2013

M.Sc. Part–II Examination

ENVIRONMENTAL SCIENCE

PAPER—IXA

Full Marks : 100

Time : 4 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer *Q. No. 1* and any *five* questions from the rest.

1. Answer any *ten* questions of the following : 2×10

(i) What is chemical potential ?

(ii) What is radionuclides ?

(iii) What is heavy metals ?

(iv) What is soil fertility ?

(v) What is algal bloom ?

(vi) What is chemical speciation?

(vii) Write down the stochiometric air fuel ratios of common fuel.

(viii) The equilibrium concentrations CO = 0·0911M, H_2 = 0·0822M, CH_3OH = 0·00892 M. What is the value of the equilibrium constant?

(ix) What is importance of carbonate system?

(x) What is Frozen Free Radicals?

(xi) What are the biochemical effects of cyanide?

(xii) What is the function of FIC?

(xiii) What is the reaction combination of O_3 and NO in close circle system?

(xiv) Write the reaction steps in O_3 depletion?

(xv) What is chronic arsenicosis?

(xvi) What is Colourimetry?

2. Write down steps involved in water purification system? What is disinfection? Discuss the chemical used for disinfection.

10+2+4

3. What are carcinogen and carcinogenesis? Discuss the importance of carcinogens in air.

2+2+12

4. What are the sources of arsenic in environment? Discuss the current status of chronic arsenicosis in gangetic basin.

4+12

5. Distinguish between saturated and unsaturated hydrocarbons. Discuss the function of hydrocarbons in biological systems.

6+10

6. What is biological Methylation? Discuss the step involved in biomagnification pesticides with examples.

2+14

7. What is primary air pollutant? Discuss the biochemical effects of SO_2 on plants. Write down the SO_2 tolerant plants.

2+12+2

8. Write down the principle and application of GLC. How working principle of HPLC differ from GLC?

4+8+4

9. Critically discuss the reaction of free radicals in the atmosphere. 16

10. Give a short account of biodegradable and persistant pesticides in the environment. 16
