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**M.A./M.Sc. Geography**  
**First semester**  
**Paper IV (41364) Climatology and Oceanography**

**Unit I:**

**Basic Concepts and Atmospheric Phenomenon**

- a) Nature and scope of Climatology
- b) Composition and layered structure of the atmosphere
- c) Insolation; Energy balance of the Earth; horizontal and vertical distribution of temperature
- d) Atmospheric pressure and pressure belts; Forces controlling motion of air

**Unit II:**

**Atmospheric Circulation**

- a) Basic Positional Astronomy: Motion of the earth – rotation , revolution, Earth inclination, diurnal cycle, equinoxes and solstices, Northward and southward march of the sun.
- b) Planetary winds; Jet Streams; Monsoons
- c) Atmospheric Humidity–process and forms of precipitation: types of rainfall; world distribution of rainfall.
- d) Air masses and fronts; Tropical and Temperate cyclones

**Unit III:**

**Climate Types and Climate Change**

- a) Approaches to classification of world climates; Koppen's and Thornthwaite's classifications
- b) Major climates of the world: Characteristics of Equatorial, Tropical Monsoon, Savanna, Hot Desert, Mediterranean and Mountain type of climate
- c) Ocean atmosphere interaction: El Nino- La Nina; Walker's Circulation & El Nino Southern Oscillation (ENSO)
- d) Ozone depletion; Green house effect; Global warming

**Unit IV:**

**Oceans-Physical Characteristics**

- a) Nature and scope of Oceanography
- b) Ocean bottom relief; Relief of Indian and Atlantic oceans
- c) Ocean temperature and salinity: factors and distribution patterns
- d) Ocean deposits; Coral reefs: Types and theories of formation

**Unit V:**

**Dynamics of Ocean Water and Human-marine Interface**

- a) Tides :Types, Theories of origin of tides
- b) Ocean currents: Currents of Indian, Atlantic and Pacific ocean

- c) Marine resources: Food, mineral and energy resources
- d) Sea level changes; Human impact on marine communities

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20. Ummerkutty, A.N.P., 1985. Science of the Oceans and Human Life, National Book Trust, New Delhi

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3. Gupta L. S., 2000. Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi
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