

2. Differentiate between (any three) :
- (a) Competitive and non-competitive enzyme inhibition
 - (b) Enzymes and Ribozymes
 - (c) Glycerophospholipids and Sphingolipids
 - (d) α -Helix and β -pleated structure of proteins
 - (e) Nucleosides and Nucleotides (3×3)
3. (a) Outline the complete reactions of the Krebs' cycle and give an account of the total ATPs generated.
- (b) Draw structures of any three of the following :
- (i) ATP
 - (ii) Cholesterol
 - (iii) Deoxycytidine
 - (iv) An ω -3 fatty acid (6,3)
4. Answer any three of the following :
- (a) Explain the terms Apoenzyme, Holoenzyme and Coenzyme.
 - (b) What is Biocatalysis ? What is its importance in 'Green Chemistry' ?
 - (c) What is Gene Therapy ?
 - (d) Explain Chargaff's Rule. What is its significance ?
 - (e) Elaborate upon the analytical and industrial applications of enzymes. (3×3)

SECTION B

Environmental Chemistry

Attempt all four questions in this section.

Maximum Marks : 37

5. (a) Fill in the blanks (any four) :
- (i) _____ is the secondary air pollutant.

- (ii) _____ is the bio-degradable pollutant.
- (iii) Detergents harm a water body because _____ .
- (iv) Stratospheric temperature increases with the altitude. This is termed as _____ .
- (v) The primary pollutants involved in the photochemical smog are _____ and _____ .

(b) Indicate True or False (any three) :

- (i) PAN is the major constituent in the formation of photochemical smog.
- (ii) A molecule of CFC-12 is more effective as a green house gas than a molecule of carbon dioxide.
- (iii) Solar, hydro, wind and tidal are four important non renewable sources of energy.
- (iv) Aerosols of natural origin having diameters $<0.2\mu$ are called Aitkin Particles.

(c) With the help of a labeled diagram explain the biogeochemical cycle of sulphur or carbon. (4,3,3)

6. (a) What is meant by the lapse rate ? How do you account for the observed lapse rate in different regions of the atmosphere ?

OR

Why does thermal inversion increase air pollution ? What harm can thermal inversion cause to humans ?

- (b) Discuss sources and sinks of carbon monoxide.

OR

What do you understand by the term "Acid Rain" ? Explain with reactions.

- (c) Discuss in details the environmental effects of Ozone depletion.

OR

Describe the Green House effect and its consequences. (3,3,3)

P.T.O.

7. (a) What are the different Water Purification Methods used for purifying water ?

OR

Discuss three techniques for measuring water pollution.

- (b) How can geothermal energy be utilized ?

OR

What are the possibilities of using Tidal power ?

- (c) Mention the different ways of safe disposal of nuclear waste. Discuss the problems faced in doing so.

OR

Discuss one Nuclear Disaster as a case study taking into account its causes and effects. (3,3,3)

8. (a) Mention the principle renewable sources of energy. Explain any one.

OR

Why are non-conventional energy sources preferred over conventional energy sources ?

- (b) Discuss the methods of reducing hazardous nuclear waste at source.

OR

Differentiate between nuclear fission and nuclear fusion. Why is fission preferred over fusion to harness power ?

- (c) What is Thermal Pollution ? How can it be controlled ?

OR

Hydrogen is the fuel of future. Justify. (3,3,3)