DR. SHYAMA PRASAD MUKHERJEE UNIVERSITY, RANCHI

SYLLABUS OF FOUR YEAR UNDER GRADUATE PROGRAMME IN GEOGRAPHY

UNDER

NATIONAL EDUCATION POLICY 2020

Implemented from Academic Year 2023 and Onwards

Members of Board of Studies for Four Year Under Graduate Programme (FUGP)

in Geography of Dr. Shyama Prasad Mukherjee University, Ranchi

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2. Dr. Saroj Kumar Singh

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Approved by the Departmental Council of Geography held on 15-07-2023

Regulations for Four-Year Undergraduate Programme

Dr. Shyama Prasad Mukherjee University, erstwhile Ranchi College, Ranchi traces back its origin as early as 1839 when it was started as a Government English Medium Middle School. Intermediate of Arts teaching was started in the school for the first time in 1926 in the Ranchi Zila School Building, and the school with Intermediate teaching was affiliated to the Old Patna University. On 1st August 1946, Ranchi Government Degree College began to function as a separate institution with Sri. K.P. Sinha as its first principal. During the Session 1948-1949 the name of the college was changed from Ranchi Government College to Ranchi College, Ranchi. In 1952 Management and Control of Ranchi Government Degree college was transferred to Bihar University by the State Government and it became a constituent College of Bihar University since, 2nd January 1952. Post Graduation Teaching was started in Ranchi College, Ranchi in History and Hindi by the State Government in 1951-52. Subsequently, M.A./M.Sc. Teaching along with Hons. in Geography and Psychology was started in 1952-53. Ranchi College, Ranchi functioned till 1962 in the old School Training Building opposite main Post Office. Ranchi College, Ranchi shifted to its present Location in Morabadi in the year 1962 and served and catered to the needs of education of this predominantly tribal region, achieving Milestones in imparting quality education under the fold of Ranchi University. Ranchi College, Ranchi was awarded Academic Autonomy and accorded Autonomous Status by the UGC in the Year 2009. Subsequently Ranchi College, Ranchi was also declared 'College with Potential for Excellence' by the University Grants Commission (UGC). Ranchi College, Ranchi was accredited by the NAAC and given B Grade (2.96) missing the coveted A grade by a whisker. Keeping in mind the glorious and illustrated academic history and with sprawling 110 acres of developed land and Imposing Central building, Ranchi College, Ranchi was up graded to a State University with no affiliating or Constituent Unit under its fold giving it a Unitary Status by the State government of Jharkhand under the Rashtriya Uchchattar Shiksha Abhiyan (RUSA) Component. Dr. Shyama Prasad Mukherjee University came to existence Vide Jharkhand Gazette Extra Ordinary Number: 216, Ranchi, Tuesday April 11, 2017; Department of Law, Government of Jharkhand, Notification Dated March 23, 2017. Situated in the heartland of the State capital, the University is spread over in 110 acres of land with colossus building architecture, well versed and experienced faculties, well-equipped laboratories, departmental libraries enriched with books, Language Lab, classrooms, gardens and Botanical Garden. The University has well developed infrastructure for carrying out co-curricular, cultural and sports activities in the University. The Campus is digitally equipped and Wi-Fi Facility is available. After being upgraded as university, physical infrastructure is being developed at high pace.

The main emphasis of syllabus for the Four-Year Undergraduate Programme (FYUGP) under National Education Policy (NEP)- 2020 is to help the students to understand the latest tools and techniques, which would help in giving focused and precise understanding of

geographical phenomenon. The purpose is to enhance the capability of the students in perceiving, creating and analyzing sound geographical bases and concepts. It is designed to emphasize the teaching and learning process at the undergraduate from teacher centric to student centric by strengthening the quality of teaching and learning in the present-day real-life scenario of global, regional and local level. It is considered learning as an activity of creativity of innovations and analyzing geographical phenomena. It would help the students to understand and critically analyze various dimensions of the geographical issues. The following objectives would be achieved:

- To orient the students towards identification and analysis of various facets of geographicalfeatures and processes.
- To develop students' aptitude for acquiring basic skills of carrying out field work.
- To inculcate the ability to evaluate and solve geographical problems effectively.
- To develop the skills in using geographical research tools including spatial statistics.
- To facilitate the students to learn skills of map making.
- To guide students to learn the science and art of collecting, processing and interpreting the data.
- To expose the students to the use of the updated technologies of remote sensing, IRNSS,GNSS, Geographical Information System (GIS) and GI Science.

The curriculum framework of Four Year Under Graduate Programme (FYUGP) in University Department of Geography under Dr. Shyama Prasad Mukherjee University, Ranchi consists of Major Course (MJ), Advance Major Course (AMJ), Research Course (RC) Minor Course (MN), Ability Enhancement Course (AEC), Skill Enhancement Course (SEC), Value Added Course (VAC), Internship, Apprentice Project Course (IAP) and Multidisciplinary Course (MDC). The papers of the former three courses are somehow related with Honours papers whereas the papers of Minor course denote subsidiary papers. Again, the papers of AEC, SEC, VAC and IAP come under the broad category of common courses whereas the papers of MDC Course are of introductory nature. The details of various combinations of all courses in different semesters of FYUGP are illustrated in Table- 1.

Table 1: Subject Coding and Credit Framework for all Under Graduate (Practical) Programme as per NEP 2020 for Dr. Shyama Prasad Mukherjee University, Ranchi.

Semester	Major Paper (Earlier known as Hons. Paper)	Minor Paper (Traditional) (Earlier known as G.E./Subsidiary)	Minor Courses (Vocational)	Multi-Disciplinary Courses	Ability Enhancement Course (AEC)	Skill Enhancement Course (SEC)	Value Added Course (VAC)	Total Credits
I	MJ-101T (03 Credits) MJ-101P (01 Credit)	MN-101T (03 Credits) MN-101P (01 Credit)	-x-x-x-	MDC-101T (02 Credits) MDC-101P (01 Credit)	AEC-101T (02 Credits) Hindi Communication	SEC-101T (02 credits) SEC-101P (01 Credit)	VAC-101T (02 Credits) EVS VAC-102T (02 Credits) Understanding India	20 Credits
II	MJ-201T (03 Credits) MJ-201P (01 Credits) MJ-202T (03 Credits) MJ-202P (01 Credits)	-x-x-x-	MVC-201T (03 Credits) MVC-201P (01 Credit)	MDC-201T (02 Credits) MDC-201P (01 Credit)	AEC-201T (02 Credits) English Communication	SEC-201T (02 credits) SEC-201P (01 Credit) / INT-201P/APP-201P/PRO-201P (04 Credits) Internship/Apprenticeship/ Project compulsory for students who wishes to leave the course after Semester II	-x-x-x-	20 Credits (If a candidate wishes to continue the course) 24 Credits (If a candidate wishes to leave the course)
• Certificate of 44 Credits will be awarded to the candidate if he wishes to leave the course after taking up mandatoryInternship/Apprenticeship/Project of 4 Credits. • If the candidate wishes to continue he/she will move to Semester III with 40 Credits subject to the condition thathe/she clears 75% of the total papers of Semester I and II.								
III	MJ-301T (03 Credits) MJ-301P (01 Credit) MJ-302T (03 Credits) MJ-302P (01 Credit)	MN-301T (03 Credits) MN-301P (01 Credit)	-x-x-x-	MDC-301T (02 Credits) MDC-301P (01 Credit)	AEC-301T (02 Credits) Modern Indian Language-I (Sanskrit/Urdu/ Santhali/Bengali /Panch Pargania /Kharia/Hindi/ Nagpuri/ Kurux/Ho/	SEC-301T (02 credits) SEC-301P (01 Credit)	-x-x-x-	20 Credits

					Khortha /Kurmali/ Mundari/Odia)			
IV	**MJ-401T (03 Credits) MJ-401P (01 Credit) MJ-402T (03 Credits) MJ-402P (01 Credit) MJ-403T (03 Credits) MJ-403P (01 Credit)**	**-x-x-x-**	**MVC-401T (03 Credits) MVC-401P (01 Credit)**	**-x-x-x-**	**AEC-401T (02 Credits) Modern Indian Language-II (Sanskrit/Urdu/ Santhali/Bengali /Panch Pargania /Kharia/Hindi/ Nagpuri/ Kurux/Ho/ Khortha /Kurmali/ Mundari/Odia)**	**INT-401P/APP-401P/PRO-401P (04 Credits) Internship/ Apprenticeship/ Project compulsory for students who wishes to leave the course after Semester IV**	**VAC-401T (02 Credits) Digital Education/ Health & Wellness and Yoga/Indian Knowledge System**	**20 Credits (If a candidate wishes to continue the course) 24 Credits (If a candidate wishes to leave the course)**
• **Diploma with 84 Credits will be awarded to the candidate if he wishes to leave the course after taking up mandatoryInternship/Apprenticeship/Project of 4 Credits.** • **If the candidate wishes to continue, he/she will move to Semester V with 80 Credits subject to the condition that he/she clears 75% of the total papers till Semester IV.**								
V	**MJ-501T (03 Credits) MJ-501P (01 Credit) MJ-502T (03 Credits) MJ-502P (01 Credits) MJ-503T (03 Credits) MJ-503P (01 Credit)**	**MN-501T (03 Credits) MN-501P (01 Credit)**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**INT-501P/APP-501P/PRO-501P (04 Credits) Internship/ Apprenticeship/ Project Compulsory for all Students**	**-x-x-x-**	**20 Credits**

VI	**MJ-601T (03 Credits) MJ-601P (01 Credit) MJ-602T (03 Credits) MJ-602P (01 Credit) MJ-603T (03 Credit) MJ-603P (01 Credit) MJ-604T (03 Credits) MJ-604P (01 Credit)**	**-x-x-x-**	**MVC-601T (03 Credits) MVC-601P (01 Credit)**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**20 Credits**
• **Degree with 120 Credits will be awarded to the candidate if he wishes to leave the course.**								
• **Minimum CGPA of 7.5 with no backlog is required if any candidate wishes to continue the course in 7th Semester toobtain Degree with Honours and Research.** • **No restriction of CGPA but no backlog is required if any candidate wishes to continue the course in 7th Semester toobtain Honours Degree.**								
VII	**MJ-701T (03 Credits) MJ-701P (01 Credit) MJ-702T (03 Credits) MJ-702P (01 Credit) MJ-703T (03 Credits) MJ-703P (01 Credits) MJ-704T (03 Credits) MJ-704P (01 Credit)**	**MN-701T (03 Credits) MN-701P (01 Credit)**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**20 Credits**

VIII	**MJ-801T (03 Credits) MJ-801P (01 Credit) AMJ-801T (03 Credits) AMJ-801P (01 Credit) AMJ-802T (03 Credits) AMJ-802P (01 Credit) AMJ-803T (03 Credits) AMJ-803P (01 Credit)**	**-x-x-x-**	**MVC-801T (03 Credits) MVC-801P (01 Credit)**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**20 Credits**
VIII	**MJ-801T (03 Credits) MJ-801P (01 Credits) RC-801T (04 Credits) RC-802T (04 Credits) RC-803T (04 Credits)**	**-x-x-x-**	**MVC-801T (03 Credits) MVC-801P (01 Credit)**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**-x-x-x-**	**20 Credits**

- **Degree with Honours and Research will be awarded to a candidate if he/she earns 160 Credits in addition to 03 Research /Dissertation Courses of 12 Credits.**
- **Honours Degree will be Awarded to a candidate if he/she earns 160 Credits in addition to 03 Advanced Major Courses of 12 Credits.**

RC-801T: Research Methodology, RC-802T: Research Proposal, RC-803T: Research Report

Total Credits Calculation for Four-Year Under Graduate Programme =160 Credits

[Major Courses = 80 Credits, Advanced Major Courses/Project or Dissertation = 12 Credits, Minor Courses (Traditional) = 16 Credits, Minor Courses (Vocational) = 16 Credits, Multi-Disciplinary Courses = 09 Credits, Ability-Enhancement Courses = 08 Credits, Skill Enhancement Courses = 09 Credits, Value-Added Courses = 06 Credits, Internship = 04 Credits]

Total Credits Calculation for Three-Year Under Graduate Programme = 120 Credits

[Major Courses = 60 Credits, Minor Courses (Traditional) = 12 Credits, Minor Courses (Vocational) = 12 Credits, Multi-Disciplinary Courses = 09 Credits, Ability-Enhancement Courses = 08 Credits, Skill Enhancement Courses = 09 Credits, Value-Added Courses = 06 Credits, Internship/Apprenticeship/Project = 04 Credits]

Major Courses: The FYUGP offers students a general understanding as well as in-depth study of the major subject also known as Honours Course. The major subject will be of a higher level to get deep knowledge and specialization in the selected discipline.

Minor Courses (Traditional): There are two minor subjects under the umbrella of Minor Courses. The first subject is of subsidiary nature and supports the major subject from the concerned broad disciplinary area. The subjects of Minor Courses (MN) are of interdisciplinary nature and probable list of subjects are given below for Geography.

Table 2: Association of other Minor Subjects with Geography

Major Subject	Minor Subjects
Geography	Statistics, Anthropology, Economics, History, Political Science, Psychology, Sociology, Philosophy, Bengali, English, Hindi, Ho, Kharia, Kurmali, Kurux, Mundari, Nagpuri, Panch Pargania, Odia, Sanskrit, Santhali, Urdu, Sociology

Minor Courses (Vocational): Another subject of minor courses (MVC) is from a pool of vocational courses either supporting the major or from the field of major courses offered by DSPMU, Ranchi. A pool of subjects for various vocational courses are given below and students have to select only one subject of vocational course: Geographical Information System (GIS), Remote Sensing (RS), Amanat Survey, Soil Health Management, Tourism and Travel Management, Human Rights and Duties, Jyotisha and Karmakanda, Applied Physics, Applied Statistics, Applied Zoology, Applied Botany and Applied Chemistry.

Internship/ Apprenticeship/ Project (IAP): This course is related with induction of actual work situations whereby students are advised to pursue the IAP Course in the following period:

I. Break between II & III Semester of one paper containing 4 Credits Or
II. Break between IV & V Semester of one paper containing 4 Credits Or
III. During V Semester of as one paper containing 4 Credits.

Skill Enhancement Courses: These courses are designed to impart practical skills, hands-on training and soft skills to enhance the employability of students. The said courses will be taught in the first three semesters in the Department itself.

Ability Enhancement Courses: The said courses are framed to enhance competency in a Modern Indian Language (MIL) and in the English language with special emphasis on language and communication skills. The students are advised to choose Hindi in 1st Semester whereas they have to opt English in 2nd Semester. Again, they will have option of selecting two papers of any one of the following modern languages for 3rd and 4th Semester respectively: Sanskrit, Urdu, Santhali, Bengali. Panch Pargania, Kharia, Hindi, Nagpuri, Oriya, Nagpuri, Kurux, Khortha, Kurmali, Ho and Mundari.

Value-Added Courses: The students have to study three courses under the umbrella of the said courses. They have to pursue the courses of Environmental Studies and Understanding

India in the 1st Semester. Moreover, they will have option to select any one course from the pool of Digital Education, Health & Wellness and Yoga and Indian Knowledge System in 4th Semester.

Multidisciplinary Courses: Students are advised to select one subject in the previous first three semesters for multidisciplinary courses from the pool of following table. However, they are directed not to repeat those subjects already undergone at the Higher Secondary Level. They are further advised not to choose such subjects, which are proposed in the major and minor courses.

Table 3: List of Multidisciplinary Subjects

1st Semester	**2nd Semester**	**3rd Semester**
Botany	Physics	Zoology
Chemistry	Geology	Political Science
Mathematics	History	Sociology
Anthropology	Psychology	Kharia
Commerce	Hindi	Kurmali
Geography	Ho	Kurux
Bengali	Khortha	Sanskrit
English	Nagpuri	Economics
Santhali	Panch Pargania	Odia
Mundari	Philosophy	Urdu

Pass and Full Marks for Various Subjects: The pass marks in 160 credit courses will be 40 % of the total marks obtained in each course offered by the student. Again, a student must obtain 20 marks out of 50 marks in 2 credit courses.

Table 4: Credits, Full Marks (FM) and Pass Marks (PM) for Various Subjects

Subjects	**Credits**	**FM**	**PM**
MIL Hindi	2	50	20
Other Language	2	50	20
Non-Practical Subjects	4	100	40
Non-Practical Subjects	3	75	30
Non-Practical	3	50	20

Subjects			
Practical Subjects: Theory Paper	3	75	30
Practical Subjects: Practical Paper	1	25	10
Practical Subjects: Practical Paper	2	50	20
Practical Subjects: Practical Paper	3	75	30
Practical Subjects: Practical Paper	4	100	40

Grades and Grade Points: The Semester Grade Point Average (SGPA) is computed from the grades as a measure of the student's performance in a given semester. The SGPA is based on the grades of the current term, while the Cumulative Grade Point Average (CGPA) is based on the grades in all courses taken after joining the programme of study, which can be computed by the following formula:

i. $SGPA(Si) = \Sigma (Ci * Gi) / \Sigma Ci$

ii. $CGPA = \Sigma (Ci * Si) / \Sigma Ci$

Table No. 5: Grades and Grade Points

Letter Grade	**Grade Point**
O (Outstanding)	10
A^+ (Excellent)	9
A (Very Good)	8
B^+ (Good)	7
B (Above Average)	6
C (Average)	5
P (Pass)	4
F (Fail)	0
Ab (Absent)	0

List of Abbreviations

NEP- National Education Policy
FYUGP- Four-Year Undergraduate Programme
UGC- University Grants Commission
HEIs- Higher Education Institutions
ABC- Academic Bank of Credits
UG- Undergraduate
CE- Controller of Examinations
BoS- Board of Studies
GP- Grade Point
GPA- Grade Point Average
SGPA- Semester Grade Point Average
CGPA- Cumulative Grade Point Average
ESE- End Semester Examination
CC- Common Courses
MIL- Modern Indian Language
TRL- Tribal & Regional Language
IAP- Internship/Apprenticeship/ Project
VS Vocational Studies
MJ- Major Course
MN- Minor Course
AMJ- Advance Major Course
RC- Research Course
NSS- National Service Scheme
NCC- National Cadet Corps
MVC- Minor vocational Course
MDC- Multidisciplinary Course
AEC- Ability Enhancement Course
SEC- Skill Enhancement Course
VAC- Value Added Course
IRC- Introductory Regular Course
IVS -Introductory Vocational Studies
VSR- Vocational Studies associated with Research
CUET- Common Universities Entrance Test
MOOC- Massive Open Online Course

Dr. Shyama Prasad Mukherjee University, Ranchi

Course Structure for B. A. (Geography)

S. N.	Name of Paper	Semester	Course	Code of Paper	Full Marks	Pass Marks	Page No.
1	Geomorphology	I	Major Course	MJ– 101T	75	30	1-2
2	**G**eological Mapping Techniques	I	Major Course	MJ- 101P	25	10	3
3	Climatology	II	Major Course	MJ- 201T	75	30	4-5
4	Cartographic Techniques of Weather and Climate	II	Major Course	MJ- 201P	25	10	6-7
5	Hydrology and Oceanography	II	Major Course	MJ- 202T	75	30	8-9
6	Map Projection	II	Major Course	MJ- 202P	25	10	10
7	Human Geography	III	Major Course	MJ- 301T	75	30	11-12
8	Thematic Cartography	III	Major Course	MJ- 301P	25	10	13-14
9	Evolution of Geographical Thought	III	Major Course	MJ- 302T	75	30	15-16
10	Elementary Statistics	III	Major Course	MJ- 302P	25	10	17-18
11	Fundamentals of Geographical Information System and Remote Sensing	IV	Major Course	MJ- 401T	75	30	19-20
12	Techniques of Geographic Information System	IV	Major Course	MJ- 401P	25	10	21
13	Economic Geography	IV	Major Course	MJ- 402T	75	30	22-23
14	Representation of Economic Data	IV	Major Course	MJ- 402P	25	10	24-25
15	Settlement Geography	IV	Major Course	MJ- 403T	75	30	26-27
16	Statistical Methods in Geography-I	IV	Major Course	MJ- 403P	25	10	28
17	Geography of Asia	V	Major Course	MJ- 501T	75	30	29
18	Statistical Methods in Geography-II	V	Major Course	MJ- 501P	25	10	30
19	Geography of India	V	Major Course	MJ- 502T	75	30	31-32
20	Cartographic Techniques	V	Major Course	MJ- 502P	25	10	33-34
21	Geography of Jharkhand	V	Major Course	MJ- 503T	75	30	35-36
22	Instrumental Survey- I	V	Major Course	MJ- 503P	25	10	37

	Report		Course				77
47	Research Methodology	VIII	Research Course	RC- 801T	100	40	78-79
48	Research Proposal	VIII	Research Course	RC- 802T	100	40	80-81
49	Research Report	VIII	Research Course	RC- 803T	100	40	82
50	Geomorphology	I	Minor Course	MN- 101T	75	30	83-84
51	Geological Mapping Techniques	I	Minor Course	MN- 101P	25	10	85
52	Geography of India & Jharkhand	III	Minor Course	MN- 301T	75	30	86-87
53	Instrumental Survey	III	Minor Course	MN- 301P	25	10	88
54	Climatology	V	Minor Course	MN- 501T	75	30	89-90
55	Techniques of Weather & Climate	V	Minor Course	MN- 501P	25	10	91
56	Human Geography	VII	Minor Course	MN- 701T	75	30	92-93
57	Cartographic Techniques	VII	Minor Course	MN- 701P	25	10	94
58	Geographical Information System	I	Skill Enhancement Course	SEC- 101T	50	20	95-96
59	Geographical Information System	I	Skill Enhancement Course	SEC- 101P	25	10	97-98
60	Remote Sensing	II	Skill Enhancement Course	SEC- 201T	50	20	99-100
61	Remote Sensing	II	Skill Enhancement Course	SEC- 201P	25	10	101-102
62	Digital Image Processing	III	Skill Enhancement Course	SEC- 301T	50	20	103-104
63	Digital Image Processing	III	Skill Enhancement Course	SEC- 301P	25	10	105
64	Fundamentals of Geography	I	Multidisciplinary Course	MDC-101T	50	20	106-107
65	Cartographic Techniques	I	Multidisciplinary Course	MDC-101P	25	10	108

B. A. (Major Course) Geography, Semester- I, Credit -03

Geomorphology (MJ–101T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the functioning of Earth systems in real time and analyze how the natural andanthropogenic operating factors affects the development of landforms
2. Distinguish between the mechanisms that control these processes
3. Assess the roles of structure, stage and time in shaping the landforms, interpret geomorphological maps and apply the knowledge in geographical research.

Course Content:

Unit- I

Geomorphology: Nature, Scope and Key Concepts, Earth: Origin, Evolution and Interior Structure, Geological Time Scale.

Unit- II

Earth Movements: Isostasy, Plate Tectonics, Types of Folds and Faults, Mountain Building, Earthquakes and Volcanoes.

Unit- III

Geomorphic Processes: Weathering, Mass Wasting, Cycle of Erosion (Davis and Penck), Rocks and their Characteristics.

Unit- IV

Evolution of Landforms (Erosional and Depositional): Fluvial, Karst, Aeolian, Glacial and Coastal.

Unit- V

Applied Geomorphology and Environment.

Recommended Books:

- Ahmad, E., 1972, Coastal Geomorphology of India, Orient Long, New Delhi.
- Bloom A. L., 2003: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
- Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
- Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, Ed., Macmillan Publishing Company.
- Das Gupta, A and Kapoor, A.N., (2001) *Principles of Physical Geography,* S.C. Chand& Company Ltd. New Delhi.
- Dayal, P., (1996) A Text book of Geomorphology. Shukla Book Depot, Patna.
- Gautam, A (2010): Bhautik Bhugol, Rastogi Publications, Meerut.
- Huggett, R.J. (2007) *Fundamentals of Geomorphology*, Routledge, New York.
- Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
- Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
- Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
- Singh, S (2009): *Bhautik Bhugol ka Swaroop (Hindi)*, Prayag Pustak, Allahabad.
- Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to physical Geology,4th Edition, John Wiley and Sons.
- Strahler, A. H. and Strahler, A N., (2001): *Modern Physical Geography* (4/E), JohnWiley and Sons, Inc., New York.
- Summerfield M. A. (2013): Global Geomorphology, Routledge, New York
- Thornbury W. D., 1968: Principles of Geomorphology, Wiley.
- Tikkaa, R N (1989): Bhautik Bhugol ka Swaroop, Kedarnath Ram Nath, Meerut.

B. A. (Major Course) Geography, Semester- I, Credit- 01

Geological Mapping Techniques (Practical) – (MJ- 101P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 101P and another one question from SEC- 1010P but both examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Portrait various types of reliefs through cartographic techniques
2. Analyze morphometry and cartographic patterns of reliefs
3. Comprehend locational and spatial aspects of the earth surface.

Course Content:

Unit- I

Representation of Relief: Contour; Profile: Serial, Superimposed, Projected and Composite.

Unit- II

Block Diagrams: One Point Perspective; Drawing of Geological Cross Section- 1 & 6 and their interpretations, Hypsometric Curve, Histogram.

Recommended Books:

- Anson R. and Ormelling F. J., 1994: International Cartographic Association Basic Cartographic Vol. Pegmen Press.
- Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
- Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London. 6. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
- Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
- Sharma J. P. 2010: Prayogic Bhugol, Rastogi Publishers. Meerut.
- Sharma, J P (2010) Prayogtmak Bhugol ki Rooprekha, Rastogi Publications. Meerut 13. Singh. RL & Dutta, PK (2012) Prayogatmak Bhugol, Central Book Depot, Allahabad
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Singh RL & Rana P. B. Singh (1991) Prayogtmak Bhugol ke Mool Tatva, Kalyani Publishers, New Delhi

B. A. (Major Course) Geography, Semester- II, Credit-03

Climatology (MJ- 201T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the elements of weather and climate and its impacts at different scales.
2. Comprehend the climatic aspects and its bearing on planet earth.
3. Understand the oceanic process and availability of resources.

Course Content:

Unit I

Composition and Structure of Atmosphere – Variation with Altitude, Latitude and Season.

Unit II

Insolation and Temperature –Factors and Distribution, Heat Budget, Temperature Inversion.

Unit III

Atmospheric Pressure and Winds – Planetary Winds, Forces affecting Winds, General Circulation of Air, Jet Streams; Cyclones – Tropical Cyclones & Temperate Cyclones.

Unit IV

Atmospheric Moisture – Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation Types, Stability and Instability.

Unit V

Climatic Regions (Koppen & Thornthwaite); Monsoon - Origin and Mechanism.

Recommended Books:

- Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
- Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
- Bhutani, S., (2000): *Our Atmosphere*, Kalyani Publishers, Ludhina.
- Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi.
- Gupta L S(2000): Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi
- Gupta, L.S., (2000): *JalvayuVigyan(Hindi)*,MadhyamKaryanvayNidishalya, DelhiVishwaVidhyalaya, Delhi.
- Lal, D S (2006): Jalvayu Vigyan, Prayag Pustak Bhavan, Allahabad.
- Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
- Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
- Pinet, P. R., (2008): *Invitation to Oceanography* (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
- Singh, S (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad
- Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw-Hill.
- Vatal, M (1986): Bhautik Bhugol, Central Book Depot, Allahabad.

B. A. (Major Course) Geography, Semester- II, Credit-01

Cartographic Techniques of Weather and Climate (Practical) - (MJ- 201P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 201P, one question from MJ- 202P and another one question from SEC- 201P but all three examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Read and prepare weather and climate maps
2. Represent the elements of weather through cartographic techniques
3. Forecast weather conditions through symbols, graphs and diagrams.

Course Content:

Unit I

Representation of Weather Elements on the Map: Symbols and Abbreviation, Notation, Isobar, Isohyets, Interpretations of weather map.

Unit II

Climograph and Hythergraph; Wind rose diagram, Beaufort scale of wind forces.

Recommended Books:

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), McGraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
- Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol , Central Book, Depot, Allahabad
- Bhopal Singh R L and Duttta P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad

B. A. (Major Course) Geography, Semester- II, Credit- 03

Hydrology and Oceanography (MJ- 202T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand the basic components of hydrological cycle and comprehend practices of integrated watershed management
2. Evaluate the water balancing and river basin and water disputes
3. Understand the oceanic process and availability of resources.

Course Content:

Unit- I

Definition and Scope of Hydrology, human impact on the hydrological cycle; precipitation, interception, evaporation, evapotranspiration, infiltration, ground-water, run off and overland flow.

Unit -II

Water Balance: Hydrological input and output; River Basin: Characteristics of river basins, basin surface run-off; floods and droughts.

Unit-III

Ocean floor topography: Atlantic, Pacific and Indian; and Oceanic Water Movements – Waves, Currents and Tides.

Unit- IV

Ocean Salinity, Density and Temperature – Distribution and Determinants; Marine Deposits.

Unit – V

Coral reefs, Marine Biomes; Ocean Habitats; Ocean Resources and Environmental Degradation.

Recommended Books:

- Andrew. D. ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis

Publishers, CRC Press.

- Anikouchine, W. A. and Sternberg, R. W., (1973): *The World Oceans: An Introductionto Oceanography*, Prentice-Hall.
- Fetter, C.W. (2005): *Applied Hydrogeology,* CBS Publishers & Distributors, NewDelhi.
- Garrison T., 1998: Oceanography, Wordsworth Company, Belmont.
- Karanth, K.R., 1988: Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
- Kershaw S., 2000: Oceanography: An Earth Science Perspective, Stanley Thornes, UK.
- Lyon, J.G., (2003): *GIS for Water Resource and Watershed Management*, Taylor andFrancis, New York.
- Meinzer, O. E., (1962): *Hydrology,* Dover Publication, New York.
- Pinet P. R., 2008: Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
- Ramaswamy, C., (1985): *Review of floods in India during the past 75 years: A Perspective*, Indian National Science Academy, New Delhi.
- Rao, K.L., 1982: India's Water Wealth 2nd edition, Orient Longman, Delhi.
- Sharma R. C. and Vatal M., 1980: Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
- Sverdrup K. A. and Armbrust, E. V., 2008: An Introduction to the World Ocean, McGraw Hill, Boston.
- Todd, D.K. (1959): *Ground water Hydrology*, Wiley India Edition, New Delhi.

B. A. (Major Course) Geography, Semester- II, Credit-01

Map Projection (Practical) - (MJ- 202P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 201P, one question from MJ- 202P and another one question from SEC- 201P but all three examinations must be held simultaneously.

Unit- I

Scale: Simple, Comparative & Diagonal; Concept of projection and classification of projections; Conical Projection with One Standard and Two Standard Parallel.

Unit- II

Bonne's Projection, Navigational maps: Mercator's and Cylindrical Equidistant Projection; Polar Zenithal Projection.

Recommended Books:

- Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
- Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
- Evans M., 1988: “Participant Observation: The Researcher as Research Tool” in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
- Misra, R.P. (2002) Research Methodology, Concept Publications, New Delhi.
- Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publications. Co., New Delhi.
- Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
- Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001).
- Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
- Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.
- Yadav, H. (2013): Shodh Pravidhi Evam Matratamak Bhugol, Raja Publications, Delhi.

B. A. (Major Course) Geography, Semester- III, Credit- 03

Human Geography (MJ- 301T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Know the changing human and cultural landscape at different levels
2. Understand patterns and processes of population growth and its implications
3. Appreciate the nature and quality of human landscapes.

Course Content:

Unit I

Human Geography: Definition, Scope and Principles; Contemporary Relevance.

Unit II

Population: Population Growth and Distribution; Population Composition; Malthusianand Demographic Transition Theories.

Unit III

Space and Society: Cultural Regions; Race; Tribes, Religion and Language.

Unit IV

Settlements: Types of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization.

Unit V

Population-Resource Relationships and Regional Resource Development.

Recommended Books

- Chandana, R.C. (2010) Population Geography, Kalyani Publisher.
- Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur.
- Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
- Johnston R: Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
- Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography, W. H. Freeman and Company, New York.
- Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
- Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
- Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur.
- Perpillou, A. V.,1997, Human Geography, Longman, Newyork.

B. A. (Major Course) Geography, Semester- III, Credit- 01

Thematic Cartography (Practical) – (MJ- 301P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 301P, one question from MJ- 302P and another one question from SEC- 301P but all three examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Acquire knowledge regarding the classification and elements of maps.
2. Relate utility of maps with the development.
3. Appreciate the preparation of various thematic maps with the application of various techniques.

Course Content:

Unit I

Maps – Classification and Types; Principles of Map Design. Diagrammatic Data Presentation – Line, Bar and Circle.

Unit II

Thematic Mapping Techniques – Properties, Uses and Limitations; Areal Data: Choropleth, Dot, Proportional Circles; Point Data: Isopleths.

Recommended Books:

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), McGraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Singh, L R & Singh, R (1977): Manchitra or Pryaogatamek Bhugol, Central Book, Depot, Allahabad.
- Singh, R L and Duttta, P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad.

B. A. (Major Course) Geography, Semester- III, Credit- 03

Evolution of Geographical Thought (MJ- 302T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Distinguish the paradigms in geography discipline through time
2. Understand the geographical thinking in different regions of world
3. Appreciate the past and future trends of world geography in general and Indian geography in particular.

Course Content:

Unit – I

Nature, Approaches, Definition and Objectives of Geography; Place of Geography in Classification of Sciences; Recent Trends in Geography; Paradigm Shifts in Geography.

Unit- II

Early Origins of Geographical Thinking with reference to the contribution of the ancient Greek, Roman and Indian Geographers in the development of Geography.

Unit- III

Modern – Evolution of Geographical Thinking and Disciplinary Trends in Germany, France, Britain, United States of America.

Unit- IV

Debates – Environmental Determinism and Possibilism, Systematic and Regional, Ideographic and Nomothetic.

Unit- V

Trends – Quantitative Revolution and its Impact, Behaviouralism, System Approach, Radicalism, Humanism and Positivism.

Recommended Books:

- Adhikar, Sudeepta (2015): *Fundamentals of Geographical Thought*, Orient

black swan private limited.

- Arentsen, M., Stam R. and Thuijis R., 2000: Post-modern Approaches to Space, e book.
- Bhat, L.S. (2009) Geography in India (Selected Themes). Pearson
- Bonnett, A., 2008: What is Geography? Sage.
- Dikshit R. D., 1997: Geographical Thought: A Contextual History of Ideas, Prentice– Hall India.
- Freeman, R., (1970): *Hundred year of Geography*, Hutchinson. London.
- Hartshone R., 1959: Perspectives of Nature of Geography, Rand McNally and Co.
- Harvey, David., (1969): *Explanation in Geography*, London: Arnold.
- Holt-Jensen A., 2011: Geography: History and Its Concepts: A Students Guide, SAGE.
- Hussain, M., (2005): *Bhougolik Chintan Ka Itihas*, Rawat Publications, Jaipur.
- Johnston, R. J., (Ed.): Dictionary of Human Geography, Routledge.
- Johnston, R. J., 1997: Geography and Geographers, Anglo-American Human Geography since 1945, Arnold, London.
- Kapur, A., 2001: Indian Geography Voice of Concern, Concept Publications.
- Martin Geoffrey J., 2005: All Possible Worlds: A History of Geographical Ideas, Oxford.
- Soja, Edward 1989. Post-modern Geographies, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.

B. A. (Major Course) Geography, Semester- III, Credit-01

Elementary Statistics (Practical) - (MJ- 302P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 301P, one question from MJ- 302P and another one question from SEC- 301P but all three examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the basics of data collection and processing for the meaningful outcomes
2. Comprehend the representation and interpretation of the results
3. Put into practice results obtained in representation as well as day-to-day life.

Course Content:

Unit I

Data Collection: Type and Sources of Data; Methods of Data Collection; Measures of Central Tendency: Mean, Median & Mode.

Unit II

Data Analysis: Qualitative Data Analysis; Quantitative Data Analysis; Data Representation Techniques, Measures of dispersion: Quartile and Mean Deviation.

Recommended Books:

- Ajai, S. G. and Sanjaya, S.G. (2009) *Statistical Methods for Practice and Research,*

Sage Publications, New Delhi.

- Berry, B. J. L. and Marble, D. F. (eds.): *Spatial Analysis–A Reader in Geography*.
- Ebdon, D., (1977): *Statistics in Geography: A Practical Approach*.
- Hammond, P. and McCullagh, P. S., (1978): *Quantitative Techniques in Geography: AnIntroduction*, Oxford University Press.
- King, L. S., (1969): *Statistical Analysis in Geography*, Prentice-Hall.
- Mahmood, A., 1977: *Statistical Methods in Geographical Studies*, Concept.
- Pal, S. K., (1998): *Statistics for Geoscientists*, Tata McGraw Hill, New Delhi.
- Rogerson,P. A., (2001) *Statistical Methods for Geography*, Sage Publications, NewDelhi.
- Sarkar, A. (2013): *Quantitative geography: techniques and presentations*. Orient BlackSwan Private Ltd., New Delhi
- Shinha, Indira., (2007): *Sankhyik ibhugol (Hindi)*. Discovery Publishing House, NewDelhi.
- Silk, J., (1979): *Statistical Concepts in Geography*, Allen and Unwin, London.

B. A. (Major Course) Geography, Semester- IV, Credit- 03

Fundamentals of Geographical Information System and Remote Sensing (MJ- 401T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Appreciate the strength and application of remote sensing and GIS
2. Map the resources, their location and availability
3. Apply this knowledge for sustainable development

Course Content:

Unit-I

GIS: Geography and GIS; Definition and Development of GIS; Components of GIS; GIS Data Structures: Types (Spatial and Non-Spatial), Raster and Vector Data Structure, Comparison of Vector and Raster Data Models.

Unit- II

Remote Sensing: Principles and stages of Remote Sensing, Electromagnetic energy- Electromagnetic spectrum, EMR interaction with Atmosphere and Earth Surface; Remote Sensing Platforms.

Unit-III

Digital Image Processing: Image Processing and Data Analysis: Pre-processing (Radiometric and Geometric Correction), Enhancement; Classification (Supervised and Un-supervised).

Unit- IV

Interpretation and Application of Remote Sensing and GIS: Urban Sprawl Analysis, Forests Monitoring, Environmental Management.

Unit- V

Global Positioning System (GPS)– Principles and Uses; Basic Principles of Computer Assisted Cartography; Integration of GIS with Remote Sensing & Global Positioning System (GPS).

Recommended Books:

- Anji Reddy, M. (2008): Textbook of Remote Sensing and Geographic

InformationSystem, B.S. Publication, Hyderabad

- Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing, Springer, Berlin Heidelberg.41
- Burrough, P.A., and McDonnell, R.A., (2000): *Principles of Geographical InformationSystem-Spatial Information System and Geo-statistics*. Oxford University Press
- Campbell, J. B., (2007): *Introduction to Remote Sensing*, Guildford Press.
- Chauniyal, D. D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad
- Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Information system. Prentice Hall.
- Jensen, J. R., (2004): *Introductory Digital Image Processing: A Remote SensingPerspective*, Prentice Hall Inc., New Jersey.
- Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept Publishing House.
- Joseph, G. (2005): *Fundamentals of Remote Sensing*, United Press India.
- Kumar, Dilip, Singh, R.B. and Kaur, Ranjeet (2019): *Spatial InformationTechnology for Sustainable Development Goals*, Springer.
- Lillisand, T.M., and Kiefer, P.W., (2007):*Remote Sensing and ImageInterpretation*,6th Edition, John Wiley & Sons, New York.
- Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.
- Nag, P. and Kudra, M., (1998): *Digital Remote Sensing*, Concept, New Delhi.
- Rees, W. G., (2001): *Physical Principles of Remote Sensing*, Cambridge UniversityPress.

B. A. (Major Course) Geography, Semester- IV, Credit- 01

Techniques of Geographic Information System (Practical) - (MJ- 401P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 401P, one question from MJ- 402P and another one question from MJ- 403P but all three examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Appreciate the strength and application of remote sensing and GIS
2. Map the resources, their location and availability
3. Apply this knowledge for sustainable development.

Course Content:

Unit- I

GIS Data Analysis: Input; Geo-Referencing; Editing, Output and Query; Map digitization: Line, Dot & Polygon; Overlays.

Unit- II

Global Positioning System (GPS): Principles and Uses; Measurement of small field.

Recommended Books:

- Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press.
- Chauniyal, D. D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad
- Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
- Joseph, G. 2005: Fundamentals of Remote Sensing, United Press India.
- Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
- Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
- Rees W. G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
- Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.
- Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw-Hill.

B. A. (Major Course) Geography, Semester- IV, Credit- 03

Economic Geography (MJ- 402T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Distinguish different types of economic activities and their utilities
2. Appreciate the factors responsible for the location and distribution of activities
3. Examine the significance and relevance of theories in relation to the location of differenteconomic activities.

Course Content:

Unit I

Introduction: Meaning and scope of Economic Geography; Concept and classification of economic activity.

Unit II

Agriculture regions of the world (Derwent Whittlesey); Theory of agricultural location (Von Thunen), Theory of Industrial location (Weber).

Unit III

Primary Activities: Principal crops: rice and wheat; Forestry, Fishing and Mining: Iron ore, Petroleum & Coal.

Unit IV

Secondary Activities: Manufacturing: Cotton Textile, Iron and Steel; Manufacturing Regions of India, Special Economic Zones and Technological Parks.

Unit V

Tertiary Activities: Transport (Land, Air, Water and Pipelines), Trade (National & International).

Recommended Books:

- Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
- Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, Present and Future, Taylor and Francis.
- Bagchi-Sen, S. and Smith, H. L., (2006): Economic Geography: Past, Present and Future,Taylor and Francis.
- Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. (2000): The New Oxford Handbookof Economic Geography, Oxford Press.
- Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford.
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley-Blackwell.
- Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press.
- Durand L., 1961: Economic Geography, Crowell.
- Hodder B. W. and Lee Roger, 1974: Economic Geography, Taylor and Francis.
- Roy, P. (2014): Economic Geography - A study of Resources, New Central Book Agency, Kolkata.
- Saxena, H.M. (2013): Economic Geography, Rawat Publications, Jaipur.
- Wheeler J. O., 1998: Economic Geography, Wiley.
- Willington D. E., 2008: Economic Geography, Husband Press.

B. A. (Major Course) Geography, Semester- IV, Credit- 01

Representation of Economic Data (Practical) - (MJ- 402P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 401P, one question from MJ- 402P and another one question from MJ- 403P but all three examinations must be held simultaneously.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Read and prepare maps
2. Comprehend locational and spatial aspects of the earth surface
3. Use and importance of maps for regional development and decision making.

Course Content:

Unit I

Compound Bar Diagram, Block Pile Diagram, Band Graph, Ogive, Pie Diagram, Lorenz Curve

Unit II

Cumulative Frequency Curve, Polygon, Scatter Diagram, Histogram, Kurtosis and Skewness.

Recommended Books:

- Anson, R., and Ormelling F. J. (1994): *International Cartographic Association: BasicCartographic, Vol. 1*, Pregmen Press.
- Gupta, K.K. and Tyagi V.C. (1992): *Working with Map*, Survey of India, DST, NewDelhi.
- Khan, Zulfequar Ahmad., (1998): *Text book of Practical Geography*, ConceptPublishing Company, New Delhi.
- Misra, R.P. (2014): *Fundamentals of Cartography (*Second Revised and EnlargedEdition), Concept Publishing, New Delhi.
- Monkhouse, F. J. and Wilkinson, H. R. (1973): *Maps and Diagrams*, Methuen,London.
- Robinson, A. H. (2009): *Elements of Cartography* (6th Edition), John Wiley and Sons,New York.
- Sarkar, A. (2015): *Practical geography: A systematic approach*, Orient Black SwanPrivate Ltd., New Delhi
- Sharma, J. P., (2010): *Prayogic Bhugol (Hindi)*, Rastogi Publishers, Meerut.
- Singh, Gopal., (1998): *Map Work and Practical Geography (4th Edition)*, VikasPublishing House, Ahmedabad.
- Singh, R.L. &Dutta, P.K., (2012): *Prayogatmak Bhugol (Hindi)*,Allahabad: Central Book Depot.
- Singh, R.L. and Singh, R. P. B. (1999): *Elements of Practical Geography*, KalyaniPublishers, New Delhi.
- Singh, R. L. & Singh, R. P. B. (1991): *Prayogtmak Bhugol ke Mool Tatva (Hindi)*,Kalyani Publishers, New Delhi
- Steers, J.A. (1970): *An Introduction to the Study of Map Projections*, University ofLondon Press, London.

B. A. (Major Course) Geography, Semester- IV, Credit-03

Settlement Geography (MJ- 403T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand the fundamentals and patterns of urbanization process
2. Learn the functional classification of cities and Central Place Theory
3. Know contemporary problems of settlements in Jharkhand.

Course Content:

Unit I

Nature and Scope of Settlement Geography, Definition of Rural and Urban Settlement.

Unit II

Settlement Sites and Situations, Type & Pattern of Rural Settlements, Rural Morphology, Salient Features of Rural Settlement in India.

Unit III

Origin & growth of towns, Hierarchy of Urban Settlements; Functional Classification of Towns; Central Place Theory: Christaller and Losch.

Unit IV

Theories of Internal Structure of Cities, Rank Size Rule, Concept of Primate City.

Unit V

Rural Settlement Problems and Planning; Depopulation of Rural Settlement; Urban Settlement Problems and Planning: Slums and Rural- Urban Fringe; Garden City.

Recommended Books:

- Ambrose, Peter, 1970: Concepts in Geography, Vol.-I, Settlement Pattern, Longman.
- Baskin, C. (Translator) 1996: Central Places in Southern Germany, Prentice-Hall Inc. Englewood Cliffs New Jersey.
- Carter, H., (1972): *The study of Urban Geography*, Edward Arnold, London.
- Haggett, Peter, Andrew D. Cliff and Allen Frey (Ed.) 1979: Locational Models Arnold Heinemann.
- Hudson, F. S. (1976) Geography of Settlements, Macdonald, London.
- Kaplan, D. H., Wheeler, J. O. and Holloway, S. R., (2008): *Urban Geography*, JohnWiley.
- King. Leslie, J., 1986: Central Place Theory, Saga Publications, New Delhi.
- Mayer, M. Harold and Clyde F. Kohn (Ed.) 1967 Readings in urban Geography, Central Book Depot, Allahabad.
- Mitra, Asok, Mukherjee S and Bose, R., 1980: Indian Cities Abhinav Publications, New Delhi.
- Nangia, Sudesh, 1976: Delhi Metropolitan Region, K.B. Publications, New Delhi
- Northam Ray, M. (1979). Urban Geography, John Wiley and Sons, New York.
- Pacione, M., (2009): *Urban Geography: A Global Perspective*, Taylor and Francis.
- Prakasa, Rao, V. L. S., 1992: Urbanization in India: Spatial Dimensions, Concept Publishing Co., New Delhi.
- Ramachandran, R., 1992: Urbanization and Urban Systems in India, Oxford University Press, New Delhi.
- Singh, R. L. and Kashi Nath Singh (Ed.) 1975: Readings in Rural Settlement Geography, National Geographical Society of India, Varanasi.

B. A. (Major Course) Geography, Semester- IV, Credit- 01

Statistical Methods in Geography-I (Practical) - (MJ- 403P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 401P, one question from MJ- 402P and another one question from MJ- 403P but all three examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the basics of data collection and processing for the meaningful outcomes
2. Comprehend the representation and interpretation of the results
3. Put into practice results obtained in representation as well as day-to-day life.

Course Content:

Unit- I

Use of Data in Geography; Significance of Statistical Methods in Geography; Scales of Measurement (Nominal, Ordinal, Interval & Ratio).

Unit- II

Tabulation and Descriptive Statistics: Frequencies, Quartiles; Cross Tabulation, Measures of dispersion: Standard Deviation and Coefficient of Variation.

Recommended Books:

- Berry, B. J. L. and Marble D. F. (eds.): Spatial Analysis – A Reader in Geography.
- Ebdon, D., 1977: Statistics in Geography: A Practical Approach.
- Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction Oxford University Press.
- King, L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
- Mahmood, A., 1977: Statistical Methods in Geographical Studies, Concept.
- Pal, S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
- Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
- Silk. J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
- Spiegel, M. R.: Statistics, Schaum's Outline Series.
- Yeates, M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
- Shinha, Indira (2007): Sankhyiki bhugol, Discovery Publishing House, New Delhi.

B. A. (Major Course) Geography, Semester- V, Credit- 03

Geography of Asia (MJ- 501T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning outcomes:

After the completion of course, the students will have ability to:

1. Understand the physical profile of the country
2. Study the resource endowment and its spatial distribution and utilization for sustainable development
3. Synthesize and develop the idea of regional dimensions.

Course Content:

Unit- I

Asia in the context of the world, relief, structure, drainage, climate, natural vegetation & soils.

Unit-II

Agriculture: Major characteristics of agriculture in Asia with reference to production and distribution of rice, wheat & tea; Minerals: iron-ore & bauxite; Power resources: coal & petroleum

Unit- III

Manufacturing industry: Iron & steel, cotton textile and fishing industry; Means of transport: sea routes.

Unit- IV

Population: Distribution, Density & Growth; Trends & Patterns of Urbanization; Migration.

Unit- V

Regional Concept: South Asia, South-West Asia, South-East Asia.

Recommended Books:

- Ahmad, K. S. (1964): *Geography of Pakistan*, Oxford University Press, Karachi.
- Ahmad, N. (1975): *An Economic Geography of Bangladesh*, Vikas, New Delhi.
- Buchanan, K et al. (!981): *China: The Land and People*, Crown, New York.
- Chapman, G. P. and K. M. Baker (1992): *The Changing Geography of Asia*, Routledge, New York.
- Cressey, Q. (1963): Asia's Land and People, McGraw-Hill, New York.

B. A. (Major Course) Geography, Semester- V, Credit- 01

Statistical Methods in Geography- II (Practical) - (MJ- 501P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 501P, one question from MJ- 502P, and another one question from MJ- 503P but all three examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the basics of data collection and processing for the meaningful outcomes
2. Comprehend the representation and interpretation of the results
3. Put into practice results obtained in representation as well as day-to-day life.

Course Content:

Unit- I

Sampling: Purposive, Random, Systematic and Stratified, Theoretical Distribution: Probability and Normal Distribution.

Unit- II

Association and Correlation: Rank Correlation, Product Moment Correlation, and Simple Regression.

Recommended Books:

- Berry, B. J. L. and Marble D. F. (eds.): Spatial Analysis – A Reader in Geography.
- Ebdon, D., 1977: Statistics in Geography: A Practical Approach.
- Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction Oxford University Press.
- King, L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
- Mahmood, A., 1977: Statistical Methods in Geographical Studies, Concept.
- Pal, S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
- Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
- Shinha, Indira (2007): Sankhyiki bhugol. Discovery Publishing House, New Delhi
- Silk. J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
- Spiegel, M. R.: Statistics, Schaum's Outline Series.
- Yeates, M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.

B. A. (Major Course) Geography, Semester-V, Credit- 03

Geography of India (MJ- 502T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning outcomes:

After the completion of course, the students will have ability to:

1. Understand the physical profile of the country
2. Study the resource endowment and its spatial distribution and utilization for sustainable development
3. Synthesize and develop the idea of regional dimensions.

Course Content:

Unit I

Physical: Location, Physiographic Divisions, Structure, Climate: characteristics and classification; Soil and Natural Vegetation

Unit II

Population: Distribution, Density and Growth; Structure: Race and Sex Ratio; Social Composition: Distribution of Population by Race, Language and Tribes.

Unit III

Agricultural Production and Distribution: Rice, Wheat, Cotton, Tea, Jute, Rubber, Coffee, Millets and Sugarcane.

Unit IV

Distribution and Utilization Mineral and Power Resources: Iron ore, Coal, Hydroelectricity and Wind; Industries: Iron and Steel, Petroleum and Cotton Textile industry, Spatial Patterns of Industrial Development: Automobile and Information Technology.

Unit V

Regionalization of India: Physiographic (R. L. Singh), Economic (Sengupta).

Recommended Books:

- Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.
- Hussain, Majid (2018): Geography of India, Mc Graw hill Education (India) private Limited, Delhi.
- Johnson, B. L. C., ed. 2001. Geographical Dictionary of India. Vision Books, New Delhi.
- Majid Husain (2009): *Geography of India*, Tata McGraw hill Education Private Ltd, NewDelhi.
- Mandal R. B. (ed., 1990): Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.
- Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
- Sdayasuk Galina and P Sengupta (1967): Economic Regionalization of India, Census of India.
- Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
- Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur.
- Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
- Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
- Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
- Tirtha, Ranjit (2002): *Geography of India*, Rawat Publs., Jaipur & New Delhi.
- Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad.

B. A. (Major Course) Geography, Semester- V, Credit- 01

Cartographic Techniques (Practical) – (MJ- 502P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 501P, one question from MJ- 502P, and another one question from MJ- 503P but all three examinations must be held simultaneously.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Read and prepare maps.
2. Comprehend locational and spatial aspects of the earth surface.
3. Use and importance of maps for regional development and decision making.

Course Content:

Unit I

Cartography – Nature and Scope; Scales – Concept and application; Enlargement and Reduction of Map.

Unit II

Topographical Map – Interpretation of a Plateau area in context of relief, drainage, communication and settlement.

Recommended Books:

- Anson R. and Ormelling F. J. (1994): International Cartographic Association: Basic Cartographic, Vol. 1, Pregmen Press.
- Gupta K.K. and Tyagi, V. C. (1992): Working with Map, Survey of India, DST, New Delhi.
- Khan, Zulfequar Ahmad. (1998): *Text book of Practical Geography*, ConceptPublishing Company, New Delhi.
- Mishra R.P. and Ramesh, A. (1989): Fundamentals of Cartography, Concept, New Delhi.
- Monkhouse F. J. and Wilkinson H. R. (1973): Maps and Diagrams, Methuen, London.
- Rhind D. W. and Taylor D. R. F. (eds., 1989): Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
- Robinson A. H. (2009): Elements of Cartography, John Wiley and Sons, New York.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Sharma J. P. (2010): Prayogic Bhugol, Rastogi Publishers, Meerut.
- Sharma, J P (2010) Prayogtmak Bhugol ki Rooprekha, Rastogi Publications, Meerut.
- Singh R L & Rana P B Singh (1991) Prayogtmak Bhugol ke Mool Tatva, Kalyani Publishers, New Delhi.
- Singh R. L. and Singh R. P. B. (1999): Elements of Practical Geography, Kalyani Publishers.
- Singh, Gopal., (1998): *Map Work and Practical Geography (4th Edition)*, Vikas Publishing House, Ahmedabad.
- Singh, R.L. &Dutta, P.K., (2012): *Prayogatmak Bhugol(Hindi)*, Central Book Depot,Allahabad.
- Singh, R. L.& Singh, Rana. P.B. (1991): *Prayogtmak Bhugol ke Mool Tatva (Hindi)*, Kalyani Publishers, New Delhi
- Steers, J.A. (1970): *An Introduction to the Study of Map Projections*, University ofLondon Press, London.

B. A. (Major Course) Geography, Semester- V, Credit- 03

Geography of Jharkhand (MJ-503T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning outcomes:

After the completion of course, the students will have ability to:

1. Understand the physical and socio-economic profile of the state of Jharkhand
2. Study the resource endowment and its spatial distribution and utilization for sustainable development
3. Synthesize and develop the idea of regional dimensions.

Course Content:

Unit I

Physical: Physiographic Divisions, Structure, Drainage, Soil Types, Forest and Climate.

Unit II

Population: Distribution, Density and Growth, Structure: Race, Religion, Sex Ratio and Urbanization.

Unit III

Agriculture and Irrigation; Mineral and Power Resources: Distribution and utilisation of iron ore, bauxite and coal; Industries – Iron & Steel and Cement.

Unit IV

Tribal population and their distribution, Problems of Tribes and Tribal Development Plans, Socio – Demographic characteristics of Santhal, Munda, Oraon, and Ho Tribes.

Unit V

Settlement**:** Type and Pattern of Settlements, Urbanization & Urban Development; Multi-Purpose River Valley Project: Damodar & Suberna Rekha Valley Projects

Recommended Books:

- Ahmad, E. (1965): Bihar: A Physical Economic and Regional Geography, Ranchi University, Ranchi.
- Prasad,A.(1973):Chotanagpur: Geography of Settlements." Ranchi University, Ranchi.
- Satpathi, D.D.P (1981): An Outline of India geomorphology, Classical Pub. Company, New Delhi.
- Sinha, V.N.P and Singh, L.K.P. (2003). Jharkhand Land and People, Rajesh Publication, New Delhi.
- Singh, Saroj Kumar (2015): Jharkhand Pradesh ki Bhaugolik Vyakhya, Rajesh Publication, New Delhi.
- Tiwari, Ram Kumar (2010): Jharkhand ka Bhugol, Rajesh Publication, New Delhi.

B. A. (Major Course) Geography, Semester- V, Credit- 01

Instrumental Survey- I (Practical) – (MJ-503P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 501P, one question from MJ- 502P, and another one question from MJ- 503P but all three examinations must be held simultaneously.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Conduct proper field work for the collection of primary data to bring out grass root-realities

2. Make use of proper tools and surveying methods for measurement in context ofcollection and processing of data

3. Prepare a report based on field data.

Course Content:

Unit I

Plane Table Survey: Radiation Method; Resection Method: Three-point problem, Graphical Method & Bessel's Method, Trial and Error Method.

Unit II

Prismatic Compass – Open Traverse and Closed Traverse.

Recommended Books:

- Robinson A. H. (2009): Elements of Cartography, John Wiley and Sons, New York.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Sharma, J P (2010) Prayogtmak Bhugol ki Rooprekha, Rastogi Publications, Meerut.
- Singh R L & Rana P B Singh (1991) Prayogtmak Bhugol ke Mool Tatva, Kalyani Publishers, New Delhi.
- Singh R. L. and Singh R. P. B. (1999): Elements of Practical Geography, Kalyani Publishers.
- Singh, Gopal., (1998): *Map Work and Practical Geography (4th Edition)*, Vikas Publishing House, Ahmedabad.
- Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol, Central Book, Depot, Allahabad.
- Singh, R.L., & Dutta, P.K., (2012): *Prayogatmak Bhugol* (Hindi). Central Book Depot, Allahabad.

B. A. (Major Course) Geography, Semester- VI, Credit- 03

Environmental Geography (MJ- 601T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand the dynamic interactive relationship between man and environment
2. Make assessment and review of planning and policies related to environment
3. Assess different aspects of floral and faunal regions.

Course Content:

Unit-I

Meaning and Components of Environment; Nature and Scope of Environmental Geography; Biomes.

Unit-II

Concept of Ecosystem; Structure of Ecosystem- biotic, abiotic; Ecosystem Functioning- Energy flow, Food chain; Man-Environment Relationship.

Unit -III

Major Ecosystems of the World – Equatorial, Monsoonal, Desert and Mountain Ecosystems; Deforestation.

Unit- IV

Pollution: Problems of Soil Erosion and Soil Conservation, Water, Air; Environmental disasters with special reference to India, Bio-diversity in India.

Unit- V

Appraisal and Conservation of Environment; Global Warming; Green House Effect, Sustainable Development; Environmental Programmes and Policies at National Level.

Recommended Books:

- Chandna, R. C., (2002): *Environmental Geography*, Kalyani, Ludhiana.
- Cunninghum, W. P. and Cunninghum, M. A., (2004): *Principals of Environmental Science: Inquiry and Applications*, Tata McGraw Hill, New Delhi.
- Das, R.C., et. al., 1998: *The Environmental Divide: The Dilemma of Developing Countries*,
- Goel R.S., 2000: *Environment Impacts Assessment of Water Resources Projects-Concerns, Policy Issues Perceptions and Scientific Analysis,* New Delhi: Oxford & IBH Publishing Co. Pvt. Ltd.
- Gole, P., 2001: *Nature Conservation and Sustainable Development in India*, Rawat Pub., Jaipur.
- Goudie, A., (2001): *The Nature of the Environment*, Blackwell, Oxford.
- Holechek, J. L. C., Richard, A., Fisher, J. T. and Valdez, R., (2003): *NaturalResources: Ecology, Economics and Policy*, Prentice Hall, New Jersey.
- Hussain, M., (ed.) 1996: *Environmental Management in India*, Rawat Pub., Jaipur.
- Jones, G. and Hollier, G., (1997): *Resources, Society and EnvironmentalManagement*, Paul Chapman, London.
- Kumaraswamy, K., Alagappa Moses., A & Vasanthy, M. (2004) *Environmental Studies,*
- Miller, G. T., (2004): *Environmental Science: Working with the Earth,* ThomsonBrooks Cole, Singapore.
- Mitchell, B., (1997): *Resource and Environmental Management*, Longman Harlow,England.
- MoEF, (2006): *National Environmental Policy-2006,* Ministry of Environment and Forests, Government of India.
- Odum, E. P. et al, (2005): *Fundamentals of Ecology*, Ceneage Learning India.
- Ramakrishnan, P.S., 1998: *Conservation and Management of Biological Resources in Himalaya*,Oxford & IBH Pub., New Delhi.
- Sapru, R.K., 1987: *Environmental Management in India*, A.P.H. Pub., New Delhi.
- Saxena, H.M., 2012: *Environmental Studies*, Rawat Publications, Jaipur.
- Singh, R.B., (ed.) 1990: *Environmental Geography*, Heritage Pub., New Delhi.
- Singh, S., 1997: *Environmental Geography*, Prayag Pustak Bhawan, Allahabad.
- Singh, Savindra.,(2001): *Paryavaran Bhugol (Hindi),* Prayag Pustak Bhawan, Allahabad. (in Hindi)

- Singh,R.B., Prokop**,** Pawel (Eds.) (2016):*Environmental Geography of South Asia*, Springer Japan

B. A. (Major Course) Geography, Semester- VI, Credit -01

Environment Based Project Work (Practical) - (MJ- 601P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 601P, one question from MJ- 602P, one question from MJ- 603P and another one question from MJ- 604P but all four examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand processes and impact of disaster
2. Understand both the natural and man-made disaster and human negligence in context ofenvironment
3. Write a field work-based report on Disaster Management to minimize the disaster risk/Risk from Disaster.

Course Content:

Student are required to present a project report from the given topics. Faculty members shall assist in preparing the project. Project can be assigned to the students' topic(s)/ Theme(s) from the following:

Unit- I

Global Warming, Evidences of Climate Change, Carbon Crediting, Landslide, Avalanches, Thundering & Lightning, Environmental Pollution of Ranchi Metropolitan City.

Unit-II

Soil Erosion, Deforestation, Cloud Burst, spread of some epidemic on any current / contemporary issue (as deemed suitable by the department).

Recommended Books:

- Coppola, D. P., 2011: Introduction to International Disaster Management, Elesvier, Butterworth-Heinemann.
- Gupta, H. K., (ed.)2003: Disaster Management, University Press.
- Gupta, M. C. (ed.), 2001: Natural Disaster Management in India, New Delhi.
- Kapur, A., et al., 2005: Disasters in India: Studies of Grim Reality, Rawat Publications, New Delhi.

  Singh, S. and J. Singh, 2014: Disaster Management, Pravalika Publications, Allahabad.
- Singh, R.B., (ed.) 1996: *Disasters, Environment and Development*, Oxford & IBH Pub., New Delhi.

B. A. (Major Course) Geography, Semester- VI, Credit- 03

Political Geography (MJ- 602T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Learn the concept of nation and state and geopolitical theories
2. Understand the different dimensions of electoral geography and resource conflicts
3. Have sound knowledge of politics of displacement, focusing on dams and SEZ

Course Content:

Unit- I

Introduction: Concepts, Nature and Scope, Recent trends in Political Geography; Geopolitics of Indian Ocean.

Unit- II

Concept of Nation and State, Attributes of State – Frontiers, Boundaries, Shape, Size, Territory and Sovereignty, Concept of Nation State; Geopolitics; Theories (Heartland and Rimland)

Unit- III

Electoral Geography – Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation, Gerrymandering.

Unit- IV

Political Geography of Resource Conflicts – Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals.

Unit- V

Politics of Displacement: Issues of relief, compensation and rehabilitation with reference to Dams and Special Economic Zones.

Recommended Books:

- Agnew J., 2002: Making Political Geography, Arnold.
- Adhikari, S., 1997, Political Geography, Rawat Publications, Jaipur & New Delhi.
- Agnew J., Mitchell K. and Total G., 2003: A Companion to Political Geography, Blackwell.
- Cox K. R., Low M. and Robinson J., 2008: The Sage Handbook of Political Geography, Sage Publications.
- Cox K., 2002: Political Geography: Territory, State and Society, Wiley-Blackwell
- Gallaher C., et. al, 2009: Key Concepts in Political Geography, Sage Publications.
- Glassner M., 1993: Political Geography, Wiley.
- Jones M., 2004: An Introduction to Political Geography: Space, Place and Politics, Routledge.
- Mathur H M and M M Cernea (eds., 2011) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi
- Painter J. and Jeffrey A., 2009: Political Geography, Sage Publications.
- Taylor P. and Flint C., 2000: Political Geography, Pearson Education.
- Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi

B. A. (Major Course) Geography, Semester- VI, Credit- 01

Projections and Identification of Rocks & Minerals (Practical) - (MJ- 602P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 601P, one question from MJ- 602P, one question from MJ- 603P and another one question from MJ- 604P but all four examinations must be held simultaneously.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Read and prepare maps.
2. Comprehend locational and spatial aspects of the earth surface.
3. Use and importance of rocks and minerals for regional development.

Course Content:

Unit- I

Projection: Polyconic, International, Cylindrical equal-area, Gall's Stereographic, Polar zenithal equal-area, Gnomonic polar zenithal.

Unit-II

Identification of rocks and minerals: Difference between rocks and minerals, Classification of rocks and minerals.

Recommended Books:

- Robinson A. H. (2009): Elements of Cartography, John Wiley and Sons, New York.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Sharma, J P (2010) Prayogtmak Bhugol ki Rooprekha, Rastogi Publications, Meerut.
- Singh R L & Rana P B Singh (1991) Prayogtmak Bhugol ke Mool Tatva, Kalyani Publishers, New Delhi.
- Singh R. L. and Singh R. P. B. (1999): Elements of Practical Geography, Kalyani Publishers.
- Singh, Gopal., (1998): *Map Work and Practical Geography (4th Edition)*, Vikas Publishing House, Ahmedabad.
- Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol, Central Book, Depot, Allahabad.
- Singh, R.L., & Dutta, P.K., (2012): *Prayogatmak Bhugol* (Hindi). Central Book Depot, Allahabad.
- Stoddard, R. H., (1982): *Field Techniques and Research Methods in Geography*, Kendall/Hunt

B. A. (Major Course) Geography, Semester- VIII, Credit- 03

Social Geography (MJ- 603T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

After the completion of course, the students will have ability to:

1. Familiarize the understanding of the society through concepts and social theory, philosophical approaches and spatial processes
2. Examine the process of social region formats in India with the help of social, cultural and historical factors
3. Examine social distortion and regionalize the various components of social well-being in India.

Course Content:

Unit- I

Social Geography: Nature, Historical Development and Scope; Philosophical Bases: Positivists, Structuralist, Radical, Humanist & Post-modern.

Unit-II

Social Categories: Caste, Class, Religion, Race and Gender and their Spatial distribution; Social Differentiation and Region Formation.

Unit- III

Geographies of Welfare and Well-being: Concept and Components; Measurement of Human Development; Healthcare, Housing and Education.

Unit- IV

Social Geographies of Inclusion and Exclusion, Slums, Quality of life, Backward Communities, Communal Conflicts and Crime.

Unit- V

Strategies to improve social well-being in Tribal, Hill, Drought and Flood Prone Areas in India; Social and Environmental Impact Assessment of Development Projects in India.

Recommended Books:

- Ahmed A., 1999: Social Geography, Rawat Publications.
- Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.
- Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
- Gregory, D. and J. Larry (eds., 1985); Social Relation and Spatial Structures, McMillan.
- Holt L., 2011: Geographies of Children, Youth and Families: An International Perspective, Taylor & Francis.
- Panelli R., 2004: Social Geographies: From Difference to Action, Sage.
- Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.
- Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, London.
- Smith D. M., 1994: Geography and Social Justice, Blackwell, Oxford.
- Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.
- Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa

B. A. (Major Course) Geography, Semester- VIII, Credit- 01

Socio- Economic Survey (Practical) - (MJ- 603P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 601P, one question from MJ- 602P, one question from MJ- 603P and another one question from MJ- 604P but all four examinations must be held simultaneously.

Learning Outcomes:

1. Understand the importance of empirical research
2. Learn how to conduct research project
3. Learn to prepare socio-economic report.

Course Content:

An administrative unit namely Block/Municipal Wards, Nagar Palika /Nagar Panchayat etc is to be assigned to the student. Students are herein required to conduct a Socio-Economic Sample Survey or on Contemporary Issues through schedule or printed questionnaire of the Administrative Unit as decided upon by the University Department of Geography. However, evaluation shall be on the basis of Survey Report and Subsequent Viva-Voce Examination by the External Examiners.

1. Report writing on the basis of field Survey -20 Marks
2. Viva-Voce -5 Marks.

Books Recommended:

- Misra, R.P. (2002) Research Methodology, Concept Publications, New Delhi.
- Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publications. Co., New Delhi.
- Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
- Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001).
- Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
- Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.
- Yadav, H. (2013): Shodh Pravidhi Evam Matratamak Bhugol, Raja Publications, Delhi.

B. A. (Major Course) Geography, Semester- VI, Credit-03

Resource Geography (MJ-604T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand the dynamic interactive relationship between man and its utility
2. Have sound understanding on distribution, utilization and proper management of natural -resources at global level
3. Make assessment and review of planning and policies related to natural-resources.

Course Content:

Unit I

Resource Geography: Definition, Scope and Approaches; Natural Resource: Concept, Classification and Techniques.

Unit II

Distribution, Utilisation, Problems and Management of Land Resources and Water Resources.

Unit III

Distribution, Utilisation, Problems and Management of Forests and Energy Resources.

Unit IV

Appraisal and Conservation of Natural Resources; Sustainable Resource Development.

Unit V

Population & Human Resources; Resource Regions of the World.

Recommended Books:

- Cutter S. N., Renwich H. L. and Renwick W., 1991: Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use, John Wiley and Sons, New York.
- Gadgil M. and Guha R., 2005: The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press. USA.
- Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
- Jones G. and Hollier G., 1997: Resources, Society and Environmental Management, Paul Chapman, London.
- Klee G., 1991: Conservation of Natural Resources, Prentice Hall, Englewood.
- Mather A. S. and Chapman K., 1995: Environmental Resources, John Wiley and Sons, New York.
- Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.
- Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.
- Rees J., 1990: Natural Resources: Allocation, Economics and Policy, Routledge. London.

B. A. (Major Course) Geography, Semester- VI, Credit-01

Instrumental Survey-II (Practical) -(MJ-604P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 601P, one question from MJ- 602P, one question from MJ- 603P and another one question from MJ- 604P but all four examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding the instruments of survey
2. Measure direction, area, height, distance accurately
3. Make use of proper tools and surveying methods for measurement in context ofcollection and processing of data.

Course Content:

Unit I

Dumpy Level Survey, Indian Clinometer

Unit II

Abney Level; Theodolite- Measurement of Angles (Horizontal and Vertical) and Height.

Recommended Books:

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), McGraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol , Central Book, Depot, Allahabad.

B. A. (Major Course) Geography, Semester- VII, Credit- 03

Regional Planning and Development (MJ- 701T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Identify notable lagging regions and solutions for their overall development
2. Have comprehensive understanding regarding the different regions and application ofdifferent models and theories for integrated regional development
3. Select appropriate indicators for the measurement of socio-economic regionaldevelopment.

Course Content:

Unit I

Definition and Concept of Region, Evolution and Types of Regional Planning: Formal, Functional and Planning Regions; Regional Planning: Need and Types of Regional Planning.

Unit II

Choice of a Region for Planning: Characteristics of an Ideal Planning Region; Delineation of Planning Region; Regionalization of India for Planning (Agro- Ecological Zones).

Unit III

Theories and Models for Regional Planning: Growth Pole Model of Perroux; Myrdal, Hirschman, Rostow and Friedmann.

Unit IV

Changing Concept of Development, Concept of underdevelopment; Efficiency-Equity Debate; Measuring development: Indicators (Economic, Social and Environmental); Human development.

Unit V

Sustainable Development Policies and Programmes: Rio+20; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance.

Recommended Books:

- Anand, Subhash (2011): *Ecodevelopment: Global Perspectives,* Research India Press, New Delhi.

- Baker, Susan., (2006): *Sustainable Development*, Milton Park, Abingdon, Oxon;New York, N.Y.: Routledge. (Chapter 2, "*The concept of sustainable development*").
- Blij H. J. De, 1971: *Geography: Regions and Concepts*, John Wiley and Sons.
- Claval P. l., 1998: *An Introduction to Regional Geography*, Blackwell Publishers, Oxford and Massachusetts.
- Friedmann J. and Alonso W. (1975): *Regional Policy – Readings in Theory and Applications*, MIT Press, Massachusetts.
- Gore C. G., 1984: *Regions in Question: Space, Development Theory and Regional Policy*, Methuen, London.
- Gore C. G., Köhler G., Reich U-P. and Ziesemer T., 1996: *Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention*, Metropolis-Verlag, Marburg.
- Haynes J., 2008: *Development Studies*, Polity Short Introduction Series.
- Johnson E. A. J., 1970: *The Organization of Space in Developing Countries*, MIT Press, Massachusetts.
- Misra, R. P., Sundaram, K. V. and V. L. S. Prakasa Rao, (1974): *Regional Developmentplanning in India*, Vikas Publishing House Delhi.
- Peet R., 1999: *Theories of Development*, The Guilford Press, New York.
- UNDP 2001-04: *Human Development Report*, Oxford University Press.
- World Bank 2001-05: *World Development Report*, Oxford University Press, New York.

B. A. (Major Course) Geography, Semester- VII, Credit- 01

Methods of Regionalization (Practical) - (MJ- 701P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 701P, one question from MJ- 702P, one question from MJ- 703P and another one question from MJ- 704P but all four examinations must be held simultaneously.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Formulate planning strategy for the development of the region
2. Comprehend the representation and interpretation of the results
3. Prepare maps of different regions on the basis of overall development and inequality level.

Course Content:

Unit I

Composite Index, Measurement of Human Development Index.

Unit II

Measures of Inequality: Location Quotient, Gini's Coefficient & Theil's index; Choropleth and Isopleth.

Recommended Books:

- UNDP 2001-04: *Human Development Report*, Oxford University Press.
- World Bank 2001-05: *World Development Report*, Oxford University Press, New
- Creswell J., 1994: *Research Design: Qualitative and Quantitative Approaches* Sage Publications.
- Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in *Qualitative Methods in Human Geography*, eds. J. Eyles and D. Smith, Polity.
- Misra, R.P. (2002) Research Methodology, Concept Publications, New Delhi.
- Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publications Co., New Delhi.
- Robinson A., 1998: "*Thinking Straight and Writing That Way*", in *Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences*, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
- Stoddard R. H., 1982: *Field Techniques and Research Methods in Geography*, Kendall/Hunt.
- Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.
- Yadav, H. (2013) Shodh Pravidhi Evam Matratamak Bhugol, Raja Publications.

B. A. (Major Course) Geography, Semester- IV, Credit - 03

Population Geography (MJ- 702T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Learn the role of Population Geography as a distinct fields of Human Geography
2. Have sound knowledge of key concept, different components of population along with its drivers
3. Examine population dynamics and characteristic with contemporary issues.

Course Content:

Unit I

Nature and scope of population geography; Sources of population data; Methodological problems; Recent developments in population geography.

Unit II

Population Dynamics – Measurement of Fertility and Mortality; Migration – types, causes and consequences; Composition of Population: Age and Sex structure; Rural & Urban.

Unit III

World Population: Factors affecting distribution, Patterns & Growth of population; Theories of Growth – Malthusian Theory and Demographic Transition Theory.

Unit IV

Population-Resource regions in context of overpopulation, underpopulation and optimum population; Population planning; Population Policies; Human development index.

Unit V

Contemporary Issues: Aging of Population, Declining Sex Ratio in India, HIV/AIDS, Unemployment.

Recommended Books:

- Barrett, H. R., (1995): *Population Geography*, Oliver and Boyd.

- Bhende, A. and Kanitkar, T., (2000): *Principles of Population Studies*, HimalayaPublishing House.
- Chandna R.C. (2009), Geography of Population, Kalyani Publishers, Ansari Road, Daryaganj, New Delhi.
- Clarke, J. I., (1965): *Population Geography*, Pergamon Press, Oxford.
- Clerk I (1984) Geography of populations, approaches and applications, Pergamon press, Oxford, UK.
- Ghosh BN. (1987) Fundamentals of population Geography s, sterling publishing company, New Delhi
- Jingam ML. B.K. Bhat, JN Desai (2003) Demography, Urinda Publishers Pvt. Ltd. Delhi.
- Kayastha SL. (1998) Geography of Population, Rawat publications, Jaipur.
- Majid Hussain (1999), Human Geography, Rawat publications, Jaipur.
- Maurya, S D (2009): *Jansankya Bhugol*, Sharda Putak Bhawan, Allahabad
- Newbold, K. B., (2009): *Population Geography: Tools and Issues*, Rowman andLittlefield Publishers.
- Pacione, M., (1986): *Population Geography: Progress and Prospect*, Taylor andFrancis.
- Panda, B. P., (1988): *Janasankya Bhugol*, M P Hindi Granth Academy, Bhopal
- R.K. Tripathi (2000) Population geography, commonwealth publishers, New Delhi.
- Trewartha GT. (1959) A Geography of Population, world Patterns, John Wiley and Sons Inc. New York.
- Wilson, M. G. A., (1968): *Population Geography*, Nelson.

B. A. (Major Course) Geography, Semester- IV, Credit- 01

Population Representation Techniques (Practical) - (MJ- 702P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 701P, one question from MJ- 702P, one question from MJ- 703P and another one question from MJ- 704P but all four examinations must be held simultaneously.

Course Content:

Unit- I

Duo Directional Bar Diagram, Age-Sex Pyramid, Ternary Diagram, Traffic flow diagram.

Unit-II

Dot- Still Gen Baur Method, Spherical and Proportionate Pie Diagram, Polygraph, Population Projection: Arithmetic.

Recommended Books:

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), McGraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol, Central Book, Depot, Allahabad.
- Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A., 2010: Principles of Map Design, The Guilford Press.

B. A. (Major Course) Geography, Semester- VII, Credit- 03

Urban Geography (MJ- 703T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the fundamentals and patterns of urbanization process
2. Learn the functional classification of cities and Central Place Theory
3. Know contemporary problems of Delhi, Mumbai, Kolkata and Chennai

Course Content:

Unit- I

Urban geography: Meaning, Nature, Scope, Approaches and Recent Trends in Urban Geography

Unit- II

Patterns of Urbanisation in World and India; Trends of Urbanisation in India; Origin and Evolution of Urban Settlements in India.

Unit- III

Functional classification of cities; Rank-Size Rule; Law of the Primate City; Urban Hierarchies.

Unit- IV

Central Place Theory (Christaller and Lösch); Theories of urban structure (Burgess, Hoyt and Harris & Ullman).

Unit- V

Urban Issues: problems of Housing, Slums, Civic Amenities (water and transport); Case study of Ranchi with reference to land use and urban issues.

Recommended Books:

- Carter, H. (1995): The Study of Urban Geography. 4th ed. Reprinted in 2002 by Rawat Publications, Jaipur and New Delhi.

- Dubey, K.K. and Singh, A.K. (1983): Urban Environment in India. Deep and Deep, New Delhi.
- Dutt, A. Allen, K, Noble, G., Venugopal G. and Subbiah S. (eds.) (2003): Challenges to Asian Urbanization in the 21st Century. Kluwer Academic Publishers, Dordrecht and London.
- Fyfe, N. R. and Kenny, J. T., (2005): *The Urban Geography Reader,* Routledge.
- Graham, S. and Marvin, S., (2001): *Splintering Urbanism: Networked Infrastructures,Technological Mobilities and the Urban Condition,* Routledge.
- Hall, P. (1992): Urban and Regional Planning. Routledge, London.
- Hall, T. (2001): Urban Geography. 2nd edition. Routledge, London.
- Haughton, G and Hunter, C. (1994): Sustainable Cities. Jessica Kingsley, London.
- Johnson, J.H. (1981): Urban Geography, Pergamon Press, Oxford.
- Kaplan, D. H., Wheeler, J. O. and Holloway, S. R., (2008): *Urban Geography*, JohnWiley.
- Knox, P. L., and McCarthy, L., (2005): *Urbanization: An Introduction to UrbanGeography*, Pearson Prentice Hall New York.
- Mayer, H. and Cohn, C. F. (1959): Readings in Urban Geography, University. of Chicago Press, Chicago.
- Pacione, M. (2005): Urban Geography: A Global Perspective, Routledge, London and New York.
- Paddison, R. (ed.) (2001): Handbook of Urban Studies. Sage, London.
- Ramachandran, R., (1991): Urbanization and Urban Systems in India. Oxford University Press, Delhi.
- Rao, B. P. and Sharma, N. (2007): Nagariya Bhoogol, Vasundhara Prakashan, Gorakhpur.
- Sharma, Poonam and Rajput, Swati (Eds.) (2017) Sustainable Smart Cities in India;Challenges and Future Perspectives, Springer.
- Sharma, Vishwa Raj and Chadrakanta, (2019): *Making Cities Resilient,* Springer.
- Singh, K. and Stainberg, F. (eds.) (1998): Urban India in Crisis. New Age International, New Delhi.
- Singh, O. P. (1987): Nagariya Bhoogol, Tara Book Agency, Varanasi
- Singh, R.L. (1955): Banaras. A Study in Urban Geography. Nand Kishore and Brothers, Banaras.
- Singh, S. B. (ed.) (1996): New Perspectives in Urban Geography. M.D. Publications, New Delhi
- Singh. H. H. (1972): Kanpur: A Study in Urban Geography, Indrasini Publications, Varanasi

Cartographic Techniques in Urban Geography (Practical) - (MJ- 703P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 701P, one question from MJ- 702P, one question from MJ- 703P and another one question from MJ- 704P but all four examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Read and prepare maps.
2. Comprehend locational and spatial aspects of the earth surface.
3. Use and importance of maps for regional development and decision making.

Course Content:

Unit- I

Ratio and Rate of Urbanization, Trends of Urbanization, Proportionate Circle, Rank-Size Relationship, Ternary Diagram for Functional Classification of Towns.

Unit- II

Traffic Flow Diagram, Nearest Neighbour Analysis Method, Road Accessibility Map, Cross Road Traffic Diagram.

Recommended Books:

- Anson R. and Ormelling F. J. (1994): International Cartographic Association: Basic Cartographic, Vol. 1, Pregmen Press.
- Gupta K.K. and Tyagi, V. C. (1992): Working with Map, Survey of India, DST, New Delhi.
- Khan, Zulfequar Ahmad. (1998): *Text book of Practical Geography*, ConceptPublishing Company, New Delhi.
- Mishra R.P. and Ramesh, A. (1989): Fundamentals of Cartography, Concept, New Delhi.
- Monkhouse F. J. and Wilkinson H. R. (1973): Maps and Diagrams, Methuen, London.
- Robinson A. H. (2009): Elements of Cartography, John Wiley and Sons, New York.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Sharma J. P. (2010): Prayogic Bhugol, Rastogi Publishers, Meerut.
- Sharma, J P (2010) Prayogtmak Bhugol ki Rooprekha, Rastogi Publications, Meerut.
- Singh R L & Rana P B Singh (1991) Prayogtmak Bhugol ke Mool Tatva, Kalyani Publishers, New Delhi.
- Singh R. L. and Singh R. P. B. (1999): Elements of Practical Geography, Kalyani Publishers.
- Singh, Gopal., (1998): *Map Work and Practical Geography (4th Edition)*, Vikas Publishing House, Ahmedabad.
- Singh, R.L. &Dutta, P.K., (2012): *Prayogatmak Bhugol (Hindi)*, Central Book Depot,Allahabad.
- Singh, R. L.& Singh, Rana. P.B. (1991): *Prayogtmak Bhugol ke Mool Tatva (Hindi)*, Kalyani Publishers, New Delhi

B. A. (Major Course) Geography, Semester- VII, Credit- 03

Agriculture Geography (MJ- 704T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Conceptualize the agriculture and its determinants
2. Get the overview of Indian and World agriculture regions and systems
3. Have sound knowledge of agriculture revolutions and food security.

Course Content:

Unit- I

Meaning and scope of Agriculture Geography, Approaches to Agriculture Geography; Land use/ land cover definition and classification.

Unit- II

Determinants of Agriculture: Physical, Technological and Institutional.

Unit- III

Agricultural Regions of India: Agro-climatic region; Crop concentration & Crop diversification; Crop Combination Regions.

Unit- IV

Agricultural Systems of the World (Whittlesey's classification) and Agricultural Land use model (Von Thunen).

Unit- V

Food Security: Concept, approaches, pattern; Agricultural Revolutions in India: Green, White, Yellow & Blue; Government Policies.

Recommended Books:

- Basu, D.N., and Guha, G.S., 1996: Agro-Climatic Regional Planning in India, Vol. I & II, Concept Publication, New Delhi.
- Bryant, C.R., Johnston, T.R, 1992: Agriculture in the City Countryside, Belhaven Press, London.
- Burger, A., 1994: Agriculture of the World, Alder shot, Avebury.
- Grigg, D.B., 1984: Introduction to Agricultural Geography, Hutchinson, London.
- Hussain, M. (1996): *Systematic Agricultural Geography*, Rawat Publications, Jaipur.
- Ilbery B. W., 1985: Agricultural Geography: A Social and Economic Analysis, Oxford University Press.
- Mohammad, N., 1992: New Dimension in Agriculture Geography, Vol. I to VIII, Concept Pub., New Delhi.
- Roling, N.G., and Wageruters, M.A.E. (ed., 1998): Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.
- Shafi, M., 2006: Agricultural Geography, Doring Kindersley India Pvt. Ltd., New Delhi
- Singh, J., and Dhillon, S.S., 1984: Agricultural Geography, Tata McGraw Hill, New Delhi.
- Tarrant J. R., 1973: Agricultural Geography, David and Charles, Devon.

B. A. (Major Course) Geography, Semester- VII, Credit- 01

Techniques in Agriculture Geography (Practical) - (MJ- 704P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 701P, one question from MJ- 702P, one question from MJ- 703P and another one question from MJ- 704P but all four examinations must be held simultaneously.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Read and prepare maps related with agriculture
2. Get the overview of Indian agriculture regions and systems
3. Use and importance of maps for agriculture and decision making.

Course Content:

Unit- I

Agriculture land use location model of Von Thunen, Band Graph, Proportionate Pie Diagram.

Unit- II

Rainfall dispersion diagram, Ergograph, Agricultural Regionalisation, Representation of crop production through Choropleth Method.

Recommended Books:

- Basu, D.N., and Guha, G.S., 1996: Agro-Climatic Regional Planning in India, Vol. I & II, Concept Publication, New Delhi.
- Burger, A., 1994: Agriculture of the World, Aldershot, Avebury.
- Grigg, D.B., 1984: Introduction to Agricultural Geography, Hutchinson, London.
- Ilbery B. W., 1985: Agricultural Geography: A Social and Economic Analysis, Oxford University Press.
- Mohammad, N., 1992: New Dimension in Agriculture Geography, Vol. I to VIII, Concept Pub., New Delhi.
- Roling, N.G., and Wageruters, M.A.E. (ed. 1998): Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
- Shafi, M., 2006: Agricultural Geography, Doring Kindersley India Pvt. Ltd., New Delhi
- Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol, Central Book, Depot, Allahabad.

B. A. (Major Course) Geography, Semester- VIII, Credit- 03

Soil Geography (MJ- 801T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. To introduce soil as one of the important elements of the earth which supports the life system
2. Study the soil as a basic resource, focusing its distribution, problems and management
3. Appreciate the inherent limitations of soil to a particular use and managing the soil effectiveness.

Course Content:

Unit- I

Nature, Scope and Significance of Soil Geography, Its Relationship with Paedology.

Unit- II

Soil Properties: Physical, Biological & Chemical Properties; Soil Forming Factors: Parent materials, Organic, Climatic, Topographic Spatio-Temporal Dimensions; Process of soil formation and soil development: Physical, Biotic and Chemical.

Unit- III

Soil Organism: Macro – Animals (Earthworms, Sowbugs, Mites, Centipedes, Rodents and Insects); Soil Profile; Soil Texture

Unit- IV

Soil Erosion, Degradation and Conservation, Soil Reclamation and Management, Sustainable development of soil resources with reference to India.

Unit- V

Soil reclamation and management: Soil survey and landforms in environmental management; Integrated soil and water management; Sustainable development of soil resources with reference to India.

Recommended Books:

- Backman, H. O. and Brady, N. C. (1960): The Nature and Properties of Soils, Mc Milan, New York.
- Basu, D.N., and Guha, G.S., 1996: Agro-Climatic Regional Planning in India, Vol. I & II, Concept Publication, New Delhi.
- Benet, Hugh H. (1976): Soil Conservation, McGraw Hill, New York.
- Bryant, C.R., Johnston, T.R, 1992: Agriculture in the City Countryside, Belhaven Press, London.
- Bunting, B. T. (1973): The Geography of Soils, Hutchinson, London.
- Burger, A., 1994: Agriculture of the World, Alder shot, Avebury.
- Clarke, G.R. (1957): Study of the Soil in the Field, Oxford University Press, Oxford.
- Foth, H. D. and Turk, L. M. (1972): Fundamentals of Soil Science, John Willey, New York.
- Govinda Rajan, S, V. and Gopala Rao, H. G. (1978), Studies on Soils of India, Vikas, New Delhi
- Grigg, D.B., 1984: Introduction to Agricultural Geography, Hutchinson, London.
- Ilbery B. W., 1985: Agricultural Geography: A Social and Economic Analysis, Oxford University Press.
- Mc. Bride, M. B. (1999): Environmental Chemistry of Soils, Oxford University Press, New York.
- Mohammad, N., 1992: New Dimension in Agriculture Geography, Vol. I to VIII, Concept Pub., New Delhi.
- Roling, N.G., and Wageruters, M.A. E., (ed., 1998): Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.
- Roychaudhary, S. P. (1958): Soils of India, ICAR, New Delhi.

B. A. (Major Course) Geography, Semester- VIII, Credit- 03

Physical Survey of a Distant Geographical Region (Practical) -(MJ- 801P)

Time: 3 Hours Full Marks: 25

Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from AMJ- 802P, one question from AMJ- 803P, one question from AMJ- 804P and another one question from MJ- 801P but all four examinations must be held simultaneously.

Learning Outcomes:

1. Understand the physio-cultural settings of the visited area
2. Learn to interact with peoples of different culture
3. Learn to prepare travel route and tour report.

Course Content:

Physical and Socio-economic of a distinct Geographical Region (Coastal, Arid & Mountainous Region) as assigned by the Department. The Distant Field Study Trip of a geographical region will incorporate physical and socio-economic parameters on the basis of observation & primary data collection in the field survey through prescribed questionnaire. This paper would have two Components:

1. Report writing on the basis of field Survey -20 Marks
2. Viva-Voce -5 Marks.

Recommended Books:

- Misra, R.P. (2002) Research Methodology, Concept Publications, New Delhi.
- Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publications. Co., New Delhi.
- Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
- Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001).
- Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
- Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.
- Yadav, H. (2013): Shodh Pravidhi Evam Matratamak Bhugol, Raja Publications, Delhi.

B. A. (Advance Major Course) Geography, Semester- VIII, Credit- 03

Biogeography (AMJ- 802T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

After the completion of course, the students will have ability to:

1. Familiarize the dynamics of climate and related theories.
2. Understand of Vegetation as an index of climate.
3. Assess of different aspects of floral and faunal provinces.

Course Content:

Unit- I

Introduction to Bio-geography: Nature, scope, and components.

Unit -II

World Climatic Patterns (Koppen) vis-à-vis biogeographical regions.

Unit- III

Evolution of major groups of floral and faunal provinces, Biomass.

Unit- IV

Ecological successions: stages and climax.

Unit- V

Biodiversity; bio-diversity hotspots, biodiversity conservation.

Recommended Books:

- Bhattacharyya, N.N.(2003): *Biogeography,* Rajesh Publications, New Delhi.

- Clarke, G. L. (1967): *Elements of ecology*, New York: John Wiley Pub.
- Haden-Guest, S., Wright, J. K. and Teclaff, E. M. (1956): *World Geography of ForestResources*, New York: Ronald Press Co.
- Hoyt, J.B. (1992): *Man, and the Earth*, Prentice Hall, U.S.A.
- Huggett, R.J. (1998): *Fundamentals of Biogeography*, Routledge, U.S.A.
- Lal, D. S. 2003. Climatology, Allahabad: Sharda Pustak Bhawan.
- Lapedes, D.N. (1974): *Encyclopedia of Environmental Science* (eds.), McGraw Hill.
- Mal, Suraj., and Singh, R.B. (Eds.) (2009): *Biogeography and Biodiversity*, Rawat Publication, Jaipur
- Mathur, H.S. (1998): *Essentials of Biogeography*, Anuj Printers, Jaipur.
- *Mountain and Tree cover in Mountain Regions Report* - 2002, UNEP-WCMC.
- Parmesan, C., Yohe, G. (2003): *A globally coherent fingerprint of climate changeimpacts across natural systems*. Nature, 421 (6918), 37–42
- Singh, Savindra (2015): *Paryawaran Bhoogol (Hindi)*, Prayag Pushtak Bhawan,Allahabad (Hindi).
- Sivaperuman, Chandrakasan et al., (2018): *Biodiversity and Climate Change Adaptationin Tropical Islands*, Academic Press, London.
- Trewartha, G. T., (1980): *An Introduction to Climate*, McGraw Hill Company, NewYork.

B. A. (Advance Major Course) Geography, Semester- VIII, Credit -01

Research Methods (Practical) - (AMJ- 802P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from AMJ- 802P, one question from AMJ- 803P, one question from AMJ- 804P and another one question from MJ- 801P but all four examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Conduct proper field work for the collection of primary data to bring out grassrootsrealities
2. Make use of proper tools and surveying methods for measurement in context of collection and processing of data
3. Prepare a report based on field data.

Course Content:

Unit- I

Meaning, Significance, Types and Approaches to Research in Geography; Literature review; Research Design: Identification of Research Problem; Research questions. Data Collection: Type and Sources of Data; Methods of Collection; Data Analysis, Data Representation Techniques.

Unit- II

Designing the Field Report – Aims and Objectives, Methodology, Analysis., Interpretation and Writing the Report.

Recommended Books:

- Ahuja, R. (2014): Research Methods, Rawat Publications, New Delhi.

- Best, J.W., J. V. Kahn & A. K. Jha (2017): Research in Education, Pearson, Noida.
- Kerlinger, F. N. (2021); Foundations of Behavioural Research, Surjeet Publications, Delhi.
- Kothari, C. R. (2004): Research Methodology: Methods & Techniques, New Age International Publishers, New Delhi.
- Kumar, R. (2009): Research Methodology: A Step-By-Step Guide for Beginners, Pearson, New Delhi.
- Misra, R. P. (2002): Research Methodology: A Handbook, Concept Publishing Company, New Delhi.
- Young, P. V. (2014): Scientific Social Surveys and Research, PHI Learning Private Limited, Delhi.

B. A. (Advance Major Course) Geography, Semester- VIII, Credit -03

Disaster Management - (AMJ- 803T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Gain a perspective of disasters and various dimensions of disaster management
2. Have comprehensive knowledge of various natural and manmade disasters in India
3. Examine the response and mitigation measures of disasters.

Course Content:

Unit- I

Disasters: Definition and Concepts; Risk and Vulnerability; Classification.

Unit- II

Disasters in India: (a) Flood: Causes, Impact, Distribution and Mapping; Landslide: Causes, Impact, Distribution and Mapping; Drought: Causes, Impact, Distribution and Mapping.

Unit- III

Disasters in India: (b) Earthquake and Tsunami: Causes, Impact, Distribution and Mapping; (c) Cyclone: Causes, Impact, Distribution and Mapping.

Unit- IV

Manmade Disasters: Causes, Impact, Distribution and Mapping.

Unit- V

Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'tsDuring and Post-disasters.

Recommended Books:

- Government of India, (2008): *Vulnerability Atlas of India*. New Delhi,

Building Materials & Technology Promotion Council, Ministry of Urban Development,Government of India.

- Govt. of India, (2011): *Disaster Management in India*, Ministry of Home Affairs, New Delhi.
- Kapur, Anu., (2010): *Vulnerable India: A Geographical Study of Disasters*, Sage Publication, New Delhi.
- Modh, S., (2010): Manag*ing Natural Disaster: Hydrological, Marine andGeological Disasters*, Macmillan, Delhi.
- Ramkumar, M., (2009): *Geological Hazards: Causes, Consequences and Methodsof Containment*, New India Publishing Agency, New Delhi.
- Savindra, Singh and Jeetendra, S., (2013): *Disaster Management*, Pravalika Publications, Allahabad
- Singh Jagbir., (2007): "*Disaster Management Future Challenges and Opportunities*", 2007. Publisher- I.K. International Pvt. Ltd New Delhi, India.
- Singh, R. B., (ed.), (2006): *Natural Hazards and Disaster Management: Vulnerability and Mitigation*, Rawat Publications, New Delhi.
- Singh, R.B., (2005): *Risk Assessment and Vulnerability Analysis*, IGNOU, NewDelhi. Chapter 1, 2 and 3
- Sinha, A., (2001): *Disaster Management: Lessons Drawn and Strategies for Future*,New United Press, New Delhi.
- Stoltman, J.P., et al. (2004): *International Perspectives on Natural Disasters*,Kluwer Academic Publications. Dordrecht.

B. A. (Advance Major Course) Geography, Semester- VIII, Credit -01

Disaster Management Project Work (Practical) - (AMJ- 803P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from AMJ- 802P, one question from AMJ- 803P, one question from AMJ- 804P and another one question from MJ- 801P but all four examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand processes and impact of disaster
2. Understand both the natural and man-made disaster and human negligence in context ofenvironment
3. Write a field work-based report on Disaster Management to minimize the disaster risk/Risk from Disaster.

Course Content:

The Project Report based on any one fields-based case studies among following disasters andone disaster preparedness plan of respective college/locality and district:

1. Flood
2. Drought
3. Cyclone and Hailstorms
4. Earthquake and Volcanoes
5. Landslides
6. Human Induced Disasters: Fire Hazards, Chemical, Mining and Industrial Accidents
7. Lightening

Recommended Books:

- Carter, N., (1991): *Disaster Management: A Disaster Manager's Handbook.*

Asian Development Bank, Manila.

- Government of India (2008): *Vulnerability Atlas of India*. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development,Government of India
- Government of India (2011): *Disaster Management in India*. Ministry of Home Affairs, New Delhi.
- Kapur, A., (2010): *Vulnerable India: A Geographical Study of Disasters*, Sage Publication, New Delhi.
- Modh, S., (2010): *Managing Natural Disaster: Hydrological, Marine and Geological Disasters*, Macmillan, Delhi.
- Ramkumar, M., (2009): *Geological Hazards: Causes, Consequences and Methodsof Containment*, New India Publishing Agency, New Delhi.
- Savindra, Singh and Jeetendra, S., (2013): *Disaster Management*, Pravalika Publications, Allahabad
- Singh Jagbir., (2007): "*Disaster Management Future Challenges and Opportunities*", 2007. Publisher- I.K. International Pvt. Ltd New Delhi, India.
- Singh, R. B., (ed.), (2006): *Natural Hazards and Disaster Management: Vulnerability and Mitigation*, Rawat Publications, New Delhi.
- Singh, R.B., (2005): *Risk Assessment and Vulnerability Analysis*, IGNOU, NewDelhi. Chapter 1, 2 and 3
- Sinha, A., (2001): *Disaster Management: Lessons Drawn and Strategies for Future*,New United Press, New Delhi.
- Stoltman, J.P., et al. (2004): *International Perspectives on Natural Disasters*,Kluwer Academic Publications. Dordrecht.

B. A. (Advance Major Course) Geography, Semester- VIII, Credit- 03

Geography of Tourism (AMJ- 804T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks (Mid Sem.-10 & Assignment Work-5 Marks) No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Familiarize the aspects of tourism which have a bearing on subject matter of geography
2. Orient the logistics of tourism industry and the role of tourism in regional development
3. Understand the impact of tourism on physical and human environments.

Course Content:

Unit- I

Basics of Tourism: Definition, Scope and Nature; Factors influencing tourism; Motivating factors for Pilgrimages: Recreation and Leisure; Geographical Parameters of Tourism by Robinson.

Unit- II

Type of Tourism: Nature Tourism, Cultural Tourism, Medical Tourism; Globalization and Tourism, Infrastructure: Transport, Accommodation and Tour Agencies.

Unit- III

Recent Trends of Tourism: International and Regional: Domestic (India): Eco-Tourism, Sustainable Tourism, Meetings Incentives Conventions and Exhibitions (MICE).

Unit-IV

Impact of Tourism: Physical, Economic and Social and Perception Positive and Negative Impacts; Environmental Laws and Tourism.

Unit- V

Tourism in India: Regional dimensions of tourist attraction; Evolution of Tourism; Promotion of Tourism; Tourism Infrastructure: Case Study of Jharkhand.

Recommended Books:

- Bhatia, A. K. (1996): Tourism Development: Principles and Practices, Sterling Publishers,

New Delhi.

- Chandra, R. H. (1998): Hill Tourism: Planning and Development, Kanishka Publishers, New Delhi.
- Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi.
- Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation - Environment, Place and Space, Routledge, London.
- Hunter, C. and Green, H. (1995): Tourism and the Environment: A Sustainable Relationship, Routledge, London.
- Kamra, K. K. and Chand, M. (2007) Bases of Tourism: Theory, Operation and Practice, Kanishka Publishers, Pune.
- Kaul, R. K. (1985): Dynamics of Tourism & Recreation, Inter-India, New Delhi.
- Milton, D. (1993): Geography of World Tourism, Prentice Hall, New York.
- Page, S. J. (2011): Tourism Management: An Introduction, Butterworth-Heinemann-USA.
- Pearce, D. G. (1987): Tourism To-day: A Geographical Analysis, Harlow, Longman.
- Raj, R. and Nigel, D. (2007) Morphet Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA.
- Robinson, H. (1996): A Geography of Tourism, Macdonald and Evans, London.
- Shaw, G. and Williams, A. M. (1994): Critical Issues in Tourism- A Geographical Perspective, Blackwell, Oxford.
- Singh, Jagbir (2014) "Eco-Tourism" Published by I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India.
- Williams, Stephen (1998): Tourism Geography: Contemporary Human Geography, London.

B. A. (Advance Major Course) Geography, Semester- VIII, Credit - 01

Tourism Project Report (Practical) - (AMJ- 804P)

Time: 4 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from AMJ- 802P, one question from AMJ- 803P, one question from AMJ- 804P and another one question from MJ- 801P but all four examinations must be held simultaneously.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand processes and impact of tourism
2. Orient the students to the logistics of tourism industry and the role of tourism in regional development
3. Write a field work- based report regarding the impact of tourism on physical and human environment.

Course Content:

The Project Report based on any one fields-based case studies among following topics of tourism and making strategies for the development of tourism industry in Jharkhand:

1. Impact of tourism at macro level
2. Prospects 0f tourism in Jharkhand
3. Tourism policy in Jharkhand
4. Role of transportation and communication for tourism industry in Jharkhand
5. Role of peace, security and tranquility for tourism industry in Jharkhand
6. Tourism infrastructure
7. Feedback by tourists.

Recommended Books:

- Bhatia, A. K. (1996): Tourism Development: Principles and Practices, Sterling Publishers,

New Delhi.

- Chandra, R. H. (1998): Hill Tourism: Planning and Development, Kanishka Publishers, New Delhi.
- Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi.
- Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation - Environment, Place and Space, Routledge, London.
- Hunter, C. and Green, H. (1995): Tourism and the Environment: A Sustainable Relationship, Routledge, London.
- Kamra, K. K. and Chand, M. (2007) Bases of Tourism: Theory, Operation and Practice, Kanishka Publishers, Pune.
- Kaul, R. K. (1985): Dynamics of Tourism & Recreation, Inter-India, New Delhi.
- Milton, D. (1993): Geography of World Tourism, Prentice Hall, New York.
- Page, S. J. (2011): Tourism Management: An Introduction, Butterworth-Heinemann-USA.
- Pearce, D. G. (1987): Tourism To-day: A Geographical Analysis, Harlow, Longman.
- Raj, R. and Nigel, D. (2007) Morphet Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA.
- Robinson, H. (1996): A Geography of Tourism, Macdonald and Evans, London.
- Shaw, G. and Williams, A. M. (1994): Critical Issues in Tourism- A Geographical Perspective, Blackwell, Oxford.
- Singh, Jagbir (2014) "Eco-Tourism" Published by I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India.
- Williams, Stephen (1998): Tourism Geography: Contemporary Human Geography, London.

B. A. (Research Course) Geography, Semester- VIII, Credit- 04

Research Methodology (RC- 801T)

Time: 3 Hours Full Marks for End Semester: 75

Internal Assessment: 25 Marks (Mid Sem.-20 & Assignment Work-5Marks) No. of Lectures: 60

Instructions to External Question Setter for End Semester Examination (75 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein four questions are to be answered out of six questions carrying fifteen marks each.

Learning Outcomes:

1. Acquaint with literature survey, research problem, variable, objective, hypothesis and research proposal
2. Make use of proper tools and surveying methods for measurement in context of collection and processing of data
3. Familiarize the art of research methodology, methods and techniques.

Course Structure:

UNIT I

Research process & problem: Concept, Steps & Significance of research in Geography, Meaning and type of research; Research problem: identification & techniques; Literature survey; Research methods: qualitative & quantitative research; Aims & objectives of research; Formulation and testing of hypotheses.

UNIT II

Research design & Data collection: Meaning, purpose, principles of research design; Research proposal Types of data and their sources; Methods of data collection; Graphic & diagrammatic presentation of data, Data collection tools; Sampling; Measurement scales; Types of variables.

UNIT III

Statistical Geography: Measures of central tendency; Measures of dispersion; Measures of relationship; Combinational analysis; Measures of disparity: Sopher's index & composite index; Measures of inequality; Parametric and non-parametric tests: t-test, F-test, Z-test, Chi-square test.

UNIT IV

Data interpretation and analysis: Editing, Coding, Classification and Tabulation; Preparation of charts and graphs through MS-Excel; Statistical data processing and data analysis through SPSS; Construction of spatial map through GIS software; Grouping & Cross-tabulation,

Unit -V

Report writing: Report writing and presentation of results; Title page, Declaration and Certificate page, Acknowledgement, Contents, List of tables, figures & abbreviation, Chapters of the thesis. Footnotes, References & Bibliography; Appendices.

Recommended Books:

- Adams, J., H. T. A. Khan & R. Raeside (2014): Research Methods for Business and Social

Science Students, SAGE, New Delhi.
- Ahuja, R. (2014): Research Methods, Rawat Publications, New Delhi.
- Best, J.W., J. V. Kahn & A. K. Jha (2017): Research in Education, Pearson, Noida.
- Chawla, D. & Neena Sondhi (2016): Research Methodology: Concepts and Cases, Vikas Publishing House PVT. LTD., Noida.
- Dooley, D. (2008): Social Research Methods, Prentice-Hall of India Private Limited, New Delhi.
- Fox, J. (1997): Applied Regression Analysis, Linear Models, and Related Methods, Sage Publications, New Delhi.
- Gilbert, N. (1993): Analysing Tabular Data: Loglinear and Logistic Models for Social Researchers, UCL Press, New Delhi.
- Kerlinger, F. N. (2021); Foundations of Behavioural Research, Surjeet Publications, Delhi.
- Kothari, C. R. (2004): Research Methodology: Methods & Techniques, New Age International Publishers, New Delhi.
- Kumar, R. (2009): Research Methodology: A Step-By-Step Guide for Beginners, Pearson, New Delhi.
- Lindsay, J. M. (1947): Techniques in Human Geography, Routledge Contemporary Human Geography Series, London.
- Mangal, S. K. & S. Mangal (2015): Research Methodology in Behavioural Sciences, PHI Learning Private Limited, Delhi.
- Michael, V. P. (1997): Research Methodology in Management, Himalaya Publishing House, Mumbai.
- Misra, R. P. (2002): Research Methodology: A Handbook, Concept Publishing Company, New Delhi.
- Mukerjee, R. N. (2017): Samajik Shodh evam Sankhyiki. Vivek Prakashan, Delhi.
- Murthy, K.L. N. (2014): Research Methodology in Geography: A Text Book, Concept Publishing Company PVT. LTD., New Delhi.
- Panneerselvam, R. (2014): Research Methodology, PHI Learning Private Limited, Delhi.
- Phanse, S. (2016): Research Methodology: Logic, Methods and Cases, Oxford University Press, New Delhi.
- Ray, P. & C. P. Ray (2016): Anusandhan Parichaya, Lakshmi Narain Agarwal, Agra.
- Retherford, R.D. & M. K, Choe (1993): Statistical models for Causal Analysis, John Wiley & Sons, Inc, New York.
- Singh, S. K. (2019): Samkalin Shodh Vidhiyana, Rajesh Publication, New Delhi.
- Vaus, D. A. (2009): Surveys in Social Research, Rawat Publications, Jaipur.
- Yin, R. K. (1985): Case Study Research: Design and Methods, Sage Publications, New Delhi.
- Young, P. V. (2014): Scientific Social Surveys and Research, PHI Learning Private Limited, Delhi.

B. A. (Research Course) Geography, Semester- VIII, Credit- 04

Research Proposal (RC- 802T)

Full Marks: 100 Time: 4 Hours

Learning Outcomes:

1. Acquaint with literature survey, research problem, variable, objective, hypothesis and research proposal
2. Make use of proper tools and surveying methods for measurement in context of collection and processing of data
3. Familiarize the art of research methodology, methods and techniques.

Course Structure:

Preparation of Research Proposal/ Synopsis under the supervision of a distinguished Professor of University Department of Geography and presentation of synopsis before the full bench of Departmental Research Council and Ph. D. scholars. The research proposal must include Introduction, Origin of Problem, Objective, Hypothesis, Sources & Methods of Data collection, Research design & Methodology, Area of study, Significance of study, Relevance for society, Contribution to existing knowledge, Future work and a small list of References. Besides this, the paper will also be evaluated on the basis of performance under the heading of Review of Literature, Progress in field-work and Laboratory work for research purposes. Lastly, both Research Proposal (RC-2) and Research Report (RC-3) will be evaluated by the External Examiners in one sitting.

Recommended Books:

- Ahuja, Ram 2001. *Research Methods*. Rawat Publications, Jaipur and New Delhi.
- Flowerdew, R. and Martin, D. (eds.) 1997. *Methods in Human Geography. A Guide for Students Doing a Research Project*. Longman, Harlow.
- Hay, Iain (ed.) 2005. *Qualitative Research Methods in Human Geography*. Oxford University Press, Melbourne. 2nd Ed.
- Kitchen, Rob and Fuller, Duncan 2005. *The Academic's Guide to Publishing*. Vistaar Publs. (Sage), New Delhi.
- Kitchen, Rob and Tate, Nicholas J. 2009. *Conducting Research into Human Geography: Theory, Methodology & Practice*. Prentice Hall-Pearson, Harlow U.K. 2nd Ed.
- Knight, Peter G. and Parsons, Tony 2003. *How to do your Essays, Exams & Coursework in Geography and Related Disciplines*. Nelson Thornes, Cheltenham U.K.
- Lee, Roger Smith, David M. (eds.) 2004. *Geographies and Moralities: International Perspectives on Development, Justice and Place*. Wiley-Blackwell, Oxford.
- Limb, Mclanie 2001. *Qualitative Methodologies for Geographers. Issue and Debates*. Arnold, London.
- Lofland, J. and Lofland, L.H. 1995. *Analysing Social Setting. A Guide to Qualitative Observation and Analysis*. Wadsworth, Belmont, CA.
- Lousenbury, J. F. and Aldrich, F.T. 1986. *Introduction to Geographic Field Methods and Techniques*. Charles E. Merrill Publishing. Company, Colombus.

- Mikkelsen, B. 1995. *Methods for Development Work and Research: A Guide for Practitioners*. Sage, London.
- Mukherjee, Neela 2002. *Participatory Learning and Action: with 100 Field Methods*. Concept Publs. Co., New Delhi.
- Murthy, Narasimha K. L., 2014. *Research Methodology in Geography*, Concept Publishing Company Pvt. Ltd., New Delhi- 110059.
- O'Leary, Zina 2004. *The Essential Guide to Doing Research*. The Vistaar Publ., New Delhi.
- Parsons, Tony and Knight, Peter G. 2005. *How to do your Dissertation in Geography and Related Disciplines*. Routledge, London. 2nd Ed.
- Stoddard, Robert H. 1982. *Field Techniques and Research Methods in Geography*. Kendall/Hunt Pub. Dubuque IO.

B. A. (Research Course) Geography, Semester- VIII, Credit- 04

Research Report (RC- 803T)

Full Marks: 100 Time: 4 Hours

Learning Outcomes:

1. Acquaint with literature survey, research problem, variable, objective, hypothesis and research proposal
2. Make use of proper tools and surveying methods for measurement in context of collection and processing of data
3. Familiarize the art of research methodology, methods and techniques.

Course Structure:

The research report/ dissertation must contain Title page, Declaration and Certificate page, Acknowledgement, List of tables, figures & abbreviations, Contents, Introduction, Research design & methodology, Results, Discussion, Chapters of dissertation, Conclusion, References and Appendices. A Dissertation must be presented for examination in a final form in print on A 4 size paper with 12-point font and line spacing of 1.5 containing approximately 125 pages with one-inch margins all around in hard-bound form. Illustrations and tables should be preferably placed exactly where they are to appear within the text. All dissertation pages, footnotes, equations and references should be labelled in consecutive numerical order. Lastly, both Research Proposal (RC-2) and Research Report (RC-3) will be evaluated by the External Examiners in one sitting.

Recommended Books:

- Ahuja, R. (2014): Research Methods, Rawat Publications, New Delhi.
- Best, J.W., J. V. Kahn & A. K. Jha (2017): Research in Education, Pearson, Noida.
- Kerlinger, F. N. (2021); Foundations of Behavioural Research, Surjeet Publications, Delhi.
- Kothari, C. R. (2004): Research Methodology: Methods & Techniques, New Age International Publishers, New Delhi.
- Kumar, R. (2009): Research Methodology: A Step-By-Step Guide for Beginners, Pearson, New Delhi.
- Misra, R. P. (2002): Research Methodology: A Handbook, Concept Publishing Company, New Delhi.
- Young, P. V. (2014): Scientific Social Surveys and Research, PHI Learning Private Limited, Delhi.

B. A. (Minor Course), Geography, Semester- I, Credit- 03

Geomorphology (MN- 101T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

After the completion of course, the students will have ability to:

1. Understand the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affects the development of landforms
2. Distinguish between the mechanisms that control these processes
3. Assess the roles of structure, stage and time in shaping the landforms, interpret geomorphological maps and apply the knowledge in geographical research.

Course Content:

Unit- I

Origin of the Earth- Big-Bang Theory, Isostasy, Interior Structure of the Earth and Geological Time Scale.

Unit- II

Wegner's Continental Drift Theory and Plate Tectonics.

Unit- III

Earth Movements-Orogeny and epeirogeny, Mountain Building.

Unit- IV

Earthquake and Volcanoes, Evaluation of Landscapes, Concept of Cycle of Erosion.

Unit- V

Fluvial, Glacial Arid, Karst and Costal Landscapes.

Recommended Books:

- Ahmad, E., 1985, Geomorphology, Kayani Publishers, New Delhi & Ludhiana.
- Bloom A. L., 2003: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
- Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
- Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, Ed., Macmillan Publishing Company.
- Gautam, A (2010): Bhautik Bhugol, Rastogi Publications, Meerut.
- Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
- Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
- Singh, S (2009): *Bhautik Bhugol ka Swaroop (Hindi)*, Prayag Pustak, Allahabad.
- Thornbury, W. D., 1968: Principles of Geomorphology, Wiley.

B. A. (Minor Course), Geography, Semester- III, Credit - 01

Geological Mapping Techniques (Practical) – (MN- 101P)

Time: 2 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MN- 101P.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Portrait various types of reliefs through cartographic techniques
2. Analyze morphometry and cartographic patterns of reliefs
3. Comprehend locational and spatial aspects of the earth surface.

Course Content:

Representation of Relief: Contour, Profile: Serial. Superimposed. Projected and Composite; Block Diagrams: One Point Perspective; Geological Cross Section- 1, Hypsometric Curve, Histogram.

Recommended Books:

- Anson R. and Ormelling F. J., 1994: International Cartographic Association Basic Cartographic Pregmen Press.
- Gupta K.K. and Tyagi, V. C. 1992: Working with Map. Survey of India, DST, New Delhi
- Mishra R.P. and Ramesh. A. 1989: Fundamentals of Cartography, Concept. New Delhi.
- Monkhouse F. J. and Wilkinson H. R., 1973. Maps and Diagrams, Methuen, London
- Rhind D. W, and Tavlor D. R. F. (eds. 1989): Cartography: Past, Present and Future, Eisevier, International Cartographic Association.
- Robinson A. H. 2009: Elements of Cartography, John Wiley and Sons, New York
- Sarkar, A. (2015) Practical geography A systematic approach. Orient Black Swan Private Ltd. New Delhi
- Sharma J. P., 2010: Pravogic Blnugul, Rastogi Publishers, Meerut.
- Sharma, JP (2010) Prayogtmak Bhugol ki Rooprekha, Rastogi Publications. Meerut
- Singh R. L. and Singh R P. B. 1999: Elements of Practical Geography, Kalyani Publishers
- Singh RL& Rana P B Singh 1991) Prayogtmak Bhugol ke Mool Tatva, Kalyani Publishers, New Delhi
- Singh, RL & Dutta, PK (2012) Prayogatmak Bhugol, Central Book Depot, Allahabad

B. A. (Minor Course), Geography, Semester- III, Credit- 03

Geography of India & Jharkhand (MN- 301T)

Time: 3 Hours | Full Marks for End Semester: 60

Internal Assessment: 15 Marks | No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning outcomes:

After the completion of course, the students will have ability to:

1. Understand the physical profile of the country
2. Study the resource endowment and its spatial distribution and utilization for sustainable development
3. Synthesize and develop the idea of regional dimensions.

Course Content:

Unit I

India: Physiographic divisions; Drainage systems; Climate; Soils and Vegetation.

Unit II

India: Minerals and power resources: iron ore, and coal; Major industries: iron and steel, and cotton textile.

Unit III

India: Crops: rice, wheat, cotton, sugarcane and tea; Irrigation; Green revolution and its consequences

Unit IV

Jharkhand: Physical Setting - Relief, Climate & Natural Vegetation.

Unit V

Jharkhand: Socio-Economic Conditions of Oraon, Munda and Santhal.

Recommended Books:

- Ahmad, E. (1965): Bihar: A Physical Economic and Regional Geography, Ranchi University, Ranchi.
- Chauhan, P.R. and Prasad, M. (2003): Bharat Ka Vrihad Bhugol, Vasundhara Prakashan.
- Farmer, B.H. (1983): An Introduction to South Asia. Methuen, London.
- Gautam, A. (2006): Advanced Geography of India, Sharda Pustak Bhawan, Allahabad.
- Johnson, B.L.C. (1963): Development in South Asia. Penguin Books, Harmondsworth.
- Khullar, D.R. (2007): India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
- Krishnan, M.S. (1982): Geology of India and Burma, CAS Publishers and Distributors, Delhi.
- Nag, P. and Gupta, S. S. (1992): Geography of India, Concept Publishing Company, New Delhi.
- Prasad, A. (1973) Chotanagpur: Geography of Settlements." Ranchi University, Ranchi.
- Rao, B.P. (2007): Bharat kee Bhaugolik Sameeksha, Vasundhara Prakashan, Gorakhpur.
- Satpathi, D D.P. (1981): An Outline of India Geomorphology, Classical Pub. Company. New Delhi.
- Sharma, T.C. and Coutinho, O. (2003): Economic and Commercial Geography of India, Vikas Publishing House Private Ltd. New Delhi.
- Singh, J. (2001): Bharat: Bhougolik Aadhar Avam Ayam, Gyanodaya Prakashan, Gorakhpur.
- Singh, R.L. (ed.) (1971): India: A Regional Geography. National Geographical Society of India.
- Sinha, V.N.P and Singh, L.K.P. (2003): Jharknand Land and People, Rajesh Publication, New Delhi.
- Spate, O.H. K., Learmonth A. T. A. and Farmer, B. H. (1996): India, Pakistan and Sri Lanka.
- Tiwari, R.C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad.
- Tiwari, Ram Kumar (2010) Jharkhand ka Bhugol, Rajesh Publication New Delhi
- Wadia, D. N. (1959): Geology of India. Mac-Millan and Company, London and student edition.

B. A. (Minor Course) Geography, Semester- III, Credit -01

Instrumental Survey (Practical) – (MN- 301P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MN- 301P.

Learning Outcome:

After the completion of course, the students will have ability to:

1. Conduct proper field work for the collection of primary data to bring out grass root realities

2. Make use of proper tools and surveying methods for measurement in context ofcollection and processing of data

3. Prepare a report based on field data.

Course Content:

Plane Table Survey: Radiation Method; Resection Method: Three Point Problem; Prismatic Compass - Open Traverse and Closed Traverse.

Recommended Books:

- Cuff J. D. and Mattson M. T, 1982: Thematic Mans: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W, 2008: Cartography: Thematic Map Design (6th Edition). McGraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C, 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography. Visualization Prentice-Hall. Geo-Spatial.
- Mishra R. P. and Ramesh A., 1989; Fundamentals of Cartography, Concept, New Delhi.
- Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
- Singh R. L and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers
- Slocum T. A., Memaster R. B. and Kessler F. C 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A, 2010: Principles of Map Design. The Guilford Press.
- Sarkar, A (2015) Practical geography: A systematic approach Orient Black Swan Private Ltd., New Delhi.
- Singh, L R& Singh R (1977): Manchitra or Pryogatamek Bhugol, Central Book Depot. Allahabad.

B. A., (Minor Course) Geography, Semester-V, Credit- 03

Climatology (MN- 501T)

Time: 3 Hours | Full Marks for End Semester: 60

Internal Assessment: 15 Marks | No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the elements of weather and climate and its impacts at different scales.
2. Comprehend the climatic aspects and its bearing on planet earth.
3. Understand the oceanic process and availability of resources.

Course Content:

Unit I

Elements of weather, Determinants of Climate.

Unit II

Composition and Structure of Atmosphere.

Unit III

Air Masses, Fronts, Humidity and Precipitation.

Unit IV

Tropical and Temperate Cyclones.

Unit V

Koppen's Classification of Climate; Surface configuration of Climate.

Recommended Books:

- Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
- Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
- Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
- Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
- Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
- Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw-Hill.
- Lal, D S (2006): Jalvayu Vigyan, Prayag Pustak Bhavan, Allahabad
- Vatal, M (1986): Bhautik Bhugol, Central Book Depot, Allahabad
- Singh, S (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad

B. A. (Minor Course) Geography, Semester- V, Credit- 01

Techniques of Weather and Climate (Practical) - (MN- 501P)

Time: 2 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MN- 501P.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Read and prepare weather and climate maps
2. Represent the elements of weather through cartographic techniques
3. Forecast weather conditions through symbols, graphs and diagrams.

Course Content:

Representation of Weather Elements on the Map: Symbols and Abbreviation, Notation; Isobar, Isohyets, Interpretation of weather map; Climograph and Hythergraph.

Recommended Books:

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production Methuen Young Books.
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Des. (6th Edition). McGraw-Hill Higher Education.
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps. Survey of India, DST, New Delhi.
- Kraak M.-J and Ormeling F, 2003: Cartography Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
- Singh R. L. and Singh R. P. B. 1999: Elements of Practical Geography, Kalyani Publishers.
- Slocum T. A., Memaster R. B. and Kessler C., 2008: Thematic Cartography a Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A. 2010: Principles of Map Design, The Guilford Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Priv Ltd., New Delhi.
- Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol Central Book, Der Allahabad Bhopal Singh RL and Duttta PK (2012) Prayogatama Bhugol, Central Book Der Allahabad.

B. A., (Minor Course) Geography, Semester-VII, Credit- 03

Human Geography (MN- 701T)

Time: 3 Hours Full Marks for End Semester: 60

Internal Assessment: 15 Marks No. of Lectures: 45

Instructions to External Question Setter for End Semester Examination (60 Marks): There will be three Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Again, Section B will be short answer type questions wherein two questions are to be answered out of four questions carrying five marks each. Lastly, Section C will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Know the changing human and cultural landscape at different levels
2. Understand patterns and processes of population growth and its implications
3. Appreciate the nature and quality of human landscapes.

Course Content:

Unit I

Introduction: Defining Human Geography, Major Themes, Development of Human Geography

Unit II

Space and Society: Cultural Regions; Race; religion and language, man and environment relationships.

Unit III

World Population: Distribution and growth; Settlements: Types of Rural Settlements; Evolution & classification of towns.

Unit IV

Population -Resource Relationships; Agricultural Regions of World and their Problems and Prospects.

Unit V

Industries in World-Location and Distribution of Iron and Steel and Cotton Textile industry.

Recommended Books:

- Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New

Jersey.

- Chandana, R.C. (2010) Population Geography, Kalyani Publisher.
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley- Blackwell.
- Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur.
- Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
- Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
- Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
- Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
- Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur.

B. A. (Minor Course) Geography, Semester- VII, Credit- 01

Cartographic Techniques (Practical) - (MN- 701P)

Time: 2 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MN- 701P.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Read and prepare weather and climate maps
2. Represent the elements of weather through cartographic techniques
3. Forecast weather conditions through symbols, graphs and diagrams.

Course Content:

Line graph, Bar diagram, Pie diagram, Measures of Central Tendencies: Mean, Median & Mode; Frequency distribution.

Recommended Books:

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), McGraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Singh, L R & Singh, R (1977): Manchitra or Pryaogatamek Bhugol, Central Book, Depot, Allahabad.
- Singh, R L and Duttta, P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad.

B. A. (Skill Enhancement Course) Geography, Semester- I, Credit- 02

Geographical Information System (SEC- 101T)

Time: 2 Hours Full Marks for End Semester: 50

No. of Lectures: 30

Instructions to External Question Setter for End Semester Examination (50 Marks): There will be two Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Further, Section B will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Appreciate the strength and application of GIS
2. Map the resources, their location and availability
3. Apply this knowledge for sustainable development

Course Content:

Unit I

Geographical Information System (GIS): Definition, Components and Historical Development.

Unit II

Advantages of GIS over Manual Methods; Sources of Data: Primary, Secondary, Census and Sample.

Unit III

GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.

Unit IV

GIS Data Analysis: Input; Geo-Referencing: Editing, Output and Query; Overlays.

Unit V

Application of GIS: Land Use Mapping, Urban Sprawl Analysis; Forests Monitoring.

Recommended books:

- Bhatta, B. (2010): Analysis of Urban Growth and Sprawl from Remote Sensing, Springer, Berlin Heidelberg 41

- Burrough, P.A., and McDonnell, R.A (2000): Principles of Geographical Information System-Spatial Information System and Geo-statistics, Oxford University Press.
- Chauniyal, D. D. (2010): Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad.
- Heywoods, 1., Cornelius, S and Carver, S. (2006): An Introduction to Geographical Information system, Prentice Hall.
- Jha. M.M. and Singh, R.B. (2008): Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
- Nag, P. (2008): Introduction to GIS, Concept India: New Delhi.
- Sarkar, A. (2015): Practical geography: A systematic approach, Orient Black Swan Private Ltd., New Delhi.

B. A. (Skill Enhancement Course) Geography, Semester- I, Credit- 01

Geographical Information System (SEC- 101P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 101P and another one question from SEC- 101P but both examinations must be held simultaneously in one sitting.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Introduce GIS as a tool of spatial science
2. Indicate the basic components of GIS and methodology of GIS
3. Outline the steps and areas of application in GIS.

Course Content:

Unit I

Georeferencing of Scanned Maps; Creation of Shape files and Digitisation of Point; Line and Polygon Features; Attribute Data Entry Process.

Unit II

Preparation of Thematic Map (using bar, pie and choropleth method); Map Design or Map Layout Preparation.

Practical Record:

A project file consisting of 5 exercises by using any GIS Software on above mentioned themes.

Recommended books:

- Bhatta, B. (2010): Analysis of Urban Growth and Sprawl from Remote Sensing, Springer, Berlin Heidelberg 41

- Burrough, P.A., and McDonnell, R.A (2000): Principles of Geographical Information System-Spatial Information System and Geo-statistics, Oxford University Press.
- Chauniyal, D. D. (2010): Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad.
- Heywoods, 1., Cornelius, S and Carver, S. (2006): An Introduction to Geographical Information system, Prentice Hall.
- Jha. M.M. and Singh, R.B. (2008): Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
- Nag, P. (2008): Introduction to GIS, Concept India: New Delhi.
- Sarkar, A. (2015): Practical geography: A systematic approach, Orient Black Swan Private Ltd., New Delhi.
- Singh, R. B. and Murai, S. (1998): Space Informatics for Sustainable Development, Oxford and IBH: New Delhi.

B. A. (Skill Enhancement Course) Geography, Semester- II, Credit- 02
Remote Sensing (SEC- 201T)

Time: 2 Hours Full Marks for End Semester: 50

No. of Lectures: 30

Instructions to External Question Setter for End Semester Examination (50 Marks): There will be two Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Further, Section B will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Introduce the basic principles of Remote Sensing
2. Appreciate the strength and application of Remote Sensing
3. Apply this knowledge for sustainable development.

Course Content:

Unit I

Remote Sensing: Definition and Development and Types; Stages and Process of Remote Sensing.

Unit II

Introduction; Electromagnetic Energy- Electromagnetic Spectrum, EMR Interaction with Atmosphere- Scattering, Absorption, Refraction, Reflection; Satellite Remote Sensing: Principles; Earth's Surface Spectral Response Pattern.

Unit III

Platforms – Types and their characteristics; Satellites and their characteristics, Earth Resources Satellites & Sensors (Landsat and IRS).

Unit IV

Integration of GIS with Remote Sensing, Concept of Resolution – Spatial, Spectral, Temporal, Radiometric.

Unit V

Application of Remote Sensing: Land Uses, Land Cover and Natural Resource Management.

Recommended Books:

- Bhatta, B. (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
- Campbell J. B. (2007): Introduction to Remote Sensing, Guildford Press.

- Chauniyal, D. (2010): Sudur SamvedanaAvam Bhaugolik Suchna Pranali, Sharda Pustak Bhawan, Allahabad.
- Jensen, J. R. (2005): Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
- Joseph, G. (2005): Fundamentals of Remote Sensing, United Press India.
- Li, Z., Chen, J. and Batsavias, E. (2008): Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences CRC Press, Taylor and Francis, London.
- Lillesand T. M., Kiefer R. W. and Chipman J. W. (2004): Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).

B. A. (Skill Enhancement Course) Geography, Semester- II, Credit- 01
Remote Sensing (SEC- 201P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 201P, one question from MJ- 202P and another one question from SEC- 201P but all three examinations must be held simultaneously in one sitting.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Introduce the basic principles of Remote Sensing
2. Appreciate the strength and application of Remote Sensing
3. Apply this knowledge for sustainable development.

Course Content:

Unit I

Download OSM Survey of India Toposheet; Download OSM satellite Images such as Landsat, IRS, LISS data different web sites; Georeferencing of toposheet, image to maps.

Unit II

Creating AOI for difference purposes and subset; Techniques Mosaic through different data model.

Practical Record:

A project file consisting of 5 exercises based on the above-mentioned themes and Subthemes.

Recommended Books:

- Bhatta, B. (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
- Campbell J. B. (2007): Introduction to Remote Sensing, Guildford Press.

- Chauniyal, D. (2010): Sudur SamvedanaAvam Bhaugolik Suchna Pranali, Sharda Pustak Bhawan, Allahabad.
- Jensen, J. R. (2005): Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
- Joseph, G. (2005): Fundamentals of Remote Sensing, United Press India.
- Li, Z., Chen, J. and Batsavias, E. (2008): Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences CRC Press, Taylor and Francis, London.
- Lillesand T. M., Kiefer R. W. and Chipman J. W. (2004): Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
- Mukherjee, S. (2004): Textbook of Environmental Remote Sensing, Macmillan. Delhi.
- Nag P. and Kudra, M. (1998): Digital Remote Sensing, Concept: New Delhi.
- Singh R. B. and Murai S. (1998): Space-informatics for Sustainable Development, Oxford and IBH Publication.

B. A. (Skill Enhancement Course) Geography, Semester- III, Credit- 02
Digital Image Processing (SEC- 301T)

Time: 2 Hours Full Marks for End Semester: 50

No. of Lectures: 30

Instructions to External Question Setter for End Semester Examination (50 Marks): There will be two Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Further, Section B will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Appreciate the strength of remote sensing
2. Indicate the methods of visual and digital interpretations of satellite imageries
3. Outline the application value of satellite imageries.

Course Content:

Unit I

Concepts about Digital Image and its characteristics, Digital Image Data and its Formats, Manual Image Processing.

Unit II

Pre-processing: Radiometric and Geometric Correction, Image Transformation.

Unit III

An Overview of Image Enhancement Techniques: Image Reduction, Image Magnification, Colour Compositing, Transect Extraction, Contrast Enhancement, Filtering.

Unit IV

Principles of Image Classification & its Types (Supervised and Un-supervised), Accuracy Assessment.

Unit V

Global Positioning System (GPS) - Principles and Uses; GNSS Components – space segment, control segment, user segment.

Recommended Books:

- Bhatta, B. (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
- Campbell J. B. (2007): Introduction to Remote Sensing, Guildford Press.

- Chauniyal, D. (2010): Sudur SamvedanaAvam Bhaugolik Suchna Pranali, Sharda Pustak Bhawan, Allahabad.
- Jonson, J.R. (1996): Introductory Digital Image Processing, Prentice-Hall, Inc.
- Joseph, G. (2005): Fundamentals of Remote Sensing, United Press India.
- Lillesand T. M., Kiefer R. W. and Chipman J. W. (2004): Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
- Mullar J.P. (1986): Digital Image Processing in Remote Sensing, Taylor & Francis

B. A. (Skill Enhancement Course) Geography, Semester- III, Credit- 01
Digital Image Processing (SEC- 301P)

Time: 3 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MJ- 301P, one question from MJ- 302P and another one question from SEC- 301P but all three examinations must be held simultaneously in one sitting.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Appreciate the strength of remote sensing
2. Indicate the methods of visual and digital interpretations of satellite imageries
3. Outline the application value of satellite imageries.

Course Content:

Unit I

Layer Stacking of Multispectral Imagery and created FCC image using IRS LISS and/or Landsat data; Preparation of LULC Map by Supervised Image Classification using IRS LISS-or Landsat data

Unit II

Preparation of LULC Map by Unsupervised Image Classification using IRS LISS-or Landsat data; Principles of preparing attribute tables; Change detection analysis.

Practical Record:

A project file consisting of 5 exercises based on the above-mentioned themes and Subthemes.

Recommended Books:

- Bhatta, B. (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
- Campbell J. B. (2007): Introduction to Remote Sensing, Guildford Press.
- Chauniyal, D. (2010): Sudur SamvedanaAvam Bhaugolik Suchna Pranali, Sharda Pustak Bhawan, Allahabad.
- Jonson, J.R. (1996): Introductory Digital Image Processing, Prentice-Hall, Inc.
- Joseph, G. (2005): Fundamentals of Remote Sensing, United Press India.

B. A., (Multidisciplinary Course) Geography, Semester-I, Credit- 02

Fundamentals of Geography (MDC- 101T)

Time: 2 Hours Full Marks: 50

No. of Lectures: 30

Instructions to External Question Setter for End Semester Examination (50 Marks): There will be two Section of questions. Section A will be very short answer type questions consisting of 5 compulsory questions carrying 1 mark each. Further, Section B will be long answer type questions wherein three questions are to be answered out of five questions carrying fifteen marks each.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affects the development of landforms
2. Comprehend the climatic & oceanic aspects and its bearing on planet earth
3. Understand patterns and processes of population growth and its implications
4. Understand the physical profile of India.

Course Content:

Unit I

Origin of the Earth, Internal Structure of the Earth, Type of Rocks, Earthquake and Volcanoes.

Unit II

Structure and Composition of Atmosphere, Pressure Belt and Planetary Winds, Cyclone & Precipitation; Ocean Floor.

Unit III

Evolution of Man, Distribution of Human Races, Religion, Language.

Unit IV

Distribution, Density, and Growth of World Population.

Unit V

India: Physiographic Divisions; Climate; Soils and Vegetation.

Recommended Books:

- Bloom, A. L., (2003): *Geomorphology: A Systematic Analysis of Late Cenozoic*

Landforms, Prentice-Hallof India, New Delhi.

- Bridges, E. M., (1990): *World Geomorphology*, Cambridge University Press, Cambridge.
- Christopherson, R. W. and Birkeland, G. H., (2012) *Geosystems: An Introduction to Physical Geography*
- Das Gupta, A and Kapoor, A.N., (2001) *Principles of Physical Geography*, S.C. Chand & Company Ltd.New Delhi.
- Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur.
- Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
- Lal, D S (2006): Jalvayu Vigyan, Prayag Pustak Bhavan, Allahabad
- Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
- Singh, S (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad
- Spate, O.H. K., Learmonth A. T. A. and Farmer, B. H. (1996): India, Pakistan and Sri Lanka, (8th edition), Pearson Education, New Jersey.
- Tiwari, R.C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad.
- Vatal, M (1986): Bhautik Bhugol, Central Book Depot, Allahabad.

B. A. (Multidisciplinary Course) Geography, Semester- I, Credit- 01

Cartographic Techniques (Practical) - (MDC- 101P)

Time: 2 Hours Full Marks: 25

P.N.B. and Viva-Voce: 05 Marks No. of Lectures: 30

Instructions to Question Setters for End Semester Practical Examination: One question is to be answered from MDC- 101P.

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Read and prepare scales
2. Construct graphs and diagrams
3. Represent the elements of weather through cartographic techniques

Course Content:

Scale: Simple, Comparative, Diagonal; Line graph, Bar diagram, Pie diagram, Climograph & Hythergraph.

Recommended Books:

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), McGraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Singh, L R & Singh, R (1977): Manchitra or Pryaogatamek Bhugol, Central Book, Depot, Allahabad.
- Singh, R L and Duttta, P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad.