of Rajasthan :Municipalities Act, 1959
- 6- Government of India :Diwakar Committee Report, 1963
- 7- Balwant Rai Mehta :Committee Report, 1957.

JOURNALS:

- 1- Nagarlok, Delhi.
- 2- Journal of Local - self Government, Bombay.
- 3- Kurukshetra.

University of Kota, Kota

ENVIRONMENTAL STUDIES ,DISASTER MANAGEMENT & PHILOSOPHY OF SPORTS- SESSION-2020-21

Scheme of Examination;

Time 1¹/₂ Hrs.

Max. Marks 100

Min Pass Marks 36

In pursuance of the directions of the Hon'ble Supreme Court of India and the University Grants Commission, New Delhi, the University of Kota has declared to introduce compulsory paper of "Environmental Studies" in Part- I of all streams (B.A./B.Sc./B.com.) etc. w.e.f. the session 2005-2006 and onwards. The marks secured in this paper will not be counted for working out the division. The candidate can clear this paper in three chances. Therefore all the candidates regular/Ex/Non-Collegiate appearing in Part-I of B.A./B. Sc and B.Com etc. examination of 2006 are required to appear and clear this paper and they must enter this paper in their examination forms. The code number of this paper is 5106.

The syllabus and scheme of examination is as under:

The question paper shall contain 50 objective type questions with multiple choice (four) answers. The student will be required to blacken the circle of correct choice of answer on the computer scan able OMR sheet with the help of H.B. pencil. Evaluation of the answer sheets be made with the help of computer. Four different types of question papers (A,B,C, and D) each containing 50 questions shall be printed. The student will be required to mark/write the type of question paper he is answering on the answer sheet, so that answers marked by him/her may be correctly assessed with the help of relevant key of answers, by the computer.

Each question shall carry one mark, with no negative marking. As such, one mark shall be awarded for the correct answer in each question.

Note:

1. The marks secured in this paper shall not be counted in awarding the division to a candidate.
2. The candidate has to clear compulsory paper in three chances.
3. Non appearing or absent in the examination of compulsory paper will be counted a chance.

Unit 1 : Introduction to environmental studies

- Multidisciplinary nature of environmental studies;
- Scope and importance; Concept of sustainability and sustainable development.

(2 lectures)

Unit 2 : Ecosystems

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems :

a) Forest ecosystem

b) Grassland ecosystem

c) Desert ecosystem

d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit 3 : Natural Resources : Renewable and Non-renewable Resources

- Land resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
- Energy resources : Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

(8 lectures)

Unit 4 : Biodiversity and Conservation

- Levels of biological diversity : genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity : Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity : In-situ and Ex-situ conservation of

biodiversity. • Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

(8 lectures)

Unit 5 : Environmental Pollution

- Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management : Control measures of urban and industrial waste. • Pollution case studies.

(8 lectures)

Unit 6 : Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture 2/2
- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

(7 lectures)

Unit 7 : Human Communities and the Environment

- Human population growth: Impacts on environment, human health and welfare.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management : floods, earthquake, cyclones and landslides.
- Environmental movements : Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

(6 lectures)

Unit 8 : Field work

- Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems-pond, river, Delhi Ridge, etc.

(Equal to 5 lectures)

Unit-9: Philosophy of Sports

- Define sports and Physical education, classification of Sports activities.
- Sports as a way of life.
- Team work and sports.
- Peace through sports in the world.
- Development of social and moral values through sports.
- Personality development and sports.
- Physiological changes in Human body through sports activity.

Suggested Readings:

1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
4. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.
7. McCully, P. 1996. Rivers no more: the environmental effects of dams (pp. 29-64). Zed Books.
8. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.

9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. Tripathi 1992. 14. Sengupta, R. 2003. *Ecology and economics: An approach to sustainable development*. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
18. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
19. Wilson, E. O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
20. World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press.

M. A. (POLITICAL SCIENCE) -2020

		Max.Marks	Min. Marks
M.A. (Prev.): There will be four papers –			
Paper – I -	History of Western Political Thought / Theory.	100	36
Paper – II -	Comparative Political Institutions	100	36
Paper – III -	International Politics	100	36
Paper – IV -	Theory and Practice of Public Administration	100	36
		400	144
M.A. (Final): There will be five papers, out of which papers V, VI & VII will be compulsory papers VIII & IX will be optional. Student will select any two papers from any one group.			
Paper – V -	(i) Modern Political Theory	100	36
Or			
	(ii) Political Theory from Karl Marx to Present Day		
Paper - VI -	Indian Government and Politics	100	36
Paper VII	Any one		
	(i) Human Rights and Duties – Theory and Practice	100	36
OR			
	(ii) Dissertation	100	36
OR			
	(iii) Political Analysis and Research Methodology	100	36
Paper VIII & IX	(Two Papers are to be offered from any one of the following groups)	100+100	36+36
Group – A	(i) Ancient Indian Political Thought		
	(ii) Modern Indian Social and Political Thought		
	(iii) Gandhian Political Thought		
Group – B	(i) Public International Law		
	(ii) Theory and Practice of Diplomacy		
	(iii) Foreign Policies of Major Powers		
Group – C	(i) Public Administration in India		
	(ii) Rural –Urban Local Govt & Administration in India		
	(iii) Administrative Theory		

12. Shakdhar. S.L. : Parliamentary Practice in India
 13. Myron Weiner : Party Politics in India- The Development of Multiparty system.
 14. Myron Weiner : Politics of Scarcity- Public Pressure and Politics of Response in India
 15. Singhvi, L.M. : Bharat Main Nirvachan
 16. Singhvi, L.M. : Indian Political Parties (In Hindi & English)
 17. Khanna S.K. : Coalition Politics in India
 18. Khanna S.K. : Crisis of India Democracy
 19. Khanna S.K. : Reforming Indian Political System
 20. S.K. Kashyap : Coalition Politics in India
 21. बी.एल. फड़िया : भारतीय शासन एवं राजनीति

Paper-VII - Any one of the followings

(i) Human Rights and Duties: Theory and Practice

Duration : 3 hours

Max. Marks – 100

Note : The question paper will contain three sections as under –

Section-A : One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks: 10

Section-B : 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words.

Total marks: 50

Section-C : 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks: 40

Unit- I

Meaning and Nature of Human Rights and Duties: Basic concepts- Liberty, Equality, Justice and Violence: Human Values-Humanity, Compassion and Virtues; Different Perspectives: Liberal-Locke, Rousseau, J.S. Mill and A.V. Dicey; Marxian Perspectives, Gandhian Perspective, Dalit Perspective- Phule & Ambedkar.

Unit- II

Human Rights and Duties: Origin and Evolution, Natural, Civil and Political Rights, Individual Vis-à-vis Society and State, The Contribution of Magna Carta, Bill of Rights, The French Revolution and its Goals, Marxist Revolution and Freedom Movements with special reference to India; Universal declaration of Human Rights (1948) International Conventions and Declarations relating to Specific Groups (Women, Children, Minorities, Refugees) and Religious Freedom.

Unit- III

Universal Human Rights- Context and Concerns, International Covenant on Civil, Political, Economic, Social and Cultural Rights;

UN Organs- UN Commission on Human Rights, UN Commission of Status of Women.

Universal Human Rights: Changing World Order.

Unit- IV

Human Rights and Duties in India-Philosophical Postulates of India's Constitution, Constitutional vision of Freedom Fundamental Rights, Directive Principles of State Policy, Constitution and Duties, Judicial Activism and Public Interest Litigation, Legislation for Weaker Sections and Enforcement.

Unit- V

State Enforcement Agencies, National Human Rights Commission, State Human Rights Commission, Human Rights and Courts, NGOs and Human Rights Movements, Amnesty International, Asia Watch, People's Union for Civil Liberties (PUCL), Need for Spelling Out Human Duties.

Core Books :

1. Begum, Dr. S. Meharaty : Human Rights in India-Issues and Perspectives
2. Danjeli Yael. Else : The Universal Declaration of Human Rights
Stamatopoulon and Clarenaca J. Dias. (Editer) Fifty
Years and Beyonds
3. Jaswal, P.S. : Human Rights and the Law
4. Johari, J.C. : Human Rights and New world order. Toward Perfection
of the Democratic Way of life
5. Kaushik, V. : Women's Movements and Human Rights
6. Nirmal, Chiranjive J. : Human's Rights in India : Historical, Social and Political
Perspective
7. Parmar, Lalit : Human Rights
8. Saxena, K.P. : Human Rights- Fifty years of India's Independence
9. Sen, Shankar : Human Rights in a Development Society
10. Sharma, N.R. : Human Rights in The World
11. Sehgal, B.P.S. : Human Rights in India: Problems and Perspectives
12. Sanajoba, N. : Human Rights- Principal Praticies and Abuses
13. Rahul Raj : Human Rights : UN Initiatives
14. Leason. Edward : The Encylopaedia of Human Rights (2nd Edt.)

OR

Paper-VII

(ii) Dissertation

Note: - [Regular Students with 55% of marks in M.A. Previous will only be eligible for opting dissertation]

OR

Paper-VII

(ii) Political Analysis and Research Methodology

Duration: 3 hours

Max. Marks – 100

Note : The question paper will contain three sections as under –

Section-A : One compulsory question with 10 parts, having 2 parts from each unit,
short answer in 20 words for each part. Total marks: 10

Section-B : 10 questions, 2 questions from each unit, 5 questions to be attempted,
taking one from each unit, answer approximately in 250 words. Total marks: 50

Section-C : 04 questions (question may have sub division) covering all units but not
more than one question from each unit, descriptive type, answer in about
500 words, 2 questions to be attempted. Total marks: 40

Unit- I

Meaning, Nature and Need of Political Analysis, Models of Explanations – Easton's System Approach, Almond's Functional Approach, Fact-Value Dichotomy and Scientific Method, Operationalisation of Political Analysis, Shift toward Policy Analysis to Applied Politics.

4. The Thesis/Dissertation/Survey Report : Field Work shall be typed & written and submitted in triplicate so as to reach the office of the Registrar at least 3 weeks before the commencement of the theory examination. Only, such candidates shall be permitted to offer dissertation/Field work/Survey report. Thesis (if provided in the scheme of examination) in lieu of a paper as have secured at least 55% marks in the aggregate of all scheme, irrespective of the number of papers in which a candidate actually appeared at the examination.

- N.B.** (i) Non-Collegiate candidates are not eligible to offer dissertation as per provision of 0.170-A.
(ii) A Candidate failing in previous examination may be provisionally admitted to the final class, provided that he pass in at least 50% papers, as per provisions of 0.235.
(iii) A candidate may allow grace marks in only one theory paper up to the extent of 1% of the total marks prescribed for the examination.

M.A./M.Sc. GEOGRAPHY

There will be four theory papers and a practical each in Previous and Final Examination. Each of the theory papers will be of 100 Marks. Each theory paper will be of three hours duration. Candidates will be required to pass both in Theory and Practical separately.

Note : A weekly seminar is to be arranged for M.A. Previous and Final Students.

M.A. / M.Sc. (Previous) Geography

Paper-I	-	Evolution of Geographical Thought
Paper-II	-	Advanced Physical Geography
Paper-III	-	Principles and Theory of Economic Geography
Paper-IV	-	(a) Geography of Environment, or (b) Quantitative Techniques in Geography

Practical :

Distribution of marks will be as follows:

1.	Laboratory and Map work test (4 hours duration)	40 marks
2.	Record Work	25 marks
3.	Viva-Voce	10 marks
4.	Project Report & Viva-Voce (20+05)	25 marks
	Total	100 marks

N.B. : 12 hours of teaching practical be provided per batch of 10 students per week.

M.A. / M.Sc. (Final) Geography

Paper-V	-	Advanced Geography of India
Paper-VI	-	Any one of the following - (a) Agricultural Geography (b) Industrial Geography (c) Geography of Transport and Marketing
Paper-VII	-	Any one of the following - (a) Urban Geography

3. Smith, D.E. : Industrial Location – An Economic Geographical Analysis.
4. Hodder & Lee : Economic Geography.
5. Berry Conkling & Ray : The Geography of Economic Systems, Prentice Hall.
6. Smith, J.C. & Philip, M.O. : Industrial and Commercial Geography, Henry Halt.
7. Bengston, N.A. & Royen M.V. : Fundamentals of Economic Geography, Prentice Hall, New York.
8. Alexander, J.W. : Economic Geography, Prentice Hall, New York.
9. Guha & Chatterjee : A New Approach to Economic Geography.
10. Renner, T.H. & Other : World Economic Geography.
11. Robinson, H. : Economic Geography, M.Sc. Donald, London.
12. Thoman, R.S. : The Geography of Economic Activity, McGraw Hill, New York.
13. Zimmerman E.W. : World Resources and Industries, Harper and Co., New York.
14. Robertson, D. (Ed.) : Globalization and Environment, E. Elgan Co., U.K., 2001.
15. Wheeler, J.O. : Economic Geography, John Willey, New York, 1995.
16. Dreze, J. & Sen, A. : India – Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1996.
17. काशीनाथ सिंह, जगदीश सिंह : आर्थिक भूगोल के मूल तत्व, वसुन्धरा, गोरखपुर।
18. पुरूषोत्तम जैन : आर्थिक भूगोल, रस्तोगी प्रकाशन, मेरठ।
19. सक्सेना, अग्रवाल एवं सक्सेना : आर्थिक भूगोल, राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर-2010 ।

Paper – IV(a) Geography of Environment

Duration : 3 hours

Max. Marks – 100

Note : The question paper will contain three sections as under –

- Section-A :** One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks : 10
- Section-B :** 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words. Total marks : 50
- Section-C :** 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 40

UNIT – I

Concept of environment and ecology, Nature and scope of the Geography of environment. Concept of ecology and eco-system-definition and elements, energy flow in eco-system.

UNIT – II

Productivity in eco-system. Eco-cycles. Types of eco-system. Man-environment relationships, perception of environment and its quality. Degradation of Environment, Development vis-a-vis ecological crisis. Global Environmental Issues : Climate Change - Ozone depletion, Green House Effect and Global Warming, Desertification, Biodiversity.

UNIT – III

Environmental Pollution – Water, Air, Noise, Soil and Radio-activity, causes, impact and measures of control with Indian examples. Population, Resources and Ecological crisis.

UNIT – IV

Environment and quality of life. Environmental Management–Approaches, Management of forest, soil, wildlife, energy and mineral resources, Disasters & their management. Environmental Impact Assessment. Conservation of natural resources.

UNIT – V

Sustainable development. Environmental policies and programmes (international and national). Environmental problems, planning and legislation in India.

Books Recommended :

1. Batel, B. (Ed.) – Management of Environment, Wiby Eastern Ltd., New Delhi, 1980.

2. Desh Bandhu (Ed.) – Environmental Management, Indian Environment, Society, New Delhi.
3. Singh & Singh (Ed.) – Geography of Environment, Concept, New Delhi.
4. Saxena, H.M. – Environmental Geography, Rawat Pub., Jaipur, 2005.
5. Savinder Singh – Geography of Environment, Allahabad.
6. Murdock, W. (Ed.)- Environment Resources, Pollution and Society, Sin over Association Inc.
7. Gupta & Gurjar - Sustainable Development, Rawat Pub., Jaipur.
8. Khan, M.Z.A. & Gangwala Sonal : Global Climate Change, Rawat Publications, Jaipur, 2011.
9. Strahler, A.N. – Geography and Man’s Environment, John, Willey.
10. Khan, M.Z.A. & S.K. Agarwal – Environmental Geography, APH Publishing House, New Delhi, 2004.
11. Sharma B.L. & Puja Puar : Global Environmental Challenges, Rohini Books, Jaipur.
12. Saxena H.M. & M.Z.A. Khan: Urbanization, Environmental Degradation and Quality of Life, Rawat Publications, Jaipur, 2016.
13. Centre for Science – The State of Indian Environment: A Citizen’s Report 1982, Environment 1985, New Delhi.
14. सविन्द्र सिंह – पर्यावरण भूगोल, इलाहाबाद ।
15. वी.के. श्रीवास्तव : पर्यावरणीय भूगोल एवं पारिस्थितिकी विकास, वसुन्धरा, गोरखपुर।
16. एच.एम. सक्सैना – पर्यावरण एवं परिस्थितिकी भूगोल, राज. हिन्दी ग्रन्थ अकादमी, जयपुर।
17. सक्सैना – पर्यावरण भूगोल रावत पब्लिकेशन, जयपुर।

Paper – IV(b) Quantitative Techniques in Geography

Duration : 3 hours

Max. Marks – 100

Note : The question paper will contain three sections as under –

- Section-A :** One compulsory question with 10 parts, having 2 parts from each unit, short answer in 20 words for each part. Total marks : 10
- Section-B :** 10 questions, 2 questions from each unit, 5 questions to be attempted, taking one from each unit, answer approximately in 250 words. Total marks : 50
- Section-C :** 04 questions (question may have sub division) covering all units but not more than one question from each unit, descriptive type, answer in about 500 words, 2 questions to be attempted. Total marks : 40

UNIT – I

Statistical data, various types of average, measures of dispersion and their calculation. Normal Frequency distribution curve and its uses. Binomial and Poison Distribution, Frequency Distributions.

UNIT – II

Measures of spatial distribution point and line distribution. Nearest Neighbour Index and spatial randomness. Characteristics of samples. Methods of Sampling.

UNIT – III

Statistical significance, Diagrams, Standard error of difference, Students test and Senedor’s variance Ratio Test. Models as Quantitative techniques - Simulation Model, The Gravity Model.

UNIT – IV

Measurement of Connectivity and accessibility. Product moment correlation coefficient. Spearman’s rank correlation coefficient. Kendal’s correlation Coefficient.

UNIT – V

The correlation matrix. Regression line and confidence limits. The Chi-square Test and its uses. Fluctuations and trends. Logarithmic graph.

Books Recommended :

Syllabus of M.Sc. Botany Semester-I

Paper I . Biology and Diversity of Lower Plants

II. Pteridophyta, Gymnosperms and Paleobotany

III. Plant Physiology

IV. Microbiology and Plant Pathology

V. Practical

Semester-II

Paper VI . Plant Ecology

VII. Plant Resource Utilization & Conservation

VIII. Cell and Molecular Biology

IX. Biochemistry

X. Practical

Semester-III

Paper XI. Plant Development and Reproduction

XII. Cytogenetics

XIII. Taxonomy of Angiosperms

XIV. Elective Paper-(a) Adv. Plant Pathology -I (b) Adv.Plant Ecology-I.
(Environment Biology)

XV. Practical

Semester-IV

Paper XVI . Biotechnology and Biometrics

XVII. Plant Morphology and Anatomy

XVIII. Seed Biology and Plant Breeding

XIX. Elective paper-(a) Adv. Plant Pathology-II (b) Adv. Plant Ecology-II
(Arid Zone Ecology)

XX. Practical

M.Sc. Botany

Semester-II

Paper VI	Plant Ecology
Paper VII	Plant Resource Utilization and Conservation
Paper VIII	Cell and Molecular Biology
Paper IX	Biochemistry
Paper X	Practical

Paper VI- Plant Ecology

Duration of Examination: 3 Hours	Maximum Marks	: 100 Marks
	Semester Assessment	: 70 Marks
	Continuous (Internal) Assessment	: 30 Marks

Note: The syllabus is divided into five independent units and question paper will be divided into three sections.

- **Section-A** will carry 10 marks with 01 compulsory question comprising 10 short answer type questions (maximum 20 words answer) taking two questions from each unit. Each question shall be of one mark.
- **Section-B** will carry 25 marks with equally divided into five long answer type questions (answer about in 250 words). Paper setter shall be advised to set two questions from each unit and students are instructed to attempt five questions by selecting one question from each unit.
- **Section-C** will carry 35 marks with five long answer type questions comprising one compulsory question of 15 marks and four questions of 10 marks each. Students are instructed to attempt total three questions with one compulsory question (answer about in 500 words) and any two more questions (answer about in 400 words) out of remaining four questions. Paper setter shall be advised to design question paper covering from all five units.

Note: Contents of each unit may be completed into 15-18 lectures or contact hours which also include revisions, seminars, internal assessments, etc. Contact Hours will be 4 Hours per week for the faculty.

UNIT – I

Climate, soil and vegetation patterns of the world : Life zones, major biomes, and major vegetation and soil types of the world. Environment – Holistic environment, factors and their interactions, animals and man.

UNIT - II

Vegetation organization: Concepts of community and continuum, analysis of communities (analytical and synthetic characters), community coefficients, interspecific associations, ordination, concept of ecological niche.

Vegetation development: Temporal changes (cyclic and non-cyclic), mechanism of ecological succession (relay floristic and initial floristic composition, facilitation, tolerance and inhibition models), changes in ecosystem, properties during succession.

UNIT – III

Ecosystem organization: Structure and functions, primary production (methods of measurement, global pattern, controlling factors), energy dynamics (trophic organization, energy flow pathways, ecological efficiencies), litter fall and decomposition (mechanism, substrate quality and climatic factors), Concept of global biogeochemical cycles.

Biological diversity: Concept and levels, role of biodiversity in ecosystem functions and stability, speciation and extinction, IUCN categories of threat, distribution and global patterns, terrestrial biodiversity hot spots, inventory.

UNIT – IV

Air, water and soil pollution : Kinds, sources, quality parameters, effects on plants and ecosystems.

Climate change : Greenhouse gases (CO₂, CH₄, N₂O, CFCs : sources, trends and role), ozone layer and ozone hole, consequence of climate change (CO₂ utilization, global warming, sea level rise, UV radiation), carbon sequestration.

UNIT – V

Ecosystem stability : Concept (resistance and resilience), ecological perturbations (natural and anthropogenic) and their impact on plants and ecosystems, ecology of plant invasion, environmental impact assessment, ecosystem restoration.

Ecological management : Concepts, sustainable development, sustainability indicators, role of International Union for Conservation of Nature & Natural

Resources (IUCN), World Wide Fund for Nature (WWF), UNEP, UNESCO, IGBP etc.

Suggested Readings:

1. Smith, R.L. 1996. Ecology and Field Biology, Harper Collins, New York
2. Muller-Dombois, D. and Ellenberg, H., 1974. Aims and Methods of Vegetation Ecology, Wiley, New York.
3. Begon, M. Harper, J.L. and Townsend, C.R. 1996. Ecology, Blackwell Science, Cambridge, U.S.A.
4. Ludwig, J. and Reynolds, J.F. 1988, Statistical Ecology. John Wiley & Sons.
5. Odum, E.P. 1971. Fundamentals of Ecology, Saunders, Philadelphia.
6. Odum, E.P. 1983. Basic Ecology, Saunders, Philadelphia.
7. Barbour, M.G., Burk, J.H. and Pitts, W.D. 1987. Terrestrial Plant Ecology, Benjamin / Cummings Publication Company, California.
8. Kormondy, E.J. 1996 Concepts of ecology, Prentice- Hall of India Pvt. Ltd., New Delhi.
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Suggested Laboratory Exercises :

1. To calculate mean, variance, standard deviation, standard error, coefficient of variation and to use t-test for comparing two means related to ecological data.
2. To prepare ombrothermic diagram for different sites on the basis of given data set and to comment on climate.
3. To find out the relationship between two ecological variables using correlation and regression analysis.

4. To determine minimum size and number of quadrats required for community study.
5. To find out association between important grassland species using chisquare test.
6. To compare protected and unprotected grassland stand using community coefficients (similarity indices).
7. To analyze plant communities using Bra-Curtis ordination method.
8. To determine diversity indices (Shannon – Wiener, concentration of dominance, species richness, equitability and biodiversity) for protected and unprotected grassland stands.
9. To estimate IVI of the species in a woodland using point centered quarter method.
10. To determine gross and net phytoplankton productivity by light and dark bottle method.
11. To determine soil moisture content, porosity and bulk density of soils collected from varying depths at different locations.
12. To determine the Water holding capacity of soils collected from different locations.
13. To determine percent organic carbon and organic matter in the soils of cropland, grassland and forest.
14. To estimate the dissolved oxygen content in eutrophic and oligotrophic water samples by azide modification of Wrinkler's method.
15. To estimate chlorophyll content in SO₂ fumigated and unfumigated plants leaves.
16. To estimate rate of carbon dioxide evolution from different soils using soda lime or alkali absorption method.
17. To study environmental impact of a given developmental activity using checklist as a EIA method.

Paper VII-Plant Resource Utilization and Conservation

Duration of Examination: 3 Hours	Maximum Marks	: 100 Marks
	[Semester Assessment	: 70 Marks]
	Continuous (Internal) Assessment	: 30 Marks]

Note: The syllabus is divided into five independent units and question paper will be divided into three sections.

- **Section-A** will carry 10 marks with 01 compulsory question comprising 10 short answer type questions (maximum 20 words answer) taking two questions from each unit. Each question shall be of one mark.
- **Section-B** will carry 25 marks with equally divided into five long answer type questions (answer about in 250 words). Paper setter shall be advised to set two questions from each unit and students are instructed to attempt five questions by selecting one question from each unit.
- **Section-C** will carry 35 marks with five long answer type questions comprising one compulsory question of 15 marks and four questions of 10 marks each. Students are instructed to attempt total three questions with one compulsory question (answer about in 500 words) and any two more questions (answer about in 400 words) out of remaining four questions. Paper setter shall be advised to design question paper covering from all five units.

Note: Contents of each unit may be completed into 15-18 lectures or contact hours which also include revisions, seminars, internal assessments, etc. Contact Hours will be 4 Hours per week for the faculty.

UNIT – I

Plant Diversity: Concept, status in India, utilization and concerns.

Sustainable Development: Basic Concepts, origin of agriculture.

World Centers of primary diversity of domesticated plants: The Indo-Burmese center, plant introduction and secondary centers.

UNIT – II

Cultivation and uses-:Fodder, Fiber, medicinal and vegetable oil yielding crops of Rajasthan.

Important firewood and timber yielding plants and non wood forest products (NWFPs) such as bamboos, rattans, raw materials for paper making, gums, dyes, and fruits.

UNIT – III

Green revolution: Benefits and adverse consequences, innovations for meeting world food demands.

Plants used as avenue trees for shade, pollution control and aesthetics: Principles of conservation, environmental status of plants based on IUCN.

UNIT – IV

Strategies for conservation – in situ conservation: International efforts and Indian initiatives, protected areas in India – sanctuaries, national parks, biosphere reserves, wetlands, mangroves and coral reefs conservation of wild biodiversity.

UNIT – V

Strategies for conservation – ex situ conservation: Principles and practices, botanical gardens, field gene banks, seed banks, in vitro repositories, cryobanks, general account of the activities of Botanical Survey of India (BSI), National Bureau of Plant Genetic Resources [NBPGR], Indian Council of Agricultural Research (ICAR), Council of Scientific and Industrial Research (CSIR) and the Department of Biotechnology (DBT) for conservation.