Subject Code : P8AG1

GEOMORPHOLOGY AND MARINE GEOLOGY

UNIT 1 Geomorphology:

Scope of Geomorphology – Fundamental concepts – significance of structure, Process and time – A brief account of concepts of Davis and Penck in the evolution of landforms – Characteristic features of landforms – Characteristics and types of fluvial landforms – Fluvial cycle – concept of peneplains – stream rejuvenation, causes and effects.

UNIT 2

Aeolian landforms – Arid Cycle of erosion – Glacial landforms, periodicity of glaciations and its causes – Geomorphology of the coasts, classification of shorelines and their evolution. Evidences of eustatic changes and their causes – Landforms produced by volcanoes.

UNIT 3

Influence of lithology on relief, karst topography-Relationship of geologic structures to topography. Development of landforms of flat lying, tilted, folded, dome and faulted structures-Development of drainage systems, Drainage Pattens, Drainage analysis in Geological interpretation.

Geomorphic features of India; Application of Geomorphology in groundwater, mineral and oil exploration and Engineering projects.

UNIT 4 Marine Geology:

Introduction in marine Geology – Characteristics and origin of ocean basin, Oceanographic instruments pertaining to geological operations. Van been grab, petterson grab, gravity corer, piston corer, Boomerang grab, drag dredge, Water sampler – Nansen water sample – Reserving thermometer Bathy thermograph - secchi Disk.
Probing the sea floor – Echo sounding, Seismic shooting, Seismic refraction and reflection, satellite imagery.

Physical and chemical properties of ocean water. General oceanic circulation of water-waves and currents, Long shore, rip and turbidity currents. Geological work of waves and currents – Tsunami, origin and their prediction. Ocean pollution. Natural mineral resources of the ocean.

UNIT 5

Topography and origin of the continental shelf and continental slope. Characters and origin of submarine canyons, characteristics of oceanic

trenches and mid oceanic ridges. Seafloor Spreading Seamounts and Guyots, Classification of coral reefs and their characteristics. Theories atoll formation. Eustatic changes of sea-level (Plate tectonics and origin of ocean basin.
Law of the sea and its implications.

TEXT BOOKS

1. Thornbury,W.D. – 1969 Principles of Geomorphology ,Wiley.
2. Worcester,P.G. – 1948 A text book of Geomorphology
3. Kuenen, Ph. H., 1950 Marine Geology, Wiley.
4. Shepard, F.P., 1973 Submarine Geology, Harper and Row.
5. Fleming, Jhonsons & Strurup Oceans
6. Shepard, F.P., 1960 Earth, beneath the sea, OUP.
7. Petti John, F.S., 1965 Sedimentary Rocks.

REFERENCE BOOKS

1. Lobeck, A.K.- 1932 Geomorphology,McGraw Hill.
2. Ordway, R.J. – 1971 Earth Sciences, Affiliated East – West.
3. Pitty,A.F. –1972 Introduction to Geomorphology, Methuen.
4. King.L.C. – 1962 Morphology of the Earth, Oliver and boyd.
5. Woolridge S.W. & Margan R.S. 1952 – An outline of Geomorphology, Longmans
6. Sparks, b.W. – 1961 Geomorphology, Longmans.
7. Bloom, A.L. –1979 Geomorphology, Prentice Hall.
8. Turekian 1968 Oceans, Prentice Hall.
9. Menard, H.W., 1977 Ocean Sciences – Readings from Scientifica American, Freeman.
10. Kind, A.H., 1979 Introduction to Marine Geology and Geomorphology, Edward Arnold.