

2.5 Hours

TOTAL MARKS: 75

**Instructions: Please check that you have received the correct question paper.**

- 1) All the questions are compulsory. Choice is internal.
- 2) Figures to the right indicate full marks.
- 3) All questions carry equal marks.
- 4) Draw flowcharts and diagrams wherever required.

- Q1 A) Choose the MOST appropriate option (any three):** **3**
- i) \_\_\_\_\_ of the atmosphere is composed of two gases- nitrogen and oxygen.  
a) 78%                      b) 90%                      c) 99%
  - ii) \_\_\_\_\_ is NOT a greenhouse gas.  
a) Methane                      b) Oxygen                      c) Ozone
  - iii) Mesosphere extends from \_\_\_\_\_ km of altitude.  
a) 5-15                      b) 11-50                      c) 50-85
  - iv) Polyaromatic hydrocarbons in the atmosphere can produce \_\_\_\_\_.  
a) genetic changes                      b) secondary pollutants                      c) aerosols
  - v) Local temperature conditions depend upon \_\_\_\_\_ in the atmosphere.  
a) ions and radicals                      b) suspended particulates                      c) gaseous pollutants
  - vi) Oxidation of hydrocarbons is catalyzed by \_\_\_\_\_ in particulate matter.  
a) metal oxides                      b) sulphur oxides                      c) aerosols
- Q1 B) Define and explain any one of the following:** **2**
- i) Temperature inversion
  - ii) Positive lapse rate
- Q1 C) Attempt any one of the following:** **4**
- i) Describe the greenhouse effect
  - ii) Discuss the structure of atmosphere surrounding the earth
- Q1 D) Answer any one of the following:** **6**
- i) Write a note on photochemical smog
  - ii) Give detailed account of causes and consequences of Ozone Layer Depletion
- Q2 A) Choose the MOST appropriate option (any three):** **3**
- i) During \_\_\_\_\_ season the efficiency of the trickling filter method reduces.  
a) summer                      b) winter                      c) autumn
  - ii) Rain is a form of \_\_\_\_\_.  
a) precipitation                      b) flocculation                      c) agglutination
  - iii) Humans contain \_\_\_\_\_ that acts as a natural chelating agent for Cadmium.  
a) Thionein                      b) Porphyrin                      c) Cerruloplasmin
  - iv) Fog formation is a problem associated with wet cooling towers in \_\_\_\_\_ region(s).  
a) cold                      b) tropical                      c) both
  - v) Radioactive pollution may be caused due to \_\_\_\_\_ from improperly disposed medical equipment.  
a)  $^{60}\text{Co}$                       b)  $^{131}\text{I}$                       c)  $^{204}\text{Tl}$
  - vi) Biological treatment of waste water is also known as \_\_\_\_\_.  
a) primary                      b) secondary                      c) advanced

- Q2 B) Define and explain any one of the following:** **2**
- Preliminary treatment
  - Thermal pollution of water
- Q2 C) Write a note on any one of the following:** **4**
- Pesticides and insecticides as water pollutants
  - Physiological impact of heavy metal poisoning.
- Q2 D) Answer any one of the following:** **6**
- Elaborate on primary treatment of waste water.
  - Write a detailed note on Oil spill.
- Q3 A) Choose the MOST appropriate option (any three):** **3**
- \_\_\_\_\_ is a soil type with the smallest particles having good water holding capacity.
    - Silt
    - Clay
    - Sand
  - \_\_\_\_\_ is the least weathered portion of lithosphere that lies directly above parental bed rock.
    - Solum
    - Saprolite
    - Subsoil
  - Top soil is also known as \_\_\_\_\_ horizon.
    - C
    - R
    - A
  - Equivalent Noise Level (Leq) index for measurement is accepted for rating of noise in \_\_\_\_\_.
    - aircraft
    - road traffic
    - residential area
  - Noise level of \_\_\_\_\_ dBA may cause ear drum rupture.
    - 90
    - 100
    - 180
  - \_\_\_\_\_ is/are responsible for receiving sound waves by ear.
    - Tympanic membrane
    - Ear-Drum
    - both a and b
- Q3 B) Define and explain any one of the following:** **2**
- Noise
  - Salinization of soil
- Q3 C) Write a note on any one of the following:** **4**
- Soil profile
  - Classification of noise
- Q3 D) Answer any one of the following:** **6**
- Elaborate on nitrogen cycle
  - Discuss consequences of noise pollution
- Q4 A) Choose the MOST appropriate option (any three):** **3**
- The sulphur content in the petroleum varies from \_\_\_\_\_.
    - 1-2%
    - 0.1-5%
    - 6-8%
  - Discrete portions of water samples taken at any time are known as \_\_\_\_\_.
    - composite sample
    - adsorbed sample
    - spot Sample
  - Low level nuclear wastes are disposed by \_\_\_\_\_.
    - dumping on the seabed
    - burial in salt deposits
    - buried in geologic repository



- iv) Geothermal energy is primarily stored in \_\_\_\_\_.  
 a) sea                      b) rocks                      c) river
- v) Petroleum is an oily inflammable liquid consisting of \_\_\_\_\_ hydrocarbon compounds.  
 a) 30-40%                      b) 40-60%                      c) 60-98%
- vi) \_\_\_\_\_ is the coal having highest heating value.  
 a) Lignite                      b) Bituminous c) Anthracite

**Q4 B) Define and explain any one of the following:** **2**  
 i) Biofuel  
 ii) Acid mine drainage

**Q4 C) Write short note on any one of the following:** **4**  
 i) Solar energy  
 ii) Principles of air monitoring system

**Q4 D) Answer any one of the following:** **6**  
 i) Explain health effects associated with a) asbestos b) PCBs c) plastics  
 ii) Write a detailed note on remote sensing

**Q5 A) Write a brief note on any one of the following:** **3**  
 i) Ions and radicals in the atmosphere.  
 ii) Suspended particulate matter

**Q5 B) Write a brief note on any one of the following:** **3**  
 i) Hydrological cycle  
 ii) Various sources of water pollutants.

**Q5 C) Write a brief note on any one of the following:** **3**  
 i) Importance of soil.  
 ii) Measurement of Noise

**Q5 D) Answer any one of the following:** **3**  
 i) Give an account of approaches to water monitoring.  
 ii) Write a note on conventional sources of energy

**Q5 E) State true or false:(any three)** **3**  
 i) Aeroplanes fly in the stratosphere.  
 ii) Water that falls on the land attempts to move back towards sea level as run off.  
 iii) The amount of water vapour in the atmosphere varies from place to place.  
 iv) Dark coloured soil is rich in inorganic matter.  
 v) Elemental mercury is harmful to humans.  
 vi) Hydrocarbons of the petroleum are separated by vacuum distillation.