

NORTH MAHARASHTRA UNIVERSITY, JALGAON

M.A./M.Sc. Part I Semester II

Gg. 201 PRINCIPLES OF GEOMORPHOLOGY

1] INTRODUCTION :

- A. Nature and Scope
i) Definition ii) Nature
iii) Scope iv) Significance
- B. Fundamental concepts
i) System ii) Uniformitarianism
iii) Morphogenetic Regionalization

2] ORIGIN AND EVOLUTION OF EARTH'S PRIMARY RELIEF :

- A. Continental Drift Theory
i) Wegner's Theory ii) Palaeo Magnetism Theory
- B. Sea floor spreading
i) Assumptions ii) Bathymetry
iii) Sources and trenches
- C. Plate Tectonic Theory
i) Plate Margins
ii) Convergence and divergence of plates
iii) Subduction zones.
iv) Effects of plate Movements.

3] SUB AERIAL GEOMORPHIC PROCESSES AND LAND FORMS :

- A. Weathering
i) Definition
ii) Factors
iii) Types - a) Mechanical b) Chemical c) Biological
iv) Land forms
- B. Mass Wasting
i) Definition ii) Factors
iii) Types iv) Effects

4] SLOPS

- A. Methods of slope studies
i) Inductive ii) Deductive
iii) Geometrical iv) Statistical
- B. Elements of slope profile
i) Convex ii) Scarp (free face)
iii) Straight (Defris slope) iv) Concave
- C. Development of slope profile
i) Wood's Views ii) Penck's Views

5] CYCLE OF EROSION :

- Davis's cycle of erosion
i) Concept of Base Level ii) Cycle of Ferosion
iii) Interruption (Rejuvenation) iv) Criticism
a) Causes, b) Effects

- 6] FLUVIAL LANDFORMS :
- A. River and valley
 i) Definition of River and River Valley
 ii) Stream Nomen clature
 iii) Valley Development
- B. Landforms
 i) Mechanism of fluvial erosion transportation and deposition
 ii) Erosional Landforms
 iii) Depositional Landforms
- 7] SEMI AND LANDFORMS :
- A. Pediment
 i) Definition ii) Characteristics
 iii) Pediment Morphology
 a) Scarp b) Piedmont c) Pediment d) Playas
- 8] GLACIAL LANDFORMS :
- A. Concept
 i) Definition ii) Types
- B. Landforms
 i) Erosional Landforms ii) Depositoinal
- 9] COASTAL LANDFORMS :
- A. Mechanism
 i) Wave erosion ii) Wave transportation iii) Wave Deposition
- B. Landforms
 i) Erosional Landforms ii) Depositional Landforms
- C. Classification of coast
 i) Emergence ii) Submergence

BOOKS

- 1) Richard J.Charely, Stanley A, Schumm, David E. Sugden (Methuen and Com. Ltd.) - Geomorphology
- 2) William D. Thornbury - Principles of Geomorphology, (Wiley eastern Ltd.)
- 3) Harry Robinson - Morphology and Landscape
- 4) A.N.Strahler - Physical Geography (Wiley International Book, New York)
- 5) Young and Young - Slope Development (Mac Milan)
- 6) Wooldridge S.W. and R.S.Morgen - An outline of Geomorphology
- 7) Sparks - Geomorphology
- 8) F.J.Small - Study of Landforms
- 9) A.C.Bloom - Geomorphology.

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M.A./M.Sc. GEOGRAPHY Semester II
Gg. 202 : PRINCIPLES OF CLIMATOLOGY

1] INTRODUCTION :

- A. Nature and scope
i) Definition ii) Nature iii) Scope
- B. Development of modern climatology.
i) A brief chronology ii) Current view
iii) Role of satellite in weather and climatic studies

2] ATMOSPHERE :

- A. Composition
i) Physical properties ii) Chemical properties
iii) Depletion of Ozone
- B. Structure
i) On the basis of Temperature
ii) On the basis of composition
a) The chemosphere b) The ionosphere c) The Magnetosphere

3] INSOLATION :

- A. Solar radiation
i) Definition
ii) Electron magnetize spectrum
iii) Factors affecting insolation
iv) Effects of atmosphere
a) Scattering b) Diffusion c) Absorption
d) Reflection e) Green House
- B. Heat Balance
i) Terrestrial heat balance ii) Latitudinal heat balance
iii) Albedo iv) Atmospheric window
- C. Distribution of Temperature.
i) Factors affecting the distribution
ii) Horizontal distribution iii) Vertical distribution

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. Winds
i) Geostrophic winds ii) Jet streams

5] I. HUMIDITY AND PRECIPITATION :

- A. Humidity
i) Measurement of humidity ii) Types
- B. Precipitation
i) Condensation process ii) Forms of condensation
iii) Type of rainfall.

North Maharashtra University, Jalgaon
M.A./M.Sc. (Geography) Semester II
Gg. 203 STATISTICAL METHODS

- 1] NATURE OF GEOGRAPHICAL DATA
 - A. Population and sample
 - i) Types of data - Descartes and continuous
 - ii) Levels of measurements - scale of measurement - nominal, original, interval and ratio scale.
- 2] PROBABILITY CONCEPT IN GEOGRAPHY :
 - A. Probability assessment
 - i) Probability assessment for continuous data by normal distribution.
 - ii) Probability assessment of discrete event by binomial and Poisson distribution
- 3] TIME SERIES :
 - A. Time series curve characteristics and smoothening
 - i) Concept of time dependent variables, trends, periodicity, seasonability.
 - ii) Calculation of moving averages
 - iii) Least squares - Fitting of straight line equation for time series.
 - B. Curve fitting and expression of trend by an equation
- 4] INDEX NUMBER :
 - Weighted and aggregate index number
 - i) Weighted index number laspere's and pasche's index numbers
 - ii) Aggregate index number for calculation of cost of living index number.
- 5] BIVARIATE ANALYSIS :
 - A. Association of variables
 - i) Concept of covariance correlation and partial correlation.
 - ii) Basic assumptions of regression straight line and exponential regression equation.
 - iii) Residuals from regression.
 - iv) Power regression equation
- 6] INFERENCEAL STATISTICS :
 - A. Concepts related to inferential statistics
 - i) Standard error
 - ii) Null hypothesis
 - iii) One tailed and two tailed test
 - iv) Level of significance and degree of freedom
 - v) Analysis of variance one way
 - vi) Chisquared test based on contingency table.
 - vii) Kolmogrov - smir nov test.
 - B. Parametric tests
 - C. Non Parametric tests

BOOKS

- 1) Saroj K.Pal - Statistical Techniques - A basic approach to geography (Mc Graw hull)
- 2) S.Gregory - Statistical methods for geographers (Longman)
- 3) Yeats H. - An Introduction to Quantitative analysis in Geography (mc Graw Hill) New York 1974.

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M.A./M.Sc. (Geography) Semester II

Gg. 204 REGIONAL GEOGRAPHY OF
U.S.A./JAPAN/SOUTH EAST ASIA COMMON SYLLABUS

- 1] INTRODUCTION :
 1. Location, space relation
 - i) Location
 - ii) Space relation
- 2] PHYSICAL SETTING :
 1. Geology
 - i) Brief tectonic history
 - ii) Geological structure
 2. Physiographic structure
 - i) Various physiographic divisions
 3. Drainage
 - i) Rivers and drainage patterns
 - ii) Lakes
 4. Climate
 - i) Characteristics
 - ii) Factors affecting climate
 - iii) Climatic regions
 5. Soils
 - i) Factors affecting soils
 - ii) Soil types and soil regions
 6. Vegetation
 - i) Characteristics
 - ii) Types of vegetation
 - iii) Forest products
- 3] ECONOMIC GEOGRAPHY :
 1. Agriculture activities
 - i) Agriculture regionalization
 - ii) Types of farming
 - iii) Means of irrigation
 - iv) Crops
 - v) Livestock farming
 - vi) Problems of agriculture
 2. Minerals resources
 - i) Important minerals
 3. Power resources
 - i) Coal
 - ii) Mineral oil
 - iii) Natural gas
 - iv) Hydel power
 - v) Atomic power

(Take those power resources which are available in the region)
 4. Industries
 - i) Development of industries
 - ii) Factors affecting industrialization
 - iii) Major industries : Iron & steel cotton textile Automobile Shipbuilding, Forest based industries, Petro chemicals Electronics
 - iv) Problems of industries
 - v) Industrial regions
 5. Transport and communication
 - i) Land transport - Roads, Railways
 - ii) Water transport - internal water ways external water ways (ocean routes)

- iii) Air transport -
- iv) Role of transportation in economy
- v) Means of communication - satellite communication

- 6. International trade
 - i) Trading partners ii) Membership of trading blocs
 - iii) Foreign Trade

4] HUMAN GEOGRAPHY :

- 1. Population
 - i) Distribution of population ii) Migration of population
 - iii) Problem of ethnic diversity
- 2. Settlements
 - i) Urbanization ii) Important urban centres

5] GEOGRAPHICAL REGIONS AND THEIR PERSONALITY :

- 1. Major geographical regions
 - i) Basis of regionalization ii) Regional characteristics
 - iii) Role of region in national perspectives

6] INTERNATIONAL ISSUES :

- International relations
 - i) Membership of various military/political/Economic /international organization.
 - ii) Countries involvement in international issues after the second world war.

Books :

- 1. North America - Carlson
- 2. North America - Mead and Brown
- 3. North America - Griffith and others
- 4. North America - White and Renner
- 5. North America - L.D. Stamp

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M.A./M.Sc. (Geography) Semester II

Gg. 205 : PRACTICAL IN PHYSICAL GEOGRAPHY

(A) Geomorphology (B) Climatology (C) Excursion

1] GEOMORPHOLOGY :

A. Relief and slope analysis

- i) Absolute relief map ii) Relative relief map
- iii) Wentworth's average slope map iv) Miller's Isotan map
- v) Dissection Index

B. Morphometric Analysis

- i) Definition
- ii) Objectives
- iii) Methods of stream ordering
1. Horton's method 2. Strahler's method 3. Shreve's method
- iv) Bifurcation Ratio (Rb)
- v) Stream frequency (for (4) and (5) use strahler's stream ordering method)
- vi) Demarcation of drainage basin and measurement of its catchment area.
- vii) Drainage density
- viii) Constant of channel maintenance
- ix) Hypsometric curve and estimation of Hypsometric integral (Interpretation of the results of all sub units)

2] CLIMATOLOGY :

A. Preparation and interpretation of climatic maps and diagrams (Data based on Metric system should be used)

- i) Climatograph
- ii) Climograph, Hythergraph, Foster's Climograph
- iii) Wind roses : Simple Compound and octagonal
- iv) Rainfall dispersion
(Interpretation of all results of diagrams)

P. Preparation of station model

- i) Preparation of weather data with the help of symbols.

C. Estimation of potential evapotranspiration

- i) Thornwaite's method

D. Interpretation of weather maps.

- i) Interpretation of weather maps of at least 4.

E. Determination of Climatic types
Kopperis classification method

3) EXCURSION :

A. Visit to a place or a region of geographical interest Report should include the following points

1. Landforms
2. Economy
3. Settlements
4. Transport
5. General observations

a) While writing the report students may write report on any one point or may consider all points.

b) Maps, photographs and diagrams are necessary whenever required.

B. 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 Fundamentals & Application
5. R.L.Singh - Elements of practical Geography
6. Triwartha - Elements of climatology
7. Strahler A. - Physical Geography

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