

SI No of QP 1062

Unique Paper Code : 32181102
Name of Paper : Physics and Chemistry of Environment
Name of Course : B.Sc. Hons. Environmental Sciences -Core
Semester : I

Duration: 3 hours

Maximum marks: 75

Write your Roll no. on the top immediately on receipt of this question paper
Attempt any *five* questions. *All* questions carry *equal* marks

1. (a) Define any 5 of the following. (5×2=10)
- (i). Black Body Radiation
 - (ii). Normal Lapse Rate
 - (iii). Beer-Lambert's Law
 - (iv). Alkalinity
 - (v). Sulphurous smog
 - (vi). Synthetic polymers
 - (vii). Chelation
- (b) Explain the concept of heat and work with the help of Carnot's Engine. (5)
2. Differentiate between any three the following: (3×5=15)
- (i). Coriolis Force and Gravitational Force
 - (ii). Heat Engine and Refrigerator
 - (iii). Photochemical Smog and Sulphurous Smog
 - (iv). Normality and Molarity
3. (a) What is the relation between dry and moist adiabatic lapse rate? How can temperature inversion aggravate air pollution in a land-locked region? (10)
- (b) Discuss different types of flow of fluids giving examples? (5)

4. (a) Discuss the rules of solubility. (5)
- (b) What is Smog, and discuss its types? With the help of photochemical reactions, explain the phenomenon of photochemical smog using appropriate chemical reactions. (10)
5. (a) What is Gaussian Plume Model? With the help of an example, explain its significance in knowing the dispersal pattern of the emissions from a smoke-stack of factory. (9)
- (b) Explain the properties of electron affinity, ionization potential and electronegativity in different elements, giving examples. (6)
6. (a) Explain the phenomenon of Acid rain. Discuss giving an example of the detrimental impacts of acid rain on the environment and living organisms. (8)
- (b) Discuss the nature and behavior of Ozone in the Troposphere and Stratosphere. (7)
7. (a) Discuss the various causes of water contamination and how the phenomenon later affects its chemical properties. (9)
- (b) How do nitrogen and phosphorous make their way into the soil to be absorbed by the plants? (6)
8. (a) What are the advantages and disadvantages of Photovoltaic cells? What are the other green alternative sources of energy? (6)
- (b) What are the different types of turbines. How can we measure their efficiency? (9)