DEPARTMENT OF GEOGRAPHY
RAJIV GANDHI UNIVERSITY

Course Structure & Syllabus for
B. A. Geography
w.e.f. 2017-18
(Only For Deptt of Geography JNC BA all Semesters)

RAJIV GANDHI UNIVERSITY

BA GEOGRAPHY SYLLABUS w.e.f 2017

COURSE OUTLINE

Paper Code	Semester	Marks	Internal Exam	End Term	Name of Papers		Teaching hours
		Total Marks	20% of Total Marks	80% of Total Marks			
	SEMESTER I						
GEOGCT101	Theory	70	14 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Physical Basis of Geography		52
GEOGCP102	Practical	30	06 – Once. Based on Viva (3) & Practical Record (3)	Pass Marks 35%	Cartographic Techniques		24
	SEMESTER II						
GEOGCT151	Theory	70	14 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Human Geography		52
GEOGCP152	Practical	30	06 – Once. Based on Viva (3) & Practical Record (3)	Pass Marks 35%	Analytical Methods		24
	SEMESTER III						
GEOGCT201	Theory	70	14 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Economic Geography		52
GEOGCP202	Practical	30	06 – Once. Based on Viva (3) & Practical Record (3)	Pass Marks 35%	Statistical Techniques		24
	SEMESTER IV						
GEOGCT251	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Geography of India		65
GEOGCP252	Practical Skill based	100	20 – Once. Based on Exam (16) Viva (2) & Practical Record (2)	Pass Marks 35%	Survey: Prismatic 2 , Dumpy level 1. Map Projection		65
	SEMESTER V						
GEOGCT301	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Geography of N E India with spl reference to Arunachal Pr		65
GEOGCT302	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Geomorphology		65
GEOGCP303	Practical	100	20 – Once. Based on Exam (16) Viva (2) & Practical Record (2)	Pass Marks 35%	Geographical data Analysis & Computer Applications		65
GEOGET311	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Regional Geography of World	Any one	65
GEOGET312	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Agricultural Geography		65
GEOGEP313	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Population and Settlement Geography		65
	SEMESTER VI						
GEOGCT351	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Fundamentals of RS, GIS, GNSS		65
GEOGCT352	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Climatology		65
GEOGCP353	Practical	80+20	Once. For Exercises 16 :Based on Exam (12) Viva (2) & Practical Record (2) For Field Report- 4- on the basis of viva	Pass Marks 35% in each	DIP & Spatial Data Analysis Field Study Report		30
GEOGET361	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Regional Planning and Development	Any one	65
GEOGET362	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Political Geography		65
GEOGET363	Theory	100	20 - Thrice. Average of best two passed Internal Exams	Pass Marks 35%	Geography of Tourism		65

GEOGCT 101: PHYSICAL BASIS OF GEOGRAPHY

Breakup of marks with time	Questions to be set for End term Examination
Total marks :70 (T)	
End term Exam : 56 (2 hrs)	**Section A**: 6 (six) question to set, 4 (four) to attempt, i.e 4x 4marks=16 **Section B**: 2 (two) question from each unit in OR form, i.e., 4x10marks=40 (e.g., Q. 1 a OR b, Q. 2 a OR b) so that candidate will attempt one question from each unit
Internal Exam : 14 (1 hr)	14 marks: Average of best two passed Internal Exams

Unit I: Earth system
   a. Earth interior: Crust, Mantle, Core, Moho discontinuity on the basis of seismic evidences
   b. Volcanoes and Earthquakes.
   c. Continents and Oceans; crustal movement and plates
   d. Classification of Rocks and their genesis.

Unit II: Climate System
   a. Concept of weather & climate, elements of weather; Composition and structure of atmosphere
   b. Distribution of temperature: Horizontal and Vertical.
   c. Pressure belts, Wind system,
   d. Precipitation and its types

Unit III: Bio sphere system
   a. Biosphere: Components and interactive elements
   b. Ecosystem: Concept and types
   c. Origin and distribution of flora
   d. Origin and distribution of fauna

Unit IV: Ocean System
   a. Ocean bottom relief.
   b. Ocean currents: causes and effects, major ocean currents of world.
   c. Ocean tides.
   d. Ocean Salinity: causes and effects

Suggested Reading:
1. Arnell (2002) Hydrology and Global Environmental Change. Prentice-Hall (Harlow).
2. Christopherson (2008) Geosystems. Pearson/Prentice-Hall (Harlow).
3. Gabler R. E., Petersen J. F. and Trapasso, L. M., 2007: Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA.
4. Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
5. Hamblin, W. K., 1995: Earth's Dynamic System, Prentice Hall, N. J.
6. Monkhouse, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata
7. Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.
8. Sverdrup and Ambrose (2008) An Introduction to the World's Oceans, McGraw-Hill.

GEOGCP 102: CARTOGRAPHIC TECHNIQUES

Breakup of marks with time	Questions to be set for End term Examination
Total marks :30 (P)	
End term Exam: 24 (2 hrs)	4 (four) question to be set from all exercises and 3 (three) to attempt, i.e., 3x8 marks= 24
Internal Exam : 6	Record and Viva

Exercise no. 1: Scales: RF, Statement scale; conversion of scale

Exercise no. 2: Graphic Scale: simple

Exercise no. 3: Graphic Scale: Diagonal

Exercise no. 4: Measurement of length (Road & River, use of Rotameter)

Exercise no. 5: Measurement of area (grid method, coordinate pair method)

Exercise no. 6: Representation of climate data: Temperature, Rainfall

Exercise no. 7: Qualitative thematic maps

Exercise no. 8: Conventional symbols (Topographic map and weather map)

Note: Internal Assessment - 1 (one) sessional test (Viva voce on practical record book)

Suggested readings:

1. R.P. Ramesh. A 2000, Fundamentals of Cartography. Concept Publishing Company, New Delhi.
2.   Monkhouse, F.J. and Wilkinson. H.R. 1971, Maps and Diagrams: Their Compilation and Construction. B.I. Publications Private Limited. New Delhi.
3. Singh. R.L and Singh. R.P.B. 1991, Elements of Practical Geography. Kalyani Pub. New Delhi.

GEOGCT 151: HUMAN GEOGRAPHY

Breakup of marks with time	Questions to be set for End term Examination
Total marks :70 (T)	
End term Exam : 56 (2 hrs)	Section A: 6 (six) question to set, 4 (four) to attempt, i.e 4x 4marks=16 Section B: 2 (two) question from each unit in OR form, i.e., 4x10marks=40 (e.g., Q. 1 a OR b, Q. 2 a OR b) so that candidate will attempt one question from each unit
Internal Exam : 14 (1 hr)	14 marks: Average of best two passed Internal Exams

UNIT I: Nature and Scope of Human Geography and Development

a. Nature and Scope of Human Geography
b. Human Geography versus Physical Geography
c. Contributions of Carl Ritter and Alexander von Humboldt
d. Contributions of Fredrick Ratzel and Vidal de la Blache

UNIT II: Major Races and their Global Distribution and characteristics

a. Concept of race.
b. Classification of race (major, composite and residual)
c. Physical characteristics and distribution of major racial groups (Caucasoid, mongoloid and negroid),
d. Social characteristics of racial groups

UNIT III: Cultural Realms

a. Concept of cultural realms,
b. Delimitation of cultural realms,
c. Major cultural realms of the world,
d. Linguistic and cultural regions of India

UNIT IV: Human adjustments/adaptation to natural environment

a. Equatorial region
b. Polar region
c. Desert environment
d. Mountain environment

Suggested Readings:

1. Carr M, : Pattern, Process and Change in Human Geography, McMilan London.
2. Goh Cheng Leong, Physical and Human Geography, Mittal Publishers, New Delhi.
3. Huntington, Principles of Human Geography, John Willey and Sons Inc, New York
4. Johnston R.J. et al (eds), The Dictionary of Human Geography, Blackwell, Oxford.
5. Mamoria C.B., Human Geography, A modern perspective

GEOGCP 152: ANALYTICAL METHODS

Breakup of marks with time	Questions to be set for End term Examination
Total marks :30 (P)	
End term Exam: 24 (2 hrs)	4 (four) question to be set from all exercises and 3 (three) to attempt, i.e., 3x8 marks= 24
Internal Exam : 6	Record and viva

Section - A: Population

Exercise no.1: Population Distribution (Dot Method)

Exercise no. 2: Population Density (Choropleth)

Exercise no. 3: Population total and its Growth (Histogram)

Section - B: Economic

Exercise no. 4: Crop area, production of major crops (Pie Diagram) [any one]

Exercise no. 5: Workers: Main/ Male /Female/ Marginal (Proportionate circle) [any one]

Exercise no. 6: Ergograph

Section - C: Toposheet based

Exercise no. 7: Topographical map interpretation of relief and drainage (one grid of 5'X5' 1:50,000 toposheet)

Exercise no. 8: Topographical map interpretation of settlement & transport (one grid of 5'X5' 1:50,000 toposheet)

Note: Internal Assessment - 1 (one) sessional test (Viva voce on practical record book)

Suggested Readings:

1. Mishra R.P. Ramesh A. 2000, Fundamentals of Cartography. Concept Publishing Company. New Delhi.
2. Monkhouse F.J. and Wilkinson. H.R. 1971, Maps and Diagrams. Their Compilation and Construction, B.I. Publications Private Limited. New Delhi.
3. Robinson, A.H. Sale, R.D. Morrison, J. 1984, Elements of Cartography, Wiley, New Delhi.
4. Sarkar A. 1997, Practical Geography: A Systematic Approach, Orient Blackswan Ltd. Hyderbad.
5. Sen. P.K. 1989, Geomorphological Analysis of Drainage Basin: An Introduction to Morphometric and Hydrological Parameter, University of Burdwan,
6. Singh, S.L and Singh, R.P.B. 1994, Elements of Practical Geography: Kalyani Pub. New Delhi.
7. Walford. P. 1995, Geographical Data Analysis, John Wileyand Sons Inc. New York.

GEOGCT 201: ECONOMIC GEOGRAPHY

Breakup of marks with time	Questions to be set for End term Examination
Total marks :70 (T)	
End term Exam : 56 (2 hrs)	Section A: 6 (six) question to set, 4 (four) to attempt, i.e 4x 4marks=16 Section B: 2 (two) question from each unit in OR form, i.e., 4x10marks=40 (e.g., Q. 1 a OR b, Q. 2 a OR b) so that candidate will attempt one question from each unit
Internal Exam : 14 (1 hr)	14 marks: Average of best two passed Internal Exams

UNIT-I Field of Economic Geography
   a. Meaning of Economic Geography,
   b. Scope of Economic Geography,
   c. Approaches in Economic Geography : Regional, Systematic and Sectoral
   d. Classification of economic activities

UNIT-II Resources
   a. Concept and Classification of Resources
   b. Distribution and production of mineral resources- Iron ore, Bauxite
   c. Distribution and production of energy resources- Hydropower, Fossil fuels
   d. Concept of sustainable use of resources

UNIT- III Agriculture
   a. Factors affecting Agricultural activities
   b. Types of agriculture: Shifting, Sedentary, Commercial
   c. Distribution of major food major cash crops: Rice, Wheat, Sugarcane and Tea
   d. Von Thunen model

UNIT- IV Industry
   a. Factors of industrial location
   b. Types of Industries- Cottage, Small, Medium, Large
   c. Distribution and production- Iron and Steel, Cotton textile
   d. Industrial Location Theory of Weber

Suggested Readings:

1. Guha J.I. and Chattoraj. P.R. 1998, A New Approach to Economic Geography. A Study of Resources. 15th edition. World Press, Calcutta. 25
2. G.C. and Morgan, G.C. 1975: Human and Economic Geography, Oxford University Press, Hong Kong.
3. Hartshorn. T.A. and Alexander, J.W. 1988, Economic Geography. 3rd edition. Prentice-Hall India Ltd.
4. Jhingan, M.L. 1978: Economics of Development and Planning, Vikash Publishing House, New Delhi.
5. Leong G.C. and Morgan G.C. 1982, Human and Economic Geography, 2nd edition. OUP
6. Smith, D.N. 1971: Industrial Location- An Economical Geographical Analysis, John Wiley, New York.
7. Wheeler, J.O. and Muller, P.O., 1986: Economic Geography, John Wiley, New York.
8. Zimmermann, E.W. 1956: World Resources and Industries, Harper Brothers, New York. Module 4 P

GEOGC 202: STATISTICAL METHOD

Breakup of marks with time	Questions to be set for End term Examination
Total marks :30 (P)	
End term Exam: 24 (2 hrs)	4 (four) question to set from all exercises and 3 (three) to attempt, i.e., 3x8 marks= 24
Internal Exam : 6	Practical Record and viva-voce

Section A: Measures of Central Tendency
>   Exercise no. 1: Mean (Population, Density, literacy data, etc. - any one)
>   Exercise no. 2: Median (Agricultural production, Yield, etc. - any one)
>   Exercise no. 3: Mode (Climate data- one)

Section B: Variance
>   Exercise no. 4: Mean deviation and its Graphical representation
>   Exercise no. 5: Standard deviation and its Graphical representation

Section C: Correlation
>   Exercise no. 6: Spearman's rank correlation coefficient
>   Exercise no. 7: Correlation coefficient – Karl Pearson's method

Section D: Sampling
>   Exercise no. 8: Sampling - concept with one exercise

Note: Internal Assessment - 1 (one) sessional test (Viva voce on practical record book)

Suggested Readings:

1. Alvi, Z. 1995: Statistical Geography-Methods & Application, Rawat Publications, Jaipur.
2. Clark, W.A.V. and Hosking, P.L. 1986: Geographical Methods for Geographers, John Wiley and Sons, New York
3. Croxton, F.E., Cowden, D.J. & Klein, S 1969: Applied General Statistics, Prentice Hall of India Pvt. Ltd., New Delhi
4. Dickinson, G.C. (1973): Statistical Mapping and Presentation of Statistics
5. Goon, A.M., Gupta, M.K. & Dasgupta, B. 1992: Fundamentals of Statistics, Volume 1, The World Press Pvt. Ltd., Kolkata 37
6. Goon, A.M., Gupta, M.K. & Dasgupta, B. 1992: Basic Statistics, Volume 1, The World Press Pvt. Ltd., Kolkata
7. Gregory, S. 1985: Statistical Methods and the Geographer, Longman, London
8. Mahmood, A. 1998: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi

GEOGCT 251: GEOGRAPHY OF INDIA

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Theory)	
End term Exam: 80 (3 hrs)	3 (three) questions to be set from each unit, 2 (two) to attempt i.e 2x8marks= 16 (5 units x 16 = 80)
Internal Exam : 20 (1 hr)	20 marks: Average of best two passed Internal Exams

Unit I: Physical
    a.   Relief
    b.   Drainage
    c.   Climate
    d.   Vegetation

Unit II: Mineral and Power Resources
    a.   Distribution and production: iron ore, manganese
    b.   Distribution and production: coal and petroleum
    c.   Multipurpose projects: DVC, Mahanadi, Bhakra Nangal
    d.   Promotion of non conventional energy resources

Unit III: Agriculture
    a.   Major agricultural types
    b.   Distribution and production of rice, wheat, cotton, tea
    c.   Green revolution, white revolution
    d.   Agricultural regions

Unit IV: Transport Systems
    a.   Road
    b.   Railways
    c.   Water ways
    d.   Air

Unit V: Population
    a.   Growth
    b.   Distribution and density
    c.   Population growth and related problems
    d.   Population policy of India

Suggested Readings:

1. Nag, P., & Sengupta, S. (1992). Geography of India. Concept Publishing Company.
2. R,Tirtha and Gopal Krishan 2002: Geogrpagy of India, Rawat Publication, new Delhi
3. Singh R L: Regional Geography of India
4. Pal, Saroj K. (1998) Physical Geography Of India. Orient BlackSwan,
5. Qazi, Shaz Sharqi Qazi (2007): Natural Resource Conservation. APH Publishing
6. Shovan Ray (2007): Handbook of Agriculture in India. Oxford University Press,
7. Balkrishna C. Vaidya (2003): Geography of Transport Development in India. Concept Publishing Company
8. Bhattacharya, A. (1978). Population geography of India.
9. Michael Pacione (2013): Population Geography: Progress & Prospect (Routledge Revivals)

GEOGCP 252: SURVEYING AND MAP PROJECTION (Skill Based Course)
(Compulsory Paper for students who want to opt Major in Geography in V –VI semester)

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Practical)	
End term Exam: 80 (3 hrs)	a. 4 (four) compulsory questions to set i.e. 4x 16 marks b. Practical record: 8marks c. Viva voce: 8 marks
Internal Exam : 20 (1 ½ hr) Excluding the field survey part	One compulsory questions to be set from each section :2X8=16 Practical Record 2; Viva voce 2

USE METRIC SCALE

Section A: Surveying:
Plane Table Survey
  Exercise no.1: Radiation
  Exercise no.2: Intersection
Prismatic Compass Survey
  Exercise no. 3: Open traverse
  Exercise no. 4: Closed traverse
Dumpy Level Survey
  Exercise no. 5: Rise & Fall

Section B: Map Projection:
Perspective
  Exercise no. 6: Orthographic
  Exercise no. 7: Stereographic
  Exercise no. 8: Gnomonic
Cylindrical Projection
  Exercise no. 9: Simple Cylindrical
  Exercise no. 10: Cylindrical Equal area
Conical Projection
  Exercise no. 11: One standard parallel
  Exercise no. 12: Two standard parallel

Suggested Readings:
1. Kellaway, G.P., 1979: Map Projections, B.I. Publications, New Delhi
2. Misra, R.P. and Ramesh, A. 1986: Fundamentals of Cartography, Macmillan, New Delhi
3. Monkhouse, F.J. and Wilkinson, H.R. 1980: Maps and Diagrams, B.I. Publications Private Limited
4. Robinson, A.H., Morrison, J.L., Muehrcke, P.C., Kimerling, A.J. and Guptill, S.C. 1995: Elements of Cartography, John Wiley and Sons, New York.
5. Singh, R.L. and Singh, R.P.B. 1992: Elements of practical Geography.
6. Steers, J.A.1954: An Introduction to the Study of Map Projections, University of London Press, London.

GEOGCT 301: GEOGRAPHY OF NORTH EAST INDIA

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Theory)	
End term Exam: 80 (3 hrs)	3 (three) questions to be set from each unit, 2 (two) to attempt i.e 2x8marks= 16 (5 units x 16 = 80)
Internal Exam : 20 (1 hr)	20 marks: Average of best two passed Internal Exams

UNIT I: Physical Background
- a.   Locational significance
- b.   Physiographic divisions
- c.   Drainage systems
- d.   Climate and vegetation

UNIT II: Mineral and power Resources
- a.   Coal and uranium
- b.   Petroleum and natural gas
- c.   Hydropower: status and prospects
- d.   Constraints of developing mineral and power resources

UNIT III: Agriculture
- a.   Settled Agriculture
- b.   Shifting cultivation
- c.   Plantation
- d.   Modernisation of agriculture

UNIT IV: Environmental hazards
- a.   Earthquake
- b.   Flood
- c.   Deforestation
- d.   Forest fire

UNIT V: Arunachal Pradesh
- a.   Historical Evolution of the states
- b.   Different tribal groups
- c.   Population growth and distribution
- d.   Traditional and emerging economy

Suggested Readings:

1. Das H.P. 1972: Geogrphay of Assam
2. Singh R.L. (Ed). 1972: India: A Regional Geography. Vanarasi
3. Taher M.and Ahmed P. 2001: Geography of Norh East India; Mani Manik Prakash, Guwahati
4. Bhagabati AK et al 2001: Geography of Assam; Rajesh publications New Delhi
5. Gopalkrishnan : The land and people of Arunachal Pradesh
6. Dikshit KR & J K Dikshit (2014): North East India: Land People and Economy
7. Pachowa R.T.   -Geography of Mizoram

GEOGCT 302: GEOMORPHOLOGY

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Theory)	
End term Exam: 80 (3 hrs)	3 (three) questions to be set from each unit, 2 (two) to attempt i.e 2x8marks= 16 (5 units x 16 = 80)
Internal Exam : 20 (1 hr)	20 marks: Average of best two passed Internal Exams

Unit I: Meaning, scope and development of Geomorphology
   a. Meaning and scope
   b. Approaches
   c. Contributions of G. K.Gilbert and J. Tricart
   d. Quantitative revolution in geomorphology

Unit II: Fundamental Concepts
   a. Uniformitarianism
   b. Landscape evolution concepts: W.M. Davis and L.C. King
   c. Dynamic Equilibrium: J.T. Hack
   d. Time in Geomorphology: Cyclic, graded and steady time

Unit III: Tectonic Geomorphology
   a. Endogenetic forces: convective current (Holmes), sea floor spreading (Harry Hess)
   b. Continental drift theory & Plate tectonics
   c. Mountain Building theories (Kober, Holmes)
   d. Isostacy (Airy and Pratt)

Unit IV: Geomorphic Processes
   a. Weathering
   b. Mass wasting
   c. Denudation
   d. Aggradation

Unit V: Landform
   a. Fluvial landforms
   b. Aeolian landforms
   c. Glacial landforms
   d. Karst landforms

Suggested books:

1. Bloom, A.L. (1978) : A Systematic Analysis of late Cenozonic Landforms, Englewed Cliffs, M.J. Prentice Hall.
2. Hart, M.G. (1986) : Geomorphology : Pure and Applied, George Allen and   Unwin, London.
3. Holmes, A. 1978: Principles of Physical Geology, 3rd Edn. London . Nelson.
4. Huggett, Richard John, (2006): Fundamentals of Geomorphology, Routledge, London
5. Lobeck, A.K. : Geomorphology. Pitty, Alistair, F., (1982): The Nature of Geomorphology, Methuen & Co.Ltd, London
6. Ollier, C.D. : Weathering, Edinburgh : Oliver and Royd.
7. Pitty, A.F. : Geomorphology
8. Sharma, V.K. : Process in Geomorphology (Mc Graw Hill).
9. Small, R.J. : A Text Book on the Study of Landforms.
10. Thorn, C.E. : Introduction to Theoretical Geomorphology.

GEOGCP303: GEOGRAPHY DATA ANALYSIS AND COMPUTER APPLICATIONS

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Practical)	
End term Exam: 80 (3 hrs)	a. 2 questions from Unit I : 2 X 8marks =16 b. 3 (three) compulsory questions to set from Unit II-IV: i.e. 3x 16 marks 48 c. Practical record: 8marks d. Viva voce: 8 marks
Internal Exam : 20 (1 ½ hrs)	One compulsory questions to be set from each section :4X4=16 Practical Record 2; Viva voce 2

UNIT I
a. Importance of computer application in Geography
b. Introduction to MsExcel
c. Graphics in Excel

UNIT II
a. Population Density- Input Population Data, area Data
      Output- Density
      Graphic- Bar Graph
b. Decadal growth- Input – Decadal Population
      Output- Growth in percentage
      Graphics- Line Graph
c. Sex Ratio, Literacy Rate (any one)
      Graphics- Pie Chart

UNIT III
a. Agriculture- Input- Production and area
      Output- Yield
      Graphics- Bar diagram
b. Production of Food Crops Area
      Input- Three crops production (District Level)
      Output Graphics- Stacked Column
c. Area under various crops
      Input- Three crops
      Output- 100 percent Column

UNIT IV
a. Climate
      Input- Monthly Temperature
      Output- star diagram
b. Rainfall trend
      Input- Annual data for 50/100 years
      Output- Bar diagram with Trend Line
c. Monthly temperature versus monthly rainfall
      Input- Monthly Temperature and Monthly Rainfall
      Output Graphics- Scatter Diagram

Suggested Readings:
1. Monkhouse, F.J. 1971: Maps and Diagrams, Methuen, London
2. Singh, R.L. and Singh, R.P.B. 1992: Elements of practical Geography.
3. Dury, G.H. 1972: Map Interpretation, Pitman Publishing, London
4. Ishtiaque, M. 1989: Practical Geography, Heritage Publishers, New Delhi.
5. Platt, J.I., 1956 : Selected Exercises upon Geological Maps, Part I, Unwin, London
6. Any book on: Excel Data Analysis; Basics of Excel; Excel skill handbook etc.

GEOGET 313: POPULATION AND SETTLEMENT GEOGRAPHY

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Theory)	
End term Exam: 80 (3 hrs)	3 (three) questions to be set from each unit, 2 (two) to attempt i.e 2x8marks= 16 (5 units x 16 = 80)
Internal Exam : 20 (1 hr)	20 marks: Average of best two passed Internal Exams

UNIT I: Field of Population Geography
   a. Nature and scope
   b. Development of Population Geography
   c. Population growth- determinants and trends
   d. Population distribution and density

UNIT II: Population composition
   a. Age and sex composition
   b. Economic composition
   c. Rural Urban composition
   d. Literacy Composition

UNIT III: Population versus Resources
   a. Concept of optimum population
   b. Concept of over population
   c. Concept of under population
   d. Population resource regions

UNIT IV: Introduction to Settlement Geography
   a. Meaning and scope
   b. Development of Settlement of Geography
   c. Origin and development of settlement
   d. Factors of settlement growth

UNIT V: Types and Pattern
   a. Rural settlement
   b. Urban settlement
   c. Formal and functional classification of towns
   d. Concept of hierarchy of settlement

Suggested readings:
1. Chandana, R.C. (2000): An Introduction to Population Geography, Kalyani Publishers, Ludhiana.
2. Clarke, J.I. (2003): Population Geography, Pergamon Press, Oxford.
3. Hudson, F.S. (2013): A Geography of Settlement, Macdonald & Evans ltd. Plymouth.
4. Ghosh, S. (2002): A Geography of Settlement, Orient Longman, Kolkatta.
5. Jones, H.R. (2000): Population Geogaphy, Paul Chapman, London.
6. Mandal, R.B. (2001): Introduction to Rural Settlement, Concept Publishing Company, New Delhi.
7. Singh, R.Y. (2000): Geography of Settlement, Rawat Publications, Jaipur and Delhi.

GEOGCT 351: FUNDAMENTALS OF RS, GIS & GNSS

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Theory)	
End term Exam: 80 (3 hrs)	3 (three) questions to be set from each unit, 2 (two) to attempt i.e 2x8marks= 16 (5 units x 16 = 80)
Internal Exam : 20 (1 hr)	20 marks: Average of best two passed Internal Exams

Unit I: Bases of Remote Sensing
   a. Meaning and definition of Remote Sensing
   b. Historical development of Remote Sensing
   c. Types of Remote Sensing (Airborne, Space borne)
   d. Indian Remote Sensing: Development

Unit II: Electro-Magnetic Radiation Characteristics
   a. Principles of EMR
   b. Electromagnetic Spectrum
   c. Atmosphere - radiation interaction
   d. Surface - radiation interaction

Unit III: Aerial Photography and Imaging System
   a. Types of aerial photograph
   b. Principles of photo interpretation
   c. Types of Imaging System (Along track scanner, Across track scanner)
   d. Types of Resolution: spatial, spectral, radiometric, temporal

Unit IV: Digital Image Processing
   a. Need for image processing
   b. Restoration - Radiometric, geometric and atmospheric correction
   c. Image Enhancement
   d. Image Classification - Supervised and Unsupervised

Unit V: GIS and GNSS
   a. Components and functionality of GIS
   b. Spatial data formats : raster, vector
   c. Spatial analysis: union, intersection, clip
   d. GNSS and use

Suggested Books:
   1. Bhatta, Basudeb, (2011): Remote Sensing and GIS, Second Edition, Oxford.
   2. Elangovan, K. (2006): GIS Fundamentals, Applications and Implementations, New India Publishing
   3. Joseph, George, (2005): Fundamentals of Remote Sensing, Second Edition, University Press
   4. Kumar, S. (2016): Basics of Remote Sensing and GIS, Laxmi Publications.
   5. Liliesand, Kiffer, Chipman (2011): Remote Sensing and Image Interpretation, Wiley Publication
   6. Qihao Weng (2011) An Introduction to Contemporary Remote Sensing. McGraw Hill Professional

GEOGCT 352: CLIMATOLOGY

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Theory)	
End term Exam: 80 (3 hrs)	3 (three) questions to be set from each unit, 2 (two) to attempt i.e 2x8marks= 16 (5 units x 16 = 80)
Internal Exam : 20 (1 hr)	20 marks: Average of best two passed Internal Exams

Unit I: The Atmosphere
    a. Nature and Scope of Climatology
    b. Thermal and barometric properties of atmospheric layers
    c. Insolation, lapse rates
    d. Heat Budget and heat balance
Unit II: The Atmospheric Moisture
    a. Evaporation and evapotranspiration
    b. Humidity: relative, absolute and specific
    c. Condensation and Precipitation
    d. Cloud and its types
Unit III: Atmospheric Wind Circulation
    a. Hedley, Ferrel and polar cells
    b. Planetary Winds
    c. Monsoon
    d. Jet Streams
Unit IV: Airmass and fronts
    a. Air Masses: formation , types
    b. Fronts and its types
    c. Tropical Cyclones
    d. Temperate Cyclones
Unit V: Global climate system
    a. Koeppen's Classification of Climate
    b. Thronthwaite's Classification of Climate
    c. Climate Change: causes and impact
    d. Climate and wellbeing

Suggested Reading
1. Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
2. Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
3. Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
4. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
6. Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw-Hill.

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GEOGCP 353: DIGITAL IMAGE PROCESSING & SPATIAL DATA ANALYSIS (A)
&
FIELD STUDY REPORT (B)

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DIP & SPATIAL ANALYSIS (A): For 80 marks

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 80 (Practical)	
End term Exam: 64 (3 hrs)	a. 4 (four) compulsory questions to set i.e. 4 x 12 marks b. Practical record : 8marks c. Viva voce : 8 marks
Internal Exam : 16 (1 ½ hrs)	Any two exercises 2 X 6 = 12 marks; Record 2; viva 2

Exercise no. 1   : Land use Land Cover Mapping using Remote sensing data
                                  (FCC / A4 size printout of satellite image as available in open source)
Exercise no. 2   : Normalized Differential Vegetation Index (NDVI)
Exercise no. 3   : Unsupervised Classification
Exercise no. 4   : Georeferencing of Toposheets / maps (coordinate and feature based)
Exercise no. 5   : Digitization of Point, line and polygon
Exercise no. 6   : Buffer analysis (point, line, polygon)
Exercise no. 7   : Attribute table and attribute map
Exercise no. 8   : Mobile mapping (GPS)

FIELD STUDY REPORT (B): For 20 marks

Breakup of marks	Questions to be set for End term Examination
Total marks : 20 (Practical)	
End term Exam: 16	Report (8) Viva-voce (8): Project Report has to be submitted one week before the commencement of examination
Internal Exam : 4	Viva-voce

The project report is based on the supervised field work for appropriate duration, which will be conducted in appropriate or nearby places. The teacher in-charge is to select a suitable study area and conduct the survey for the collection of primary/ secondary data. The students are to submit project report at the end of the term.

Suggested readings:
1. Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
2. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
3. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
4. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

GEOGET 362: POLITICAL GEOGRAPHY

Breakup of marks with time	Questions to be set for End term Examination
Total marks : 100 (Theory)	
End term Exam: 80 (3 hrs)	3 (three) questions to be set from each unit, 2 (two) to attempt i.e 2x8marks= 16 (5 units x 16 = 80)
Internal Exam : 20 (1 hr)	20 marks: Average of best two passed Internal Exams

Unit I: Introduction to Political Geography
    a. Nature and scope of Political Geography
    b. State and Nation
    c. Territory
    d. Frontier, boundary

Unit II: Theoretical Aspects of Political Geography
    a. Theoretical contributions of Ratzel and Hartshorne
    b. Theoretical contributions of Spencer and Schafer
    c. Approaches in Political Geography
    d. Landscape school and Functional school

Unit III: Electoral Geography
    a. Electoral Geography: nature and scope
    b. Geography of voting
    c. Factors influencing voting pattern
    d. Geography of representation

Unit IV: Geopolitics
    a. Concept of Geopolitics
    b. Geo-strategic views of Mackinder and Spykman
    c. Geopolitical regions of the world
    d. Geopolitics since World War II

Unit V: Geopolitics – India
    a. International boundaries
    b. Geopolitical significance of Indian ocean
    c. India's relationship with its neighbours
    d. Geopolitical significance of North east India

Suggested Readings:
1. Agnew, J. (ed.), 1997: Political Geography, Arnold, London
2. Bryant, R. L. and Bailey, S., 1997: Third World Political Ecology, Routledge, London.
3. Blake, G. (ed.), 1987: Maritime Boundaries and Ocean Resources, Croom Helm, London.
4. Dikshit, R. D., 1997: Developments in Political Geography: A Century of Progress, Sage
5. Gottman, J., (ed.), 1980: Centre and Periphery: Spatial Variations in Politics, Sage
6. O'Tuathail, G. and Simon, D., 1998: Rethinking Geopolitics, Routledge, London.
7. Parker, G., 1998: Geopolitics: Past Present and Future, Printer, London.
8. Taylor, P.J., 2000: Political Geography: World Economy, Nation-State and Locality,
9. Taylor, P.J. and Johnston, R.J., 1979: Geography of Elections, Croom Helm,