2024/SEM/EVEN/14/36/ESC/ESCC-554/108

PG Even Semester Exam, 2024

Earth Science

2nd Semester

COURSE NO. ESIDC- 554 (ii)

[Meteorology and Oceanography]

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer five questions, taking one from each Unit

UNIT-I

1. a. Discuss in detail the vertical thermal structure of the atmosphere with suitable diagram. 7

   b. Write short note on the following: 4+3=7

      i. Dry and moist adiabatic lapse rate

      ii. Cirrocumulus and cumulonimbus clouds

2. a. Write an explanatory note on atmospheric stability with neat sketches 7

   b. Write briefly on: 4+3=7

      i. Mie and Rayleigh Scattering

      ii. Earth's Heat Budget

UNIT-II

3. a. Discuss the global wind patterns with suitable diagrams. 8

   b. Write short notes on the following: 3+3=6

      i. Cyclones and anticyclones

ii. Mountain and valley breezes

4. Write notes on the following: 5+5+4=14
   a. Jet Streams
   b. Polar and highland climates
   c. Asian Monsoon

UNIT-III

5. Describe the physiographic of continental margin with suitable sketches. Also discuss the Hypsographic curve for the earth. 9+5=14
6. Write brief notes on the following: 3+4+4+3=14
   a. Major dissolved constituents of sea water
   b. Residence time of an element in Sea water
   c. Conservative and non-conservative elements.
   d. Mineral resources of ocean

UNIT-IV

7. Write notes on the following: 5+5+4=14
   a. Seasonal current in North Indian Ocean
   b. Wave generation
   c. Solar Tide
8. Define internal tide and barotropic tide. Write a descriptive note on the different types of tides. Write a note on deep water wave. 2+8+4=14

UNIT-V

9. a. Define Salinity. State and explain the variation of salinity with depth of ocean water and latitudes. 2+5=7
   b. Explain thermocline, halocline and Pycnocline with suitable diagram. 7
10. a. What are oceanic water masses? Describe the characteristics of major water masses of the world ocean. 3+6=9
    b. Illustrate the oceanic conveyor belt. 5

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