Name of the Teacher :	Madhumita Chakrabarti Goswami
Department : B.Sc (Honours)	Geography Sem 4 (CBCS) Paper : Economics Geography
Lesson Plan :	CBCS System, 2018 – 2023
Economic Geography :	Theory – 60 marks

Topic Sl No	Class	Paper & Unit	Name of Topic Details of Sub-Topics	No. of Classes	Objectives of the course
Unit – I	Concepts Sem – 4	GEOA – CC-08 (H) Economic Geography	1. Meaning & Approaches to Economic Geography	(4)	Introducing the concept of economic, geography with definitions, nature, dynamism: Traditional approaches to modern concept of resource, recycling conservation, utilization & substitution
2.			2. Concepts of Economic Geography. Good and services, production, exchange and consumption	(6)	To explore the recent trends in Eco. Geo, Resource creation & methods of resource creation, classification, importance, substitution, resource conservation.
3	Sem 4	GEOA – CC-8 (H) Economic Geography	Concept of Economic Theories of choices	(6)	Recent concepts & ideas regarding the relationships between Man and its Economics environment. The idea of choices or selection of resources, goods, services etc.
4.		GEOA – CC-8 (H) Economic Geography	Economic Distance & Transport Cost	(4)	Concept & Importance of transportation & Networking. Classification of transport network, Analysis, connectivity, Accessibility in relation to cost, distance, modes, routes (land, water, Air). Advantages & Disadvantages of different modes of transport

Unit – II Activities

5			Classification of Economic Activities	(4)	Concept of Eco. Activities and the transformations from Primary to tenancy activities
6.			Theory related to location (i) Von Jhunen (ii) Alfred Weber	(6)	Factors involving the location of economic activities with special reference to agriculture (von Jhunen) and industry (Alfred Weber)
7.			Primary Activities	(6)	Agriculture, forestry, fishing & Mining
8.	Sem 4	GEOA – CC-8 (H) Economic Geography	Secondary Activities *Manufacturing activities, regions, SEZ (special economic zones,) Technology Parks	(6)	Concepts of manufacturing and gradual changes in concept and industrialization
9.			Tertiary Activities	6	Transport, trade, services – concept, classification & shift in the parading
10.			Transnational Sea-Routes, Railways, Highways with reference to India	4	The entire transport system of India with the modernization & development, including under ground transport, viaducts, sea links
11.			International Trade & Economics Block	4	The economic trading groups of the world : Developed countries

Economics Geography Lab : 30 Marks
[Practicals]

Topic (S. No)	Class	Paper & Unit	Name of the Topic Details of Sub-Topic	No of classes	Objective of the course
1.	Sem 4	GEOA-CC8 (P)	Choropleter mapping of state wise variation in GDP	4	Comparative Study of GDP of Indian status with choropleter maps
2.			Proportional Divided Circles (Pi-diagram) on occupational structure	4	Pi-diagrams of Indian states based on various occupations practiced in India.
3.			Time – Series Analysis	6	Time series analysis of industrial production India & West Bengal. The growth matter in production of any item.
4.			Transport Network analysis	6	(i) Detone Index (ii) Shortest Pattern analysis. Two different methods to show the transport network in India

Name of the Teacher :	Madhumita Chakrabarti Goswami
Department : B.Sc (Honours)	Geography Sem 6 (CBCS) Paper : Urban Geography
Lesson Plan :	CBCS System, 2018 – 2023
Urban Geography :	Theory – 60 marks

Sl No	Class	Paper & Unit	Name of Topic Details of Sub-Topics	No. of Classes	Objectives of the course
	Sem – 6 DSE – B7 Urban Geography	Unit –I	Urban Geography – Origin & Evolution		
1.			Urban Geography : Nature & Scope	5	Different approaches and recent trends in urban geography.
2.			Origin & urban places in ancient medieval, modern and post – modern periods	7	Factors, stages, & characteristics
3.			Theories of urban evolution and growth	3	1. Hydraulic theory 2. Economic theory
4.			Aspects of urban places.	5.	Location, site and situation, size and spacing of cities : the Rank size rule, the law of Primate city.
5.			Urban hierarchies	5	1. Christaller's central place theory. 2. August Losch's theory of market centres
6.			Patterns of urbanization	5	In developed and developing countries
7.	Sem -6	DSE-B:09	Ecological processes of urban growth	5	Urban fringe, City – region
8.			Model on city structure	5	1. Political economy 2. Bid- rent curve 3. Social area analysis
9.			Urban issues	7	1. Problems of housing slums, civic – amenities (water & transport)
10			Patterns and trends of urbanization in India	3	
11.			Policies on urbanization	5	1. urban change 2. landscape in most liberalized period in India
12.			Case studies in India		Delhi, Kolkata and Chandigarh with reference to land use.

URBAN GEOGRAPHY LAB – 30 MARKS

Sl No	Class	Paper & Unit	Name of Topic Details of Sub-Topics	No. of Classes	Objectives of the course
1.	Sem -6	DSE-B-07 urban Geography	Hierarchy of urban settlements	6	Hierarchy shown by rank size rule
2.			Trends of urbanization	5	With reference to India: State wise variation
3.			Temporal Analysis of Urban growth	5	Analysis with census data
4.			Preparation of urban band use maps	5	Maps to be drain from satellite images.

Name of the Teacher :	Madhumita Chakrabarti Goswami
Department : B.Sc (Honours)	Geography Sem 6 (CBCS) Paper : Evolution of Geographical Thought
Lesson Plan :	CBCS System, 2018 – 2023
Evolution of Geographical Thought	Theory – 60 marks

Sl No	Class Unit -I	Paper & Unit	Name of Topic Details of Sub-Topics	No. of Classes	Objectives of the course
1	Sem 6	CC-13 (H) Evolution of Geographical thoughts	Pre-modern thoughts of Geography	5	To learn the contribution of Greek, Chinese Indian philosophers
2.			Arab Contribution	5	Impact of Dark age, in Geography & Arab contribution
3.			Geography during the age of discovery and exploration	5	Contribution of explorers, Portuguese voyages, Columbus, Vasco Da Gama, Magellan, Thomas cook
4.			Transformation from cosmography to scientific geography	7	i. Contribution of Bernard Varenius, Immanuel Kamat. ii. Dualism and Dichotomies (General Vs Particular, Physical Vs. Human, Regional Vs Systematic, Determinism Vs Possibilism, Ideographic Vs Nomothetic)
5.	Unit – II		Recent trends in Modern Geography Evolution of thoughts	5	Evolution of Geographical thoughts in i. Germany ii. France iii. Britain iv. U.S.A

6.	Sem – 6	CC-13 Geographical though	Contribution of Humbolt and Ritter	3	German thinkers
7.			Contributions of Richtofer, Hartsheone, Schaffer, Ratsel & vidal De La Blanche	6	French & German contributors
8			Trends of Geography in Post World War II	7	Quantitative revolution, systems approach.
9.			Structuralism and historical materialism	3	
10.			Changing concept of space	5	Special reference to Harvey
11			Evolution of critical Geography	5	1. Behavioural, 2. Humanistic 3. Radical concepts
12.			Post Modernism	5	4. Geography in 21st Century

Evolution of Geographical thoughts Lab - 30 marks

Sl No	Class Unit -I	Paper & Unit	Name of Topic Details of Sub-Topics	No. of Classes	Objectives of the course
1	Sem -6	CC-13 P	Changing perception of Maps [Greek, Arabs, European]	4	i. Ptolemy, ii. Ibu Batuta iii. Mercator
2.			Mapping voyages	4	i. Columbus ii. Vasco Dagama iii. Magellean iv. Thomas Cook
3.			Group Presentation of Posters	15	5-10 students to present any selected school of Geographical thought.

Name of the Teacher :	Madhumita Chakrabarti Goswami
Department : B.Sc (Honours + Gen)	Geography Sem 1 (CCF) Paper : Physical Geography
Lesson Plan :	CCF System, 2023 onwards
Physical Geography	Theory – 75 marks

Sl No	Class Sem -1	Paper & Unit	Name of Topic Details of Sub-Topics	No. of Classes	Objectives of the course
1.		GEOG-(Hons) CC - 01 UNIT-III	Geomorphology : 1. Classification of weatherizing & agents of erosion 2. Fluvial processes and landforms	5 5	1. To initiate the students to know about weathering process & differences from erosional works 2. Different process of rivers : erosion, transportation & deposition and the resulting landforms.
2.		UNIT- VI	Biogeography Plant Adaptation & Distribution in relation to water availability	5	Introducing the students to the concept of Bio-geography where plants adapt to different environment. Here, availability of water is higher lighted.

Physical Geography Lab- 25 Marks

3.	Sem –I	GEOG (Hons) CC - 01	Identification of drainage and channel patterns from survey of India 1:50k topographical maps	6	

Name of the Teacher :	Madhumita Chakrabarti Goswami
Department : B.Sc (Honours + Gen)	Geography Sem 1I (CCF) Paper : Human Geography
Lesson Plan :	CCF System, 2023 onwards
Human Geography :	Theory – 75 marks

Paper – GEOG – H – CC – 02

Sl No	Class Sem -1	Paper & Unit	Name of Topic Details of Sub-Topics	No. of Classes	Objectives of the course
1.	Sem- II	GEOG-H-CC-02	Settlement Geography 1. Characteristics of settlements : Urban & Rural 2. Site, Situation, Types and Patterns of Rural Settlements	4 6	Objective of the paper is to teach human Geography and its many aspects. Here settlements types are taken into consideration. The need, back ground, genesis are taught to the students.

Human Geography Lab - 25 Marks

2.	Sem – II	GEOG-(HONS) CC -02	Identification and types of settlements according to sites from survey of India 1 :50k topographical maps	8	

Lesson Plan (CBCS System- 2018-2023)

Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-CC-1-01-TH – Geotectonics and Geomorphology
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit I: Geotectonics	1. Earth's tectonic and structural evolution with reference to geological time scale	3	1. To conceptualise earth's tectonic and structural evolution with reference to geological time scale. 2. To understand characteristics of different layers of earth's interior with reference to seismology. 3. To know about the concept of isostasy. To conceptualise theories of isostasy given by Airy and Pratt and know their applicability and differences. 4. To understand the theory of Plate Tectonics and its processes and role in forming different landforms in plate margins and hotspots. 5. To know about different types of folds and faults, their origin and surface expressions.
	2. Earth's interior with special reference to seismology. Isostasy: Models of Airy, Pratt, and their applicability	3	
	3. Plate Tectonics as a unified theory of global tectonics: Processes and landforms at plate margins and hotspots	8	
	4. Folds and Faults—origin and types.	5	
Unit II: Geomorphology	5. Degradational processes: Weathering, mass wasting, and resultant landforms	5	6. To know about different types and processes of physical and chemical weathering and resultant landforms development. 7. To explore different types of mass wasting and their resultant landforms development. 8. To understand different geomorphological agents related to the processes of entrainment, transportation and deposition. 9. To explore the role of humans in landform development. 10. To understand development of river network and landforms on uniclinal and folded structure. 11.To understand surface expression of faults. 12.To know about development of river network and landforms on granite, basalt and limestones. 13.To know about different coastal processes and resultant landforms.
	6. Processes of entrainment, transportation, and deposition by different geomorphic agents. Role of humans in landform development	5	
	7. Development of river network and landforms on uniclinal and folded structures. Surface expression of faults	4	

	8. Development of river network and landforms on granites, basalts and limestones 9. Coastal processes and landforms 10. Glacial and glacio-fluvial processes and landforms 11. Aeolian and fluvio-aeolian processes and landforms 12. Role of time in geomorphology: Schumm and Lichty's model. Models on landscape evolution: Views of Davis, Penck, King, and Hack. Significance of systems approach	5 3 3 3 8	14.To understand different glacial and glacio-fluvial processes and resultant landforms. 15.To know about Schumm and Lichty's model of geomorphology and understand the role of time in geomorphology. 16.To study the models of landscape evolution of Davis, Penck, King and Hack and understand the significance of system approach in landform development. • Describe tectonic and structural evolution of earth with reference to geological time scale. • Describe interior structure of the earth with refence to seismology. • What is shadow zone. • Define isostasy. Differentiate between the theory of isostasy propounded by Airy and Pratt. • Explain formation of folded mountains in the light of plate tectonic theory. • What is inversion of relief. Differentiate between fault scarp and fault line scarp. • Describe different types of physical weathering. • Describe different types of chemical weathering. • Explain different types of mass wasting. • Explain role of humans in landform development. • Describe the development of river network and landforms on uniclinal structure. • Describe development of river network and landforms on folded structure. • Describe development of river network and landforms on granite. • Describe development of river network and landforms on basalt. • Describe development of river network and landforms on basalt. • Explain different coastal processes and their resultant landforms. • Describe different glacial and fluvio-glacial processes and resultant landforms. • Describe different aeolian processes and resultant landforms. • Describe the model of landforms development of W M Davis. • Explain significance of system approach in landform development.

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8. Selby, M.J. 1986. Earth's Changing Surface, Oxford University Press.

Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-CC-2-03-TH – Human Geography
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit I: Nature and Principles Unit II: Society, Demography and Ekistics	1. Nature, scope and recent trends. Elements of human geography	4	1. To understand nature, scope and recent trends in human geography. 2. To explore different approaches to study human geography 3. To conceptualise race and ethnicity. To know about the classification of race. 4. To know about different cultural regions of the world based on language and religion. 5. To conceptualise evolution of human society. 6. To explore environmental adaptation of the Eskimo, Masai and Maori 7. To study growth, distribution and composition of world population. 8. To know about population resource regions of the world as postulated by Ackerman. 9. To understand the concept of conflict between environment and development 10. To know about types and patterns of rural settlements 11. To understand different rural house types in India 12. To explore morphology and hierarchy of urban settlements
	2. Approaches to Human Geography: Resource, locational, landscape, environment	6	
	3. Concept and classification of race. Ethnicity	5	
	4. Space, society, and cultural regions (language and religion)	5	
	5. Evolution of human societies: Hunting and food gathering, pastoral nomadism, subsistence farming, and industrial society	6	
	6. Human adaptation to environment: Case studies of Eskimo, Masai and Maori	5	
	7. Population growth and distribution, composition; demographic transition	5	
	8. Population–resource regions (Ackerman)	3	1. Explain the nature and scope of Human Geography. 2. Explain different approaches to study Human Geography. 3. Classify race. Define ethnicity. 4. Explain the characteristics of industrial society. 5. Describe environmental adaptations of Eskimos. 6. Describe population- resource regions as postulated by Ackerman. 7. Describe different types of rural settlement in India. 8. Explain morphology of urban settlement.
	9. Development–environment conflict	4	
	10. Types and patterns of rural settlements	4	
	11. Rural house types in India	5	
	12.Morphology and hierarchy of urban settlements	5	

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1. Chandna, R.C. 2016. Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers.
2. Fouberg, E.H., Murphy, A.B., de Blij H.J. 2015. Human Geography: People, Place, and Culture, 11th ed, Wiley.
3. Ghosh, S. 1998. Introduction to Settlement Geography, Sangam Books Ltd.
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5. Gregory, D., Johnston, R., Pratt, G., Watts, M., Whatmore, S. (Eds) 2009. The Dictionary of Human Geography, 5th ed, Wiley.
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8. Mandal, R.B. 2001. Introduction to Rural Settlement, 2nd ed, Concept Publishing Company.
9. Majumdar, P.K. 2013. India's Demography: Changing Demographic Scenario in India, Rawat Publications.

Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-CC-3-06-TH – Hydrology and Oceanography
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit-I: Hydrology	1. Systems approach in hydrology. Global hydrological cycle: Its physical and biological role	4	1. To under the concept of system approach in hydrology 2. To explore the physical and biological role of global hydrological cycle 3. To conceptualise runoff and its controlling factors 4. To understand drainage basin as a hydrological unit 5. To know the principles of rainwater harvesting and watershed management 6. To conceptualise occurrence and storage of groundwater 7. To know the factors which control recharge, discharge and movement of groundwater 8. To know about major relief features of ocean floor and how those have originated in reference to plate tectonics. 9. To understand physical and chemical properties of ocean water. 10. To conceptualise water mass and T-S diagram 11. To know about waves and tides 12. To know about distribution and determinants of ocean temperature and pressure 13. To know about formation, classification and threats of coral reefs 14. To classify marine resources and sustainable use of those resources. 15. To know about types and causes of sea level change.
	2. Run off: controlling factors. Infiltration and evapotranspiration. Run off cycle	5	
	3. Drainage basin as a hydrological unit. Principles of water harvesting and watershed management	5	
	4. Groundwater: Occurrence and storage. Factors controlling recharge, discharge and movement	5	
	5. Major relief features of the ocean floor: Characteristics and origin according to plate tectonics	6	
Unit-II: Oceanography	6. Physical and chemical properties of ocean water	6	1. Explain the global hydrological cycle and its importance. 2. Explain different phases of run off cycle. 3. What are the principles of rainwater harvesting? 4. What are the different types of groundwater based on occurrence? 5. Explain the factors which control recharge and discharge of groundwater. 6. Explain major relief features of the ocean floor in the light of plate tectonics. 7. Describe the physical and chemical properties of ocean water. 8. Write a note on T-S diagram.
	7. Water mass, T–S diagram	3	
	8. Air-Sea interactions, ocean circulation, wave and tide	6	
	9. Ocean temperature and salinity: Distribution and determinants	4	
	10. Coral reefs: Formation, classification and threats	5	

	11. Marine resources: Classification and sustainable utilisation 12. Sea level change: Types and causes	4 5	9. Describe the ocean currents of Atlantic Ocean. 10. What are the different types of coral reef? 11. Classify marine resources. 12. What are the different types of sea-level change?

References:

1. Dingman, S.L. 2015. Physical Hydrology, 3rd ed, Macmillan Publishing Co.
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6. Pinet, P.R. 2014. Invitation to Oceanography. 7th ed, Jones and Barlett Publishers.
7. Pinneker, E.V. 2010. General Hydrogeology, Cambridge University Press.
8. Pugh, D., Woodworth, P. 2014. Sea-Level Science: Understanding Tides, Surges, Tsunamis and Mean Sea-Level Changes, 2nd ed, Cambridge University press.
9. Raghunath, H.M. 2006. Hydrology: Principles, Analysis, Design, 3rd ed, New Age International Publishers.
10. Reddy, P.J.R. 2014. A Textbook of Hydrology, University of Science Press.

Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-CC-3-07-TH – Statistical Methods in Geography
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit II: Numerical Data Analysis	7. Central tendency: Mean, median, mode, and partition values	6	1. To conceptualise different measures of central tendency and partition values. 2. To understand different measures of dispersion and deviation. 3. To know about association and correlation. 4. To explore linear and non-linear regression. 5. To understand different methods of time series analysis. 6. To have knowledge about different types of hypothesis testing.
	8. Measures of dispersion range, mean deviation, standard deviation, and coefficient of variation	6	
	9. Association and correlation: Product moment correlation and rank correlation,	5	1. Explain different measures of central tendency. 2. What are the different measures of dispersion. 3. Write a short note on correlation in statistics. 4. Differentiate between linear and non-linear regression. 5. Explain the moving average method of time series analysis. 6. Describe different types of hypothesis testing.
	10. Regression: Linear and non-linear	5	
	11. Time series analysis: Moving average	5	
	12. Hypothesis testing: Chi-square test and T-test	5	

References:

1. Pal S. K., 1998. Statistics for Geoscientists: Techniques and Applications, Concept Pub Co.
2. Rogerson, P.A. 2015. Statistical Methods for Geography: A Student's Guide, 4th ed, Sage.
3. Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan.

Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-SEC-A-3-01-TH – Coastal Management
Marks:	90 Marks / 2 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Coastal Management	1. Components of a coastal zone. Coastal morphodynamic variables and their role in evolution of coastal forms 2. Environmental impacts and management of mining, oil exploration, salt manufacturing, land reclamation and tourism 3. Coastal hazards and their management using structural and non-structural measures: Erosion, flood, sand encroachment, dune degeneration, estuarine sedimentation and pollution 4. Principles of Coastal Zone Management. Exclusive Economic Zone and Coastal Regulation Zones with reference to India.	7 8 8 7	1. To understand different components of a coastal zone. 2. To have knowledge about different morphodynamic variables in coastal zone and their role in evolution of coastal forms. 3. To explore the environmental impact of mining, oil exploration, salt manufacturing, land reclamation and tourism on coastal area and their management. 4. To know about coastal hazards and their management using structural and non-structural methods. 5. To understand principles of Coastal Zone Management. 6. To have knowledge about Exclusive Economic Zones and Coastal Regulation Zones with reference to India. 1. Describe the morphodynamic variables of coastal zone and their role in evolution of coastal forms. 2. Explain the environmental impact of oil exploration in coastal area. 3. Describe the structural and non-structural measures of erosion in coastal area. 4. Describe the principles of Coastal Zone Management.

References:

1. Beatley, T., Brower, D., Schwab, A.K. 2002. An Introduction to Coastal Zone Management, 2nd ed, Island Press.
2. Berkes, F. 2015. Coasts for People: Interdisciplinary Approaches to Coastal and Marine Resource Management, Routledge.
3. Carter, R.W.G. 1988. Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines, Academic Press.
4. Clark, J.R. 1996. Coastal Zone Management Handbook, CRC Press / Lewes Publishers.
5. Kay, R. and Alder, J. 1999. Coastal Planning and Management, E & FN Spon / Routledge.
6. Pethick, J. 1984. An Introduction to Coastal Geomorphology, Arnold.

Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-CC-4-10-TH –Soil and Biogeography
Marks:	60 marks /4 credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit I: Soil Geography	1. Factors of soil formation 2. Definition and significance of soil properties: Texture, structure, and moisture 3. Definition and significance of soil properties: pH, organic matter, and NPK 4. Soil profile. Origin and profile characteristics of lateritic, podsol and chernozem soils 5 Soil erosion and degradation: Factors, processes and management measures. Humans as active agents of soil transformation 6. Principles of soil classification: Genetic and USDA. Concept of land capability and its classification	4 4 4 4 4 5	1. To know about active and passive soil forming factors 2. To understand different properties of soil and their role on defining soil characteristics 3. To know about soil pH, Organic matter and NPK and their role in soil fertility and crop production. 4. To understand the origin, structure and characteristics of the given soil profiles. 5. To know about different factors and processes of soil erosion and how soil erosion may be minimised with proper management methods. To explore the role of anthropogenic factor in soil transformation 6. Understanding the principles of soil classification of Genetic and USDA And conceptualise land capability and to know about different land capability classes. 1. Give a brief account of different soil forming factors. 2. Explain different soil structures. 3. What do you understand by soil texture? 4. Explain the role of soil pH in crop productivity. 5. Describe the profile characteristics of laterite soil. 6. Describe the profile characteristics of podsol soil. 7. Describe the profile characteristics of chernozem soil. 8. Describe different methods to reduce soil erosion. 9. Briefly describe the USDA soil Classification scheme.

Unit II: Biogeography	7. Concepts of biosphere, ecosystem, biome, ecotone, community and ecology	5	7. To conceptualise biosphere, ecosystems, biomes *etc*. 8. To know about the concept of trophic structure, food chain, food web *etc.* 9. To understand the concept of energy flow in ecosystem. 10. To know about classification of biomes after (Whittaker) and have extensive knowledge about different biomes of the world. 11. To understand the concept of bio-geochemical cycles with special emphasis on Carbon and nitrogen cycle. 12 To know the causes and consequences of deforestation. To know about the management strategies to reduce deforestation. 13. To have knowledge about biodiversity, its types and threats to it. To know about conservation methods adopted to retain biodiversity. • Define biosphere. Differentiate between population and community. • Explain the nature of energy flow in an ecosystem. • Classify world biome according to Whittaker. • What is bio-geochemical cycle? Explain nitrogen cycle. • Describe the causes, consequences and management of deforestation. • Define biodiversity. What conservation measures should be adopted to conserve biodiversity?
	8. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems	4	
	9. Classification of world biomes (Whittaker). Geographical extent and characteristics of tropical rain forest, savanna, hot desert, taiga and coral reef biomes	6	
	10. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen	3	
	11. Deforestation: Causes, consequences and management	3	
	12. Biodiversity: Definition, types, threats and conservation measures	4	

References:

1. Chapman J.L., Reiz, M.J. 1993. Ecology: Principle and Applications, Cambridge University Press.
2. Chiras, D.D., Reganold, J.P. 2009. Natural Resource Conservation: Management for a Sustainable Future, 10th ed, Pearson.
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Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-SEC-B-4-04-TH – Sustainable Development
Marks:	90 Marks / 2 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
GEO-A-SEC-B-4-04-TH – Sustainable Development	3. Determinants of global environmental issues: Population, income distribution, urbanisation, deforestation, and depletion / contamination water resources 4. Global goals for sustainable development: Domain, conflict, crisis and compromise	9 6	1. To understand determinants of global environmental issue like population, income distribution, urbanisation, deforestation and water resource depletion. 2. To explore domain, conflict, crisis and compromise related to global goals of sustainable development. 1. Describe the major global environmental issues and their determinants. 2. Explain the conflicting issues of global goals for sustainable development.

References:

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Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-CC-5-11-TH – Research Methodology and Fieldwork
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit I: Research Methodology	1. Research in Geography: Meaning, types and significance	5	1. To conceptualise research, its meaning, types and significance
	2. Literature review and formulation of research design	5	2. To know about literature review and to formulate research design
	3. Defining research problem, objectives and hypothesis	6	3. To formulate research problem, objectives and hypothesis of research.
	4. Research materials and methods	4	4. To explore research materials and methods.
	5. Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract, and keywords	6	5. To understand techniques of writing scientific reports.
	6. Plagiarism: Classification and prevention	4	6. To know about types of plagiarism and how to prevent plagiarism.
Unit II: Fieldwork	7. Fieldwork in Geographical studies: Role and significance. Selection of study area and objectives. Pre-field academic preparations. Ethics of fieldwork	6	7. To understand role and significance of fieldwork and ethics of fieldwork.
	8. Field techniques and tools: Observation (participant, non-participant), questionnaires (open, closed, structured, non-structured). Interview	5	8. To explore different types of field techniques and tools of both socio-economic and landscape survey. 9. To know about positioning and collection of samples.
	9. Field techniques and tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording	5	10. To prepare inventory from field data. 11. To tabulate, process and analyse data collected from field. 12. To know about logistics of fieldwork and how to handle emergencies during fieldwork.

	10. Positioning and collection of samples. Preparation of inventory from field data 11. Post-field tabulation, processing and analysis of quantitative and qualitative data 12. Fieldwork: Logistics and handling of emergencies	4 4 4	1. Define research. What are the different types of research? 2. Write about significance of literature review in research. 3. Write a note on research design. 4. Define research problem. Differentiate between null hypothesis and alternative hypothesis. 5. Distinguish between bibliography and reference. 6. Write a note on plagiarism and its prevention. 7. Explain the role and significance of fieldwork in geographical studies. 8. Give a brief account of various tools and techniques used in fieldwork in Geography. 9. State the ethics of fieldwork. 10. Distinguish between participant and non-participant observation. 11. What is test of significance? Explain any one of the significance tests used in geographical research. 12. Differentiate between quantitative and qualitative research methods.

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Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-DSE-A-5-02-TH – Climate Change: Vulnerability and Adaptations
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
	7. Climate change and vulnerability: Physical; economic and social 8. Impact of climate change: Agriculture and water; flora and fauna; human health and morbidity 9. Global initiatives to climate change mitigation: Kyoto Protocol, carbon trading, clean development mechanism, COP, climate fund 10. Climate change vulnerability assessment and adaptive strategies with particular reference to South Asia 11. National Action Plan on climate change 12. Role of urban local bodies, panchayats, and educational institutions on climate change mitigation: Awareness and action programmes	5 5 5 5 5 5	1. To understand the issue of climate change and its physical, economic and social vulnerability 2. To have knowledge about impact of climate change on agriculture, water, biodiversity and human health. 3. To know about different Global initiative for climate change mitigation. 4. To understand climate change vulnerability assessment and to explore adaptive strategies with special reference to south Asia. 5. To have knowledge about National Action Plan on climate change. 6. To explore the role of urban local bodies, panchayats and educational institute on climate change mitigation through awareness and action programmes. 1. Write the fundamental objectives of IPCC report. 2. What are the basic tenets of Kyoto Protocol? 3. What are the main objectives of Clean Development Mechanism? 4. Discuss the adaptative strategies to combat contemporary climate change. 5. Highlight the key issues of National Action Plan on climate change in India. 6. Describe with suitable examples the impact of climate change on agriculture in South Asian Region.

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2. Field, C.B., Barros V.R., Dokken, D.J., Mach, K.J., Mastrandrea, M.D., Bilir, D.E., Chatterjee, M., Ebi, K.L., Estrada, Y.O., Genova, R.C., Girma, B., Kissel, E.S., Levy, A.N., MacCracken, S., Mastrandrea, P.R., White, L.L. (Eds) 2014. Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects-Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press.
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Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-A-DSE-A-6-04-TH – Resource Geography
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit I: Resource and Development	1. Natural resources: Concept and classification	4	1. To conceptualise natural resources and understand classification of natural resources. 2. To conceptualise different approaches to resource utilization. 3. To have knowledge about significance of resources in growth and development of economy. 4. To have knowledge about appraisal and conservation of natural resources. 5. To identify problems of resources depletion on global perspective with special emphasis on forest and water resources and fossil fuels. 6. To have the concept of sustainable resource development. 7. To have knowledge about distribution, utilisation, problems and management of metallic mineral resources, non-metallic mineral resources and conventional and non-conventional energy resources. 8. To understand contemporary energy crisis and future scenario related to it. 9. To understand politics of power resources. 10. To have concept about limits to growth. 11. To explore about sustainable use of resources. 12. To conceptualise resource sharing.
	2. Approaches to resource utilization: Utilitarian, conservational, community based adaptive	5	
	3. Significance of resources: Backbone of economic growth and development	5	
	4. Pressure on resources. Appraisal and conservation of natural resources	5	
	5. Problems of resource depletion: global scenario (forest, water, fossil fuels)	6	
	6. Sustainable resource development	3	
Unit II: Resource Conflict and Management	7. Distribution, utilisation, problems and management of metallic mineral resources: Iron ore, bauxite, copper	5	
	8. Distribution, utilisation, problems and management of non-metallic mineral resources: Limestone, mica, gypsum	6	
	9. Distribution, utilisation, problems and management of energy resources: Conventional and non-conventional	6	• Classify natural resources. • Explain different approaches of resource utilization. • How resources determine economic growth and development of a country? • Describe the conservation strategies of natural resources. • Describe the global scenario of water resource depletion. • Elucidate the concept of sustainable resource development.
	10. Contemporary energy crisis and future scenario	4	
	11. Politics of power resources	2	

	12. Limits to growth and sustainable use of resources. Concept of resource sharing	5	• Give a brief account of distribution of iron ore in India. • Describe the distribution of limestone in India. • Classify energy resources. • Describe the issue of global energy crisis. • What do you understand by politics of power resources. • Elucidate the concept of limits to growth.

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9. Owen, S., Owen, P.L. 1991. Environment, Resources and Conservation, Cambridge University Press.
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Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-G-CC-1-01-TH – Physical Geography
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit I: Geotectonics	1. Earth's interior with special reference to seismology	3	1. To understand characteristics of different layers of earth's interior with reference to seismology.
	2. Plate Tectonics as a unified theory of global tectonics. Formation of major relief features of the ocean floor and continents according to Plate Tectonics	7	2. To understand the theory of Plate Tectonics and its processes and role in forming different landforms in plate margins and hotspots.
	3. Folds and faults: Classification and surface expressions	6	3. To know about different types of folds and faults, their origin and surface expressions.
Unit II: Geomorphology	4. Degradational processes: Weathering, mass wasting, and resultant landforms	4	4. To know about different types and processes of physical and chemical weathering and resultant landforms development. To explore different types of mass wasting and their resultant landforms development.
	5. Principal geomorphic agents. Classification and evolution of fluvial, coastal, aeolian, and glacial landforms	12	5. To understand different geomorphological agents related to the processes of entrainment, transportation and deposition.
	6. Basic models of slope evolution: Decline, replacement, and retreat. Systems approach and its significance in geomorphology	6	6.To know about basic models of slope evolution. To understand the significance of system approach in landform development
Unit III: Hydrology	7. Global hydrological cycle: Its physical and biological role	3	7. To have knowledge about global hydrological cycle and its physical and biological role.

Unit IV: Oceanography	8. Run off: Controlling factors. Concept of ecological flow	3	8. To understand run-off and its controlling factors. To conceptualise ecological flow
	9. Drainage basin as a hydrological unit. Principles of watershed management	5	9. To conceptualise drainage basin as a hydrological unit. To understand principles of watershed management.
	10. Physical and chemical properties of ocean water. Distribution and determinants of temperature and salinity	7	10. To explore physical and chemical properties of ocean water. To know about distribution and determinants of temperature and salinity.
	11. Ocean circulation, wave, and tide	3	11.To explore ocean circulation in terms of waves and tides.
	12. Marine resources: Classification and sustainable utilisation	3	12. To understand classification and sustainable use of marine resources.
			• Describe interior structure of the earth with refence to seismology. • What is shadow zone. • Explain formation of folded mountains in the light of plate tectonic theory. • What is inversion of relief. Differentiate between fault scarp and fault line scarp. • Explain the global hydrological cycle and its importance. • Explain different phases of run off cycle. • What are the principles of rainwater harvesting? • Describe the physical and chemical properties of ocean water. • Explain the determinants of ocean temperature and salinity. • Describe the waves of Atlantic Ocean. • Classify marine resource. Write a short note on sustainable use of marine resources.

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Name of the Teacher :	Smt. Moumita Nandi
Department :	Geography
Paper :	GEO-G-CC-3-03-TH – Human Geography
Marks:	60 Marks / 4 Credits

Paper & Unit	Name of topic with details of sub-topics	No. of Classes	Learning objective of the course/Question Framing
Unit I: Economic Geography	1. Sectors of the economy: Primary, Secondary, Tertiary and Quaternary. Factors affecting location of economic activities	5	1. To understand different sectors of economy. 2. To know about different theories related to location of economic activities. 3. To explore the factors behind location of cotton and iron and steel industry in India. 4. To understand globalisation and its role in integration of world economies. 5. To understand migration, its causes and consequences. 6. To know the types and characteristics of different social organisations such as primitive, hunting-gathering, agrarian and industrial. 7. To know about origin, characteristics and spatial variations of race, language and religion. 8. To understand social issues related to diversity, conflicts and transformation of societies. 9. To understand Carl Sauer's concept of cultural landscape and its elements. 10. To differentiate between cultural landscapes of rural and urban settlements. 11. To conceptualise cultural landscape and cultural realms. 12. To conceptualise cultural diffusion and cultural innovations.
	2. Location of economic activities: Theories of von Thünen, Lösch, and Weber	5	
	3. Location of industries with special reference to India: Cotton, Iron and Steel	5	
	4. Globalisation and integration of world economies	5	
Unit II: Social Geography	5. Human Society: Structure, functions, social systems. Population and migration: overview, causes and effects	5	
	6. Types and characteristics of social organisations: Primitive, hunting–gathering, agrarian, industrial	5	

Unit III: Cultural Geography	7. Race, Language and Religion: Origin, characteristics and spatial variations	6	1. Explain different types of economic activities with examples. 2. Explain Von Thunen's theory of agricultural location. 3. Describe theory of location of industries as proposed by Alfred Weber. 4. Explain the factors which have contributed agglomeration of iron and steel industry in Eastern India. 5. Explain role of globalisation in integration of world economies. 6. What are the different types of migration. Write about consequences of migration. 7. Describe the characteristics of agrarian society. 8. Classify race. 9. Describe origin and characteristics of different religions of the world. 10. Explain the concept of cultural landscape. Describe its elements. 11. Differentiate between cultural landscape and cultural realm. 12. Explain different types of cultural diffusion.
	8. Social Issues: Diversity, conflict and transformation	5	
	9. Carl Sauer: cultural landscape and its elements	6	
	10. Rural and urban settlements: Differentiation in cultural landscapes	5	
	11. Cultural regions and cultural realms	5	
	12. Diffusion of culture and innovations	4	

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