

॥ अंतरी पेटू ज्ञानज्योत ॥

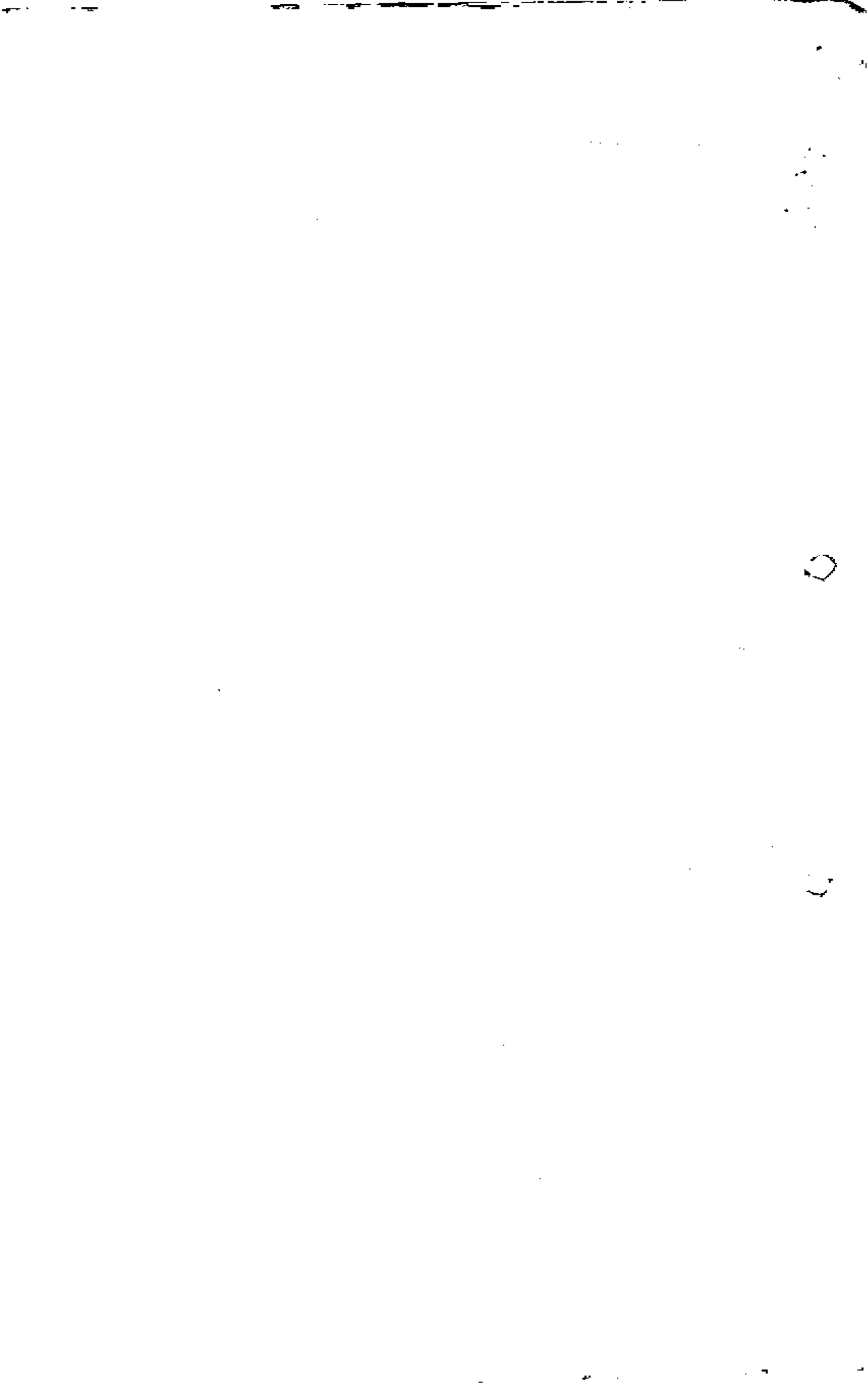


**NORTH MAHARASHTRA UNIVERSITY,
JALGAON.**

Syllabus for M.A./M.Sc.

GEOGRAPHY.

(W.e.f. Aed. Yr. 2002 - 2003)



NORTH MAHARASHTRA UNIVERSITY, JALGAON

REVISED SYLLABUS STRUCTURE

M. A. / M. Sc. Geography

I, II, III, and IV Semester.

(With effect from Acad. Yr. 2002-2003)

Semester-I

- Gg. 101 Principles of Economic Geography
- Gg. 102 Principles of Population and Settlement Geography
- Gg. 103 Environmental science
- Gg. 104 Geography of India and Maharashtra
- Gg. 105 Practical in Human Geography or Computer Application in Practical of Human Geography

Semester-II

- Gg. 201 Principles of Geomorphology
- Gg. 202 Principles of Climatology
- Gg. 203 Remote Sensing in Geography
- Gg. 204 Geo-statistical Methods
- Gg. 205 Practical in Physical Geography and Excursion

Semester-III

[Any of the following According to Specialization]

- Gg. 301 A) Fluvial Geomorphology
B) Agricultural Geography
C) Population Geography

[Any of the following According to Specialization]

- Gg. 302 A) Coastal Geomorphology
B) Geography of Resources
C) Geography of Rural settlements

[Any of the following]

- Gg. 303 A) Oceanography
B) Industrial Geography
C) Political Geography

[Any of the following]

- Gg.304 A) Hydrology
B) Geography of Economic Development
C) Social and Cultural Geography

- Gg. 305 Interpretation of Aerial Photographs, Satellite imageries and Topographical maps [India, U. K. and U.S.A.]

Cont. 2

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Semester-IV

- [Any of the following according to Specialization]
- Gg. 401 A) Tropical Geomorphology
 B) Geography of Trade and Transport
 C) Urban Geography
- [Any of the following]
- Gg. 402 A) Application of Computer in Geography and G.I.S.
 B) Regional Planning
 C) Dissertation
- [Any of the following]
- Gg. 403 A) Soil Geography
 B) Development of Modern Geography
 C) Geography of Marketing
 D) Regional Geography of U. K. or Australia
- [Any of the following]
- Gg. 404 A) Geography of Watershed Management
 B) Biogeography
 C) Geography of Tourism
 D) Research methodology in Geography
- Gg. 405 Surveying and Excursion
 I] Surveying by Dumpy level, Theodolite and Indian pattern
 Clinometer
 II] Field survey report by Instrument
 III] Study tour report by observation
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NORTH MAHARASHTRA UNIVERSITY, JALGAON

Syllabus for M.A /M.Sc. Geography (PART-I)

(W.e.f. Acad. Yr. 2002-2003)

Gg. 101: PRINCIPLES OF ECONOMIC GEOGRAPHY

	<u>Periods</u>
1. Introduction to Economic Geography:	
i) Nature and Scope of Economic Geography	
ii) Approaches to Economic Geography	(04)
2. i) Basic Economic processes- Production, Exchange and Consumption	
ii) Classification of Economic activities and their characteristics	
a) Primary	
b) Secondary	
c) Tertiary	
d) Quaternary	
iii) Location theories - Vonthunen and Weber	(10)
3. Models of economic development :	
i) Rostow's model ii) Myrdal's model	(06)
4. The Economic environment and economic development in the World:	
i) Technically advanced countries	
ii) Less developed countries	(04)
5. Factors of production and related aspects:	
i) Land, labour and capital	
Significance of land, labour and capital in different economic activities, Spatial variation in the factor cost.	
ii) Economies of scale. Agglomeration and Growth poles.	
External and Internal economies of scale.	(10)
6. Transportation:	
i) Various types of transportation and its merits and demerits	
ii) Variation in cost of transportation	(04)
7. International Trade :	
i) Spatial and Temporal Aspects:	
a) Factors promoting International trade	
b) Structure, problems and prospects of international trade	
c) Changing pattern of International trade	
ii) Recent trends in Economic Geography	(07)

Cont. 4

Books -

- 1] Hartshorne, T.A and J.W. Alexander [1988]: Economic Geography, Prentice hall.
- 2] Janaki, V.A.[1985] : Economic Geography, Concept Publishing Co.
- 3] Lloyd, P. and P. Dicken [1972]: Location in Space and Theoretical approach to Economic Geography. Harper and Row, New York.
- 4] Mc. Carty, H. H. and J. B. Lindberg [1966] : A Preface to Economic Geography, Engle Wood cliffs, N. J. Prentice.
- 5] Thomas, Conkling and Yeates [1974]: Geography of Economic Activity / Mc Graw Hill, New York.
- 6] Knox P and J. Agnew [1990] :The Geography of the world Economy.

• **Weightage**

<u>Chapter No.</u>	<u>Marks.</u>
1, 2	20
3	20
4,5	20
6	20
7	20

M. A. / M. Sc. GEOGRAPHY

Gg 102 : PRINCIPLES OF POPULATION AND SETTLEMENT GEOGRAPHY

Principles of population Geography

1. Nature and scope of Population Geography :

Periods

- i)
 - a) A review of definitions
 - b) Nature of the study
 - c) Scope of the study
 - d) Evolution of population Geography
 - e) Significance of the study of the population Geography
- ii) Approaches to the population Geography:

(06)

2. Sources of population data and history of World population:

- i) Various sources:
 - a) The Census- Nature, characteristics, merits and demerits
 - b) The registration and other population data sources.
- ii) History of world population growth:
 - a) Population of the Ancient world.
 - b) Population trends - Ancient to modern times.

(06)

3. Concepts related to population:

- i) Concepts , types definitions Characteristics-
 - a) Density
 - b) Over, optimum and under population
 - c) Fertility and mortality
 - d) Natural growth, temporal growth rates
 - e) population projections
- ii) Theories-
 - a) Malthu's theory
 - b) Marx's theory

(10)

Cont..6

Principles of settlement Geography

4. Nature and scope of Settlement Geography :

- i) a) Definition of rural and urban settlements
- b) Defining characteristics of rural and urban settlements according to the Indian Census.
- c) A review of the definitions of settlement Geography
- d) Nature of the study
- e) Scope of the study
- f) Evolution of settlement Geography
- ii) Approaches to the settlement Geography

(06)

5. Settlement types and patterns

- i) Factors affecting settlement types and patterns
- ii) Settlement types-
 - a) Dispersed
 - b) Compact
 - c) Process of dispersion and nucleation
- iii) Settlement patterns - All types

(07)

6. Concepts and theories related to settlement Geography:

- i) Concepts :-
 - a) Nodality b) Centrality c) Hierarchy d) Range
 - e) Threshold f) Rural service centre g) Rurban centre
 - h) Rank size distribution

ii) Theories :-

a) Christaller and Losch :

Principle, assumptions, explanations, criticism, importance.

b) Spatial Interactions:

1) Gravity model

2) Ullman's model : Regional complementarity,

Intervening opportunity,

Transferability.

(10)

Cont..7

F/8

Books :

1. Garnier - B.J. Geography of population Longman Group Ltd. London 1966.
2. Chandana R.C. A Geography of population , concepts ,Determinants and patterns, Kalyani Publishers , New Delhi 1986.
3. Clark J.I. polpulation Geography (Second edition) Pergamon Press Ltd. Oxford 1972.
4. M.G. Bradford and W.A. "Human Geography" Theories and their applications, Oxford University Press.
5. L.S. Bourne R. Sinclair "Urbanization and K. Dzierwonski (ed - 1984)" Settlement Systems, International perspectives , Oxford University Press.
6. F.S. Hudson (1777) "Geography of settlement" MacDonal and Evans.
7. R.B. Mandal (1979) "Introduction to rural settlements" Concept Publishing Company , New Delhi.
8. R.P. Mishra (General Editor) K. V. Syndaram Swlesh nagia (Eds: 1983) Population Geography , Heritage Pub. New Delhi.
9. R.P. Mishra (General Editor) K. V. Syndaram Swlesh nagia (Eds: 1983) Contributions to Indian Population Geography Heritage Pub. New Delhi.
10. Charles Whyte Hammanond (1979) "Elements of Human Geography" George Allen and Union London.

* Weightage

<u>Chapter No.</u>	<u>Marks.</u>
1	20
2,3	20
4	20
5	20
6	20

M. A. / M. Sc. GEOGRAPHY
Gg.103: ENVIRONMENTAL SCIENCE

- | | <u>Periods</u> |
|---|----------------|
| 1. Introduction : | |
| i) Environmental science and overview | |
| a) Definition | |
| b) Nature and scope | |
| c) Various approaches of study | |
| ii) a) Environmental deterministic approach | |
| b) Possibilities approach | |
| c) Ecological approach | |
| 2. Ecology of natural system: | (05) |
| i) Introduction | |
| ii) Ecosystem | |
| a) Definition | |
| b) Components of Ecosystem | |
| b-1) Structure | |
| b-2) Function - I. Nutrient cycling, Energy flow | |
| 3. Environmental resources | (05) |
| i) a) Forest - utilization, degradation and conservation | |
| b) Water - Natural water cycle, utilisation, degradation and conservation | |
| c) Soil - Utilization, degradation and conservation | |
| ii) Non conventional Energy Resources | |
| Energy from Sun, wind, wave and Earth | |
| 4. Pollution : Meaning of pollutants and pollution | (10) |
| Sources, causes, effects and remedial measures of | |
| a) Air pollution | |
| b) Water pollution | |
| c) Solid waste pollution | |
| d) Noise pollution | |
| 5. Environmental problems : | (10) |
| i) Environmental hazards | |
| a) Types | |
| b) Causes and consequences of | |
| Natural - Earthquake, Drought, cyclones, floods. | |
| Man made - Industrial. | |
| ii) Global Problems : | |
| a) Global warming | |
| b) Acid rain | |
| c) Depletion of ozone | |

06)

Corr. 1.5

8/11

6. Environmental planning and Environmental management
- i) Concept and approaches, need of Resource management
 - ii) Environmental Audit (04)
7. i) Introduction of Environmental Laws and Environmental Impact assessment
- ii) Case studies
 - a) Sardar sarovar project
 - b) Tehri High Dam project
 - c) Application of pesticides and insecticides in India (04)

Books:

1. Environmental Geography
-Savindar sing - Prayag Bhawan ,Allahabad
2. Environmental science-
Turk and Turk - Witness and witness,London
3. Introduction to Environmental studies - Truk Jonathan
4. Environmental science - Nebet
5. Biogeography - Newbegin.
6. Air pollution control
Engineering - Noel De Neveys(University of Utah)
Mc Graw hill International edition civil Engineering series
Environmental pollution and health - R. Kumar - Ashish
publication 8181 Punjabi Bag ,New Delhi.110026

* **Weightage**

<u>Chapter No.</u>	<u>Marks.</u>
1	20
2	20
3	10
4	20
5,6	20
7	10

M.A./M.Sc. Geography

Gg 104 : GEOGRAPHY OF INDIA AND MAHARASHTRA

	<u>INDIA</u>	<u>Periods</u>
1 :-	Location, Geostrategic importance of India	(04)
2 :-	Physiography : Structure, Relief, Physiographic Divisions & Natural Drainage system of India. Climatic types and Regional variations.	(07)
3 :-	Natural vegetation : types and regions, forests and their utilization.	(04)
4 :-	Agriculture : i) Major commercial crops ii) Agricultural Development	(04)
5 :-	Major industries : I) Mineral based industries II) Agro based industries. III) Industrial regions	(06)
<u>Maharashtra</u>		
6 :-	Location of Maharashtra : i) Site and situation ii) Significance of location of Maharashtra.	(02)
7 :-	Physiography of Maharashtra :- i) Relief and Geology ii) Climate iii) Drainage iv) Vegetation v) Soils	(10)
8 :-	Regional Setting :- Regions of Maharashtra i) Greater Mumbai ii) Central and Southern Konkan iii) Tapi - Purna basin iv) Vidarbha	(08)

- 1) National Atlas of India :- Vol I to VII
- 2) Agriculture Atlas of India :- Jabir Singh
- 3) Regional Geography India :- R.L. Singh
- 4) Economic and Commercial Geography of India :- Sharma T. C.Coutinho O.
- 5) Economic Geography of India :- Mamoria C.B.
- 6) Industrial Geography :- B.N. S.nha
- 7) India's Water wealth :- K.L. Rao
- 8) Geography of Resources :- B.N. Negi.
- 9) Geography of States series :- N.B.T. Publication.
- 10) Population Geography :- S.B. Sawant
- 11) Regional Geography of India :- Deshpande C.D.
- 12) Maharashtra :- C.D. Deshpande
- 13) Maharashtra :- Arunachalam
- 14) Maharashtra in Maps :- K.R. Dikshit
- 15) Agriculture in undeveloped regions :- Shinde S.D
- 16) Rivers of India : Mishra S.D.
- 17) Weather and Weather Forecasting : Rama Sastry, A.A.
- 18) The Cultural Heritage of India Chatterji Sunit Kumar and Others
- 19) The Monsoons : Das P.k.
- 20) Geology and Mineral Resources of Maharashtra : Govt. of Maharashtra

Weightage

<u>Chapter No.</u>	<u>Marks.</u>
1,2	20
3,4	20
5	20
6,7	20
8	20

M.A/ MSc. Geography.

Gg 105 : PRACTICAL IN HUMAN GEOGRAPHY

		<u>Periods</u>	<u>Marks</u>
1)	Economic Geography		
i)	Crop combination analysis: Weaver, Thomas, Rafiullah, and Doi's method.		(10)
ii)	Index of Concentration and diversification Bhatia's Method		(05)
iii)	Measurement of Agricultural efficiency Kendall and Bhatia's method		(05)
iv)	Measurement of Industrial activity Location Quotient and Lorenz curve.		(05)
v)	Measures of Level of Industrialization R.B. Mandal's method.		(04)
vi)	Graph theoretic measures of transport Network. Ratio Measures, Alpha, beta, gamma, associated number and koing Index	22	35
2)	Population Geography		
	Age -Sex pyramids, Child -woman ratio, Net reproductive rate Dependency ratio, Infant mortality rate, Population growth rate, NGR and AGR	11	30
3)	Settlement Geography		
i)	Methods used to calculate degree of dispersion Demangeon, Bernard and Debouverie's methods		
ii)	Nearest Neighbour analysis-Clerk and Evan's method		
iii)	Gravity model		
iv)	Rank size rule		
v)	Functional classification of towns - H.J. Nelson and Harris method.		
vi)	Calculation of Centrality-Chistaller's method of central places	12	35

Cont..13

Books

- 1) Statistic for Geography and Social science : R.B. Mandal
- 2) Maps and diagrams : Monkhouse
- 3) Agricultural Geography : Masid Husam
- 4) The study of Urban Geography : Edward Arnold
- 5) Fundamental of Demography : Surjeet Publicators Delhi Hans Raj ,1978.
- 6) Hudson F.S. (1976): Geography of Settlements, McDonald and Evans.
- 7) Michael E and Eliot Hulse (ES) :Transportation Geography Comier ts and Readings.
- 8) Pottard A.H. Faihat Yusuf and Polan L.N. (1974) : Demographic Tec niques. Pergamen Press, Australia.
- 9) Singh R.L." Reading in Rural Settlement Geography "
- 10) Yeats M.H. - An introduction to Quantitative analysis in Human Geog raphy McGraw Hill, New York.
- 11) Sing J and Ditton S.S. (1984) Agricultural Geography, Tata Hill Publishing Co.ltd.

* Weightage

<u>Chapter No.</u>	<u>Marks.</u>
1	35
2	30
3	35

MA/M.Sc. GEOGRAPHY
105 : COMPUTER APPLICATION IN PRACTICAL OF
HUMAN GEOGRAPHY

INTRODUCTION TO COMPUTER

Topic-1

- i) **Creating Excel Worksheets :**
 - a) The Excel Application Window, Workbooks and Worksheets, Moving cell Pointer, Functions of Menus File, Edit, Insert, Format, Tools, Data. Function of Formula Bar, Creating charts by applying Chart Wizard.
 - b) Working with Microsoft Excel: Tracking Data with Excel, Analyzing data with Excel.
- ii) **Creating Power Point Presentations :**

Using Auto Content wizard, Viewing Slides, Developing a Presentation, Working in Slide View, Building Presentations, inserting charts, Using existing data, Applying Transitions, Animation Effects, Slide show.

NOTE FOR APPLICATION OF COMPUTER

Apply Microsoft Excel to Computer for the following indices given in different sections and prepare suitable charts to represent the data. For the presentation of Field Report apply Multimedia-power point.

POPULATION GEOGRAPHY

Topic-2

- i) **Density :**
 - a) Density of Population
 - b) Economic Density
 - c) Nutritional Density
 - d) Caloric Density
 - e) Index of Population Change
- ii) **Some measures of Fertility and Mortality:**
 - a) Crude Rate
 - b) Crude Birth Rate
 - c) General Fertility Rate
 - d) Standard Mortality Ratio
 - e) Child Woman Ratio

Topic-3 Combination and Correlation techniques

- i) **Combination** : Disease Combination by Weaver's Method.
- ii) **Correlation** :
 - a) Male and Female Population
 - b) Monthly Rainfall, Temperature and Monthly Number of Births & Deaths.
 - c) Size of family and Number of Births.

SETTLEMENT GEOGRAPHY

Topic-4 Rural Settlements :

Index of Dispersion of Rural Settlements.

- i) Bernhard's Method
- ii) Demangon Method
- iii) Zerhoffer's Method
- iv) Debouverie's Method

Topic-5 Urban Settlements :

- i) Growth of Urban Population
- ii) Degree of Urbanization
- iii) Rate and Speed of Urbanization
- iv) Functional Classification of Urban Centers by Mellata and Thompson Method
- v) Centrality Index by W. Christaller.

ECONOMIC GEOGRAPHY

Topic-6 Agriculture geography :

- i) Crop combination by Weaver's Method
- ii) a) Crop Concentration by Bhatia's Method
- b) Crop Diversification by Bhatia's Method
- c) Measurement of Agriculture efficiency by Kendall's Method

Topic-7 A) Transport Geography :

- i) Connectivity Index :- Alfa, Beta, Eta, Gamma, and Cyclometric Number
- ii) Spread and Diameter of Network
- iii) Accessibility

B) Industrial geography :

- i) Location Quotient
- ii) Lorenz Curve

FIELD SURVEY REPORT

Topic-8 A) DATA COLLECTION

Note :- Students should collect the data from sources cited as below through questionnaires and personal interviews.

a) Source of Data :

- i) Grampachayat office of a village, P.H.C. center or a Hospital
- ii) Municipality, Pachayat office of the Tehsil.
- iii) Tehsil Office
- iv) Census hand book and Personal Interview of the villagers.

b) Kind of Data :

- i) Age, Sex, Caste, Religion wise Population data
 - ii) Number of Births and Deaths (Yearly & Monthly)
 - iii) Occupation wise data
 - iv) No. of Households in the village
 - v) Ward wise area under construction in Urban center
 - vi) Cropping Pattern-Area under different crops
 - vii) Diseased Persons treated in a PHC or Hospital
- What so ever data is required should be collected individually

B) ANALYSES OF THE DATA :

- i) For the analysis of data apply at least 15 indices for the information collected from various sources
- ii) Prepare suitable Charts, Graphs or Maps with the help of computer.
- iii) For the presentation of report prepare at least 15 slides in Power Point.

C) FIELD REPORT PRESENTATION :

- i) At the time of examination present the report with the help of Power Point.
- ii) Store all slides in the Floppy and make them available at the time of examination. Examiners will assess the work prepared by students.

	<u>Periods</u>	<u>Marks</u>
Topic 1 :- Introduction To Computer	3	00
Creating Excel Worksheet ; {Objective Questions}	7	10
Creating Power Point Presentations	2	00
Topic 2 :- a) Density :	3	10
b) Some Measures of Fertility And Mortality	3	10
Topic 3 :- Combination and Correlat on Techniques	4	10
Topic 4 :- Rural Geography	4	10
Topic 5 :- Urban Geography	4	10
Topic 6 :- Agriculture Geography	5	10
Topic 7 :- Transport Geography & Industrial Geography	4	10
Topic 8 :- Field Survey Report (Oral & Presentation)	6	10
Total Periods	45	90

Total Marks

- I) Internal Marks --- 20
- II) External --- 80 (Each question carry 10 Marks)
- i) Journal & Oral 10
- ii) Field Report Presentation & Oral 10
- iii) Objective Question on Microsoft Excel 10
- iv) Computation (No. of questions 05) 50

80 Marks

EXAMINATION SYSTEM :

Student should feed and analyze the data in computer for better presentation. Get the print of answer paper.

Books :

- 1) Statistic for Geography and Social science : R.B. Mandal
- 2) Maps and diagrams : Monkhouse
- 3) Agricultural Geography : Masid Husain
- 4) The study of Urban Geography : Edward Arnold
- 5) Fundamental of Demography : Subject Publicators Delhi Hans Raj , 1973.
- 6) Hudson F.S. (1976): Geography of Settlements, McDonald and Evans.
- 7) Michael E and Eliot Hulse (ES) : Transportation Geography Comments and Readings.
- 8) Pottard A.H. Fa hat Yusuf and Polan L.N. (1974) : Demographic Techniques, Pergamon Press, Australia.
- 9) Singh R.L. "Reading in Rural Settlement Geography "
- 10) Yeats, M.H. : An introduction to Quantitative analysis in Human Geography McGraw Hill, New York.
- 11) Sing J and Ditton S.S. (1984) Agricultural Geography, Tata Hill Publishing Co.Ltd.

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M.A./M. Sc. GEOGRAPHY
Ge. 201: PRINCIPLES OF GEOMORPHOLOGY

1) **Introduction :**

- a) Nature and scope
 - i) Definition
 - ii) Nature
 - iii) Scope
- b) Development of Geomorphologic thoughts
 - i) Ancient thoughts
 - ii) Medieval thoughts
 - iii) Recent development
- c) Fundamental Concepts
 - i) Uniformitarianism
 - ii) Catastrophism
 - iii) Morphogeactic regionalisation

(05)

2) **Origin and Evolution of Earth's Primary relief :**

- a) Continental drift theory and Palaeo-magnetism
 - i) Basic assumptions
 - ii) Theory
 - iii) Supporting evidences
 - iv) Criticism
- b) Sea floor spreading theory
 - i) Basic assumptions
 - ii) Theory
 - iii) Supporting evidences
 - iv) Criticism
- c) Plate tectonic theory
 - i) Definition of the terms-Lithosphere, Asthenosphere, Benioff Zone
 - ii) Lithospheric plates
 - iii) Plate Margins
 - iv) Effect of plate movement

(12)

3) **Exogenous Processes**

- a) Weathering :
 - i) Definition
 - ii) Factors
 - iii) Types
 - iv) Products.

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- b) Mass Wasting
 - i) Definition
 - ii) Factors (Favouring Conditions)
 - iii) Types
 - iv) Examples. (04)

4) Slope:

- a) Elements of slopes
 - i) Convex slope
 - ii) Free face
 - iii) Constant or talus slope
 - iv) Concave slope
- b) Development of slope profile
 - i) W. Penck's Views
 - ii) A. Wood's Views (05)

5) Cycle of erosion : Davis's Cycle of erosion :

- i) Basic Assumptions
- ii) Theory
- iii) Concepts
 - a) base level
 - b) Peneplain
 - c) Monadnock
- iv) Criticism
- v) Interruption of Cycle of erosion. (05)

6) Fluvial landforms :

- a) Erosion
 - i) Process of erosion
 - ii) Features of erosion
- b) Deposition
 - i) Process of deposition
 - ii) Features of deposition (04)

7) Glacial landforms :

- a) Introduction
 - i) Definition
 - ii) Occurrence
 - iii) Types - valley & continental
- b) Glacial erosion
 - i) Process of erosion
 - ii) Features of erosion

- c) Glacial deposition
 - i) Process of deposition
 - ii) Features of deposition (05)
- f) Aeolian landforms :
 - a) Erosional landforms
 - i) Process of erosion
 - ii) Features of erosion
 - b) Depositional landforms
 - i) Process of deposition
 - ii) Features of depositions (05)

Books

- 1) Geomorphology - Sparks
- 2) Principles of Geomorphology - William Thornbury
- 3) Morphology and landscape - Harry Robinson
- 4) Physical Geography - A Stranler
- 5) Unstable Earth - S.J. Steers
- 6) An outline of Geomorphology - Wooldridge and Morgan.
- 7) The Earth's Dynamic Surface - K. Siddhartha

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Weightage

<u>Chapter No.</u>	<u>Marks.</u>
1	20
2	20
3,4,5	30
6,7,8	30

Cont. 21

H/12

M.A. / M.Sc GEGGRAPHY

Gg 202: PRINCIPLES OF CLIMATOLOGY

- 1) Introduction : Periods
- a) Nature and Scope
 - i) Definition
 - ii) Nature
 - iii) Scope
 - b) Development of Modern Climatology
 - i) Current views
 - ii) Role of satellite in weather and climatic studies
- (04)
- 2) Atmosphere :
- i) Composition of atmosphere
 - ii) Depletion of Ozone and its causes and effects
 - iii) Structure
 - a) On the basis of temperature
 - b) On the basis of composition
- (05)
- 3) Insolation :
- a) Solar radiation or Insolation
 - i) Definition
 - ii) Factors affecting insolation
 - iii) Effects of atmosphere
 - a) Scattering
 - b) Reflection
 - c) Absorption
 - b) Heat Balance
 - i) Terrestrial heat balance
 - ii) Latitudinal heat balance
 - iii) Albedo
 - c) Distribution of temperature
 - i) Factors affecting the distribution
 - ii) Horizontal distribution
 - iii) Vertical distribution
- (10)
- 4) Atmospheric pressure and winds
- a) General Circulation of atmosphere
 - i) Planetary winds
 - ii) Diurnal variation
 - iii) Seasonal variation

- b) Pressure gradient
 - i) Pressure gradient force
 - ii) Coriolis force
- c) Geostrophic winds
- d) Jet stream (07)

5) Humidity and precipitation

- a) Humidity of atmosphere, types
- b) Precipitation
 - i) Condensation process
 - ii) Types of rainfall
- c) Stable and unstable atmosphere
 - i) Laps rate
 - ii) Dry and wet adiabatic rate
- d) Stability
 - i) Absolute stability
 - ii) Absolute instability
 - iii) Conditional stability and instability (07)

6) Air masses and fronts

- a) Air masses
 - i) Definition
 - ii) Source region
 - iii) Classification
 - iv) Modification
 - a) Thermodynamics
 - b) Mechanical
- b) Fronts
 - i) Definitions
 - ii) Frontogenesis
 - iii) Types
 - iv) Atmospheric disturbances
 - v) Thunderstorms (06)

7) Classification of Climates

- a) Köppen's Classification
 - i) Basis of classification
 - ii) types
 - iii) Merits and demerits

- b) Thornthwaite's classification
i) Basis
ii) Types
iii) Merits and De-merits

(06)

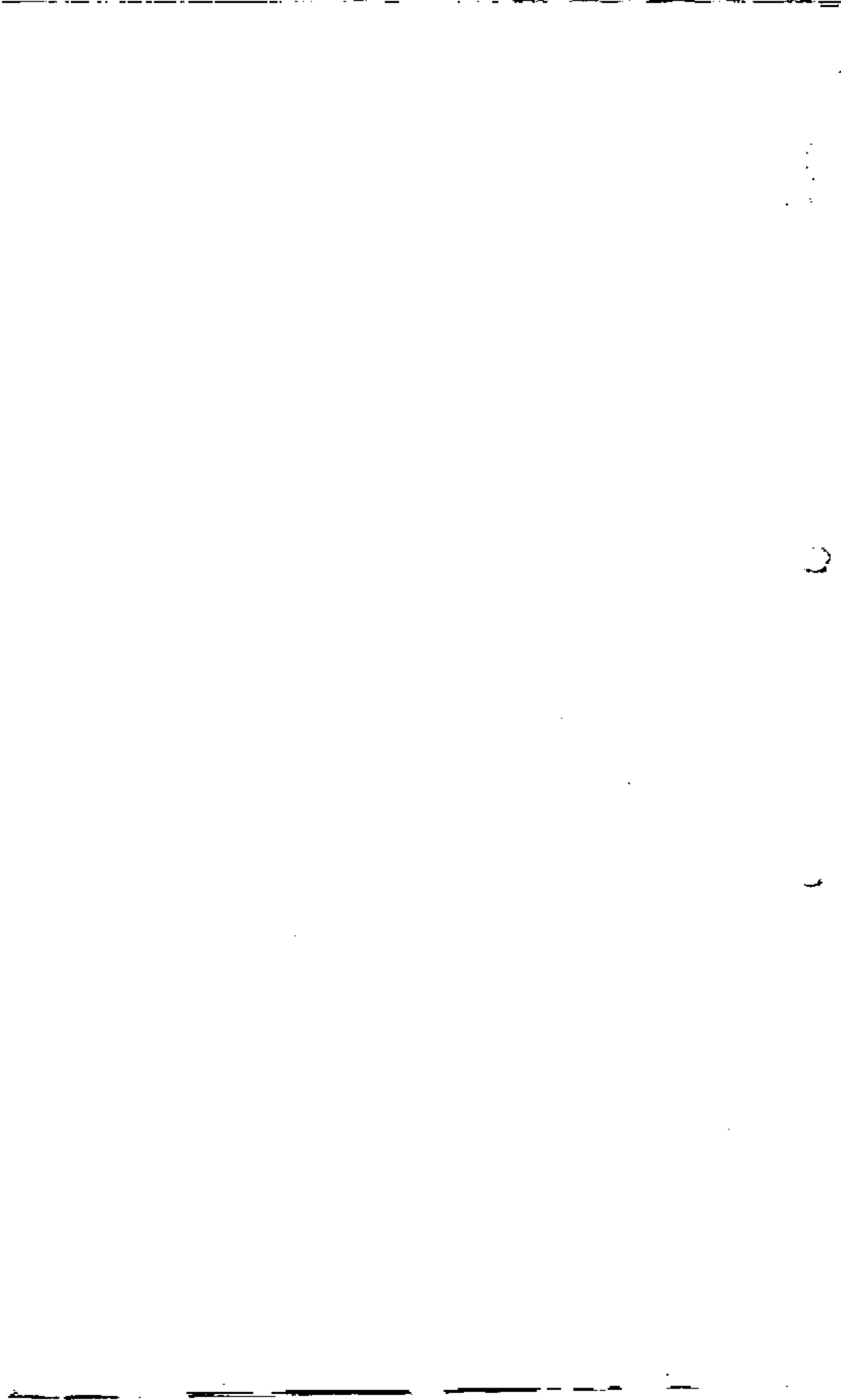
(45)

Books

- 1) Trewartha G.T. - An Introduction to Weather and Climate.
- 2) Austin Millar - Climatology
- 3) Kendrew - Climate of the Continents
- 4) Critchfield H.J. - General Climatology
- 5) Crowe - Concepts in Climatology
- 6) J.D. Ayode - Introduction to Climatology in Tropics
- 7) Das P.K. - Monsoon
- 8) Subrahmanyam V.P. - General Climatology, vol.3
- 9) Masjid Husam - Climatology
- 10) Keith Smith - Principles of Applied Climatology
- 11) R.G. Barry and R.J. Chorley - Atmosphere, Weather and Climate.
- 12) Strahler A.N. - Introduction to Physical Geography
- 13) Haurwitz - Tropical Meteorology
- 14) Manunder W.J. - The Value of Weather
- 15) R.N. Tikka - Physical Geography
- 16) K. Siddhartha - Atmosphere, Weather and Climate

Weightage

<u>Chapter No.</u>	<u>Marks.</u>
1,2	20
3,4	30
5,6	30
7	20



5 : LAND USE OR LAND COVER MAPPING :

- i) Geologic Mapping
- ii) Soil Mapping
- iii) Agricultural Application
- iv) Forestry Application
- v) Water Resource Application
- vi) Urban and regional Application (12)

6 : PHOTOGRAMMETRY :

- i) Relief Displacement of vertical features
- ii) Image Parallax
- iii) Parallax Measurements (05)

7 : DEVELOPMENT OF INDIAN SPACE PROGRAMME :

- i) History of Indian Space programme
- ii) Organization of Indian Space programme
- iii) Recent development in Indian Space programme (05)

45

REFERENCE BOOKS :

Thomas M. Lillesand & Ralph W. Kiefer : Remote sensing & Image Interpretation
Third Edition, John Wiley Sons, Inc. New York.

S.M. Rashid : "Remote sensing in Geography" Manak Publications Pvt. Ltd,

3 - A Savarkar Block, Shakarpur, Delhi 110092

W. K. Kilford : "Elements of Air Survey", The Pitman publishing corp. New York

Paul J. Carran: "Principles of Remote sensing", English Language book Society Longman.

G.C. Barret & L.F. Curtis : "Introduction to Environmental Remote Sensing" Chapman
& Hall, New York.

G. C. Dickenson : "Maps and Air Photography" Arnold Heinemann.

Thomas Eugene Avery : "Interpretation of Aerial Photographs" Burgess Publishing Co. Minnesota

Floyd Sabins : "Remote Sensing Principles & Application, Freeman and Co. N. York.

Cumar : "Aerial Photography" Suderhan Publishers, Hycerabad.

Weightage

<u>Chapter No.</u>	<u>Marks.</u>
1,2	30
3,4	20
5,6	30
7	20

MA/M. SC. GEOGRAPHY
Gr. 203: REMOTE SENSING IN GEOGRAPHY

1 : CONCEPT AND FOUNDATION OF REMOTE SENSING :

Introduction :

- | | | |
|------|--|----------------|
| i) | Energy sources and radiation principles. | <u>Periods</u> |
| ii) | Energy interactions in the Atmosphere, Scattering and Absorption | |
| iii) | Energy interactions with earth surface features | |
| | a) Basic interaction between Electromagnetic Energy and Earth surface feature. | |
| | b) Spectral reflectance of vegetation, soil and water | |
| | c) Spectral response pattern | |
| | d) Atmospheric influences on spectral response pattern. | |
| iv) | Data acquisition and interpretation | |
| v) | An ideal remote sensing system. | |
| vi) | Characteristics of real remote sensing system. | |
| vii) | Successful application of remote sensing. | (08) |

2 : ELEMENTS OF PHOTOGRAPHIC SYSTEMS :

- | | | |
|------|-------------------------------------|------|
| i) | Early history of Aerial Photography | |
| ii) | Processing of Black and White films | |
| iii) | Processing of Colour films. | |
| iv) | Aerial Cameras. | (05) |

3 : BASIC GEOMETRIC CHARACTERISTICS OF AERIAL PHOTOGRAPHS :

- | | | |
|------|-------------------------------------|------|
| i) | Taking vertical Aerial Photographs. | |
| ii) | Scale of Aerial Photographs | |
| iii) | Photographic Resolution | (04) |

4 : INTRODUCTION TO AIR PHOTO INTERPRETATION :

- | | | |
|------|--|------|
| i) | Fundamentals of Air photo interpretation | |
| ii) | Elements of Air photo interpretation | |
| iii) | Photo interpretation strategies. | |
| iv) | Temporal aspect of photo interpretation | |
| v) | Basic photo interpretation equipments. | (06) |

Cont. 25

f/25

MA / M. Sc. GEOGRAPHY.
Gr. 204: GEO- STATISTICAL METHODS

1. (i) Geo - science system and Statistical technique .
(ii) Measurement scales in Geo - science system. - Nominal scale , ordinal, interval ratio scale. (03)

- 2 (A) Probabilistic treatment in Geo - science system.
(i) Introduction to probability
(ii) Normal distribution
(iii) Standard scores and Normal curve.
(iv) Finding area under Normal curve.
(v) Characteristics of Normal curve.
(B) Binomial distribution
(i) Binomial distribution function
(ii) Characteristics of Binomial distribution
(C) Poisson Distribution
(i) Poisson distribution function
(ii) Characteristics , merits and demerits (08)

3. Sampling and Sampling plan in Geo - science system
(i) Population and sample
(ii) Methods of Sampling
(a) Simple Random sampling ,
- Point sampling
- Area sampling ,
- Line sampling
(b) Restricted random sampling - Systematic ,
- Grid ,
- Stratified and
- Cluster sampling
(c) Designing and conducting a Sample survey (05)

4. (A) Parametric statistics in Geo - science system
(i) Sampling theory and parametric statistics
(ii) Null - Hypothesis and significance level
(iii) One - tailed and two - tailed tests
(iv) Test of significance between sample mean and population mean.
(B) Parametric statistics in geo - science system (small sized sample)
(i) Student's t statistics
(ii) Importance of 't' statistics.
(iii) Test of significance between sample mean and population mean
(when standard deviation is unknown.)
(iv) Test of significance between the means two independent samples. (12)

(5) Non parametric statistics in geo - science system.

(i) Chi - square Test
One - sample Test

(ii) K.S. Test
One sample Test
Two sample Test

(10)

(6) Regression Analysis in Geo - science system

(i) Semi - average method

(ii) Least square method

(iii) Residuals from regression

(B) (i) Exponential regression equation

(ii) Power regression equation

(07)

45

Books :

1. Saroj K. Pal - statistics for Geo - scientists
2. S.Gregory - Statistical methods for geographers
3. Yeats H. - An introduction to quantitative analysis in geography

Weightage

<u>Chapter No.</u>	<u>Marks.</u>
1,2	25
3,4	35
5,6	40

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M.A. / M. SC. GEOGRAPHY
Gg. 205: PRACTICAL IN PHYSICAL GEOGRAPHY

GEOMORPHOLOGY

Morphometric Analysis :

1. Relief and slope analysis

- a) Absolute Relief
- b) Relative Relief
- c) Dissection Index
- d) Slope by Wentworth's method

(10)

2. Drainage network hierarchy

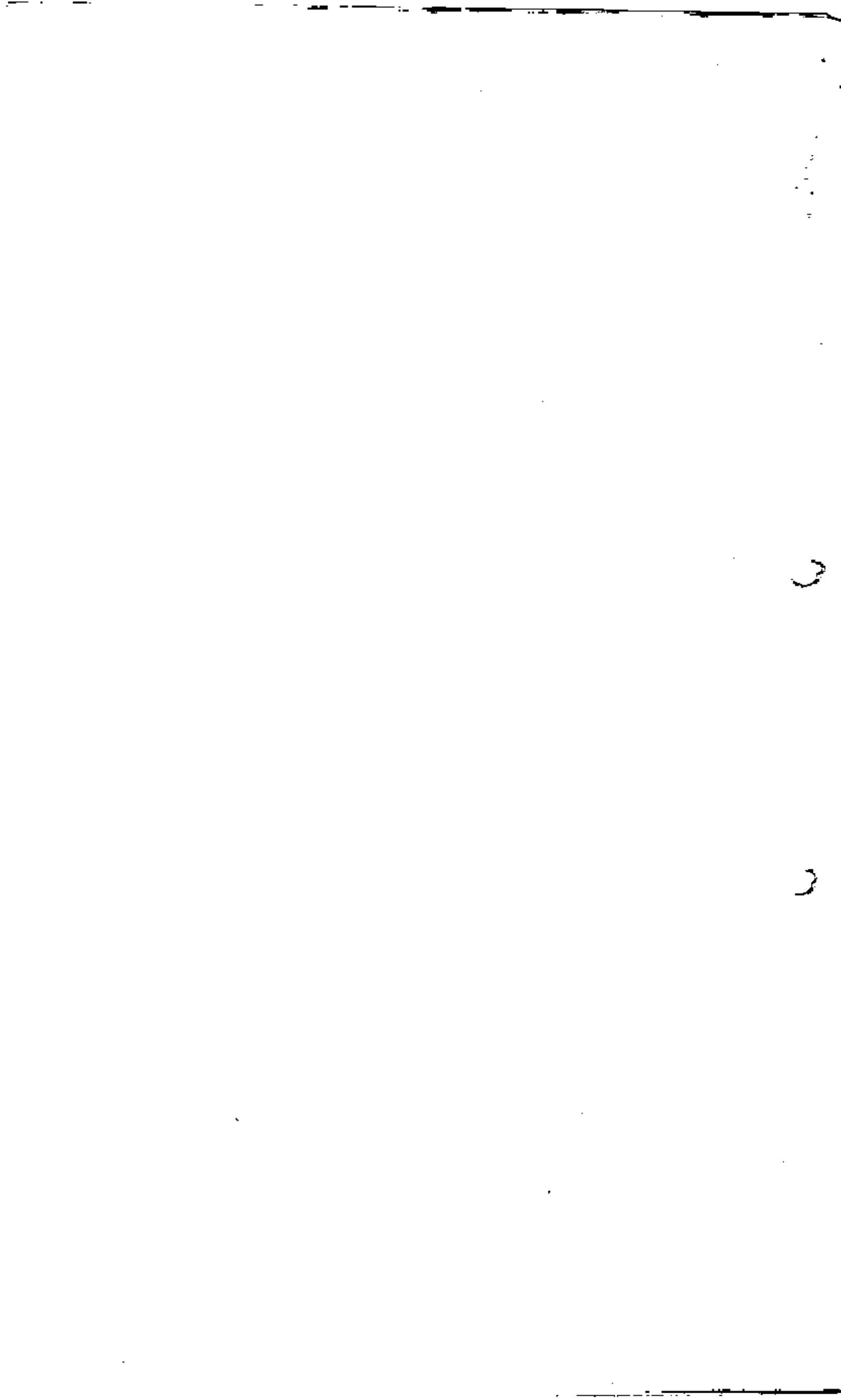
- a) Drainage network hierarchy
 - i) Horton's method
 - ii) Strahler's method
- b) Laws of drainage composition
 - I) Law of stream order :
 - i) Measurement of orderwise stream number.
 - ii) Stream number v/s Stream order
(Preparation of graph)
 - iii) Bifurcation ratio
 - II) Law of stream length
 - i) Measurement of stream length & average
 - ii) Stream order v/s Average stream length
(Preparation of graph)
 - iii) Length ratio
- c) Measurement of catchments area of drainage basin unit.
 - I) Drainage frequency
 - II) Drainage density
 - III) Constant of channel maintenance
- d) Percentage Hypsographic curve and estimation of hypsometric integral.

(10)

3. Geological Maps

- a) Explanation of Terminology
 - i) Dip
 - ii) Strike line
 - iii) Bedding Plane
 - iv) Plane of unconformity
 - v) Out crops
- b) Drawing of Geological section and its interpretation.

(10)



CLIMATOLOGY

4. a) Preparation of climatic maps and diagrams
(data based on metric system should be used)
- i) Climatograph :- Simple temp. and rainfall graph
 - ii) Climograph, Hythergraph, Foster's climograph
 - iii) Wind roses : simple, compound and octagonal
 - iv) Rainfall dispersion (08)
- b) Preparation of station model.
- i) Preparation of weather data with the help of symbols. (02)
- c) Estimation of potential evapotranspiration
- i) Thornthwaite's method (02)
5. a) Interpretation of weather maps at least 3 of various seasons (04)
- b) T.V. Weather Bulletin interpretation : Students should be asked to prepare and interpret the weather report of a week with the help of Weather Bulletin telecast after the News on Durdarshan. He is supposed to submit this report at the time of examination.
If possible the Department can make available the Video Cassettes of typical weather phenomena taken from the Weather Bulletin of varied days. (02)
- c) Determination of climatic types : Koppen's classification method. (04)

6. EXCURSION

- a) Visit to a place or a region of geographical interest.
Report should include the following points:
- i) landforms - More emphasis should be given on the formation of these landforms
 - ii) Economy
 - iii) settlements
 - iv) Transport
 - v) General observations
- b) While writing the report students may write report on any one point or may consider all points.
- c) Maps, photographs and diagrams are necessary wherever required.
- d) Collection of rock specimens is also expected. Students should bring them at the time examination and show them to the Examiner. Examiners are requested to give weightages to such students
- e) Excursion Report

Books

1. Monkhouse F.J. - Maps and diagrams
2. King C.A. - Techniques in geomorphology
3. Miller A. - Skin of the Earth
4. Mathur - Climatology fundamental & Application
5. R.L. Singh - Elements of Practical Geography
6. Triwartha - Elements of climatology
7. Strahler A. - Physical Geography.

Weightage

<u>Chapter No.</u>	<u>Marks.</u>
1,2	35
3	20
4,5	35
6	10
