C/18/DDE/MSc/Part-II/ENV/9A

# 2018

## 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 : 10×2

(i) What is redox potential ?

(ii) Differentiate between sedimentation and coagulation.

(iii) Define chemical potential.

(iv) What do you mean by tropospheric ozone ?

(v) Mention one difference between pH are alkalinity.

(vi) What is Biomethylation ?

(vii) What is Gibbs energy ?

(viii) Define 'Dobson' unit.

(ix) What are colloids ?

(x) What will be pH of a $10^{-8}$ (N) HCl solution ?

(xi) What is buffer solution ?

(xii) Define ozone depletion potential of a compound.

(xiii) What are halous ?

(xiv) Define Green Cracker.

(xv) What is 'Bioamplification' ?

**2.** What are the major components of soil composition ? Discuss the importance of NPK in plant growth. How do you rationalise the water holding capacity of soil ? Write down four ways of amelioration of soil. 5+4+3+4

**3.** Write short notes on : 4×4

(a) Phytic acid.





(b) Polar vortex.

(c) GWP.

(d) Chernobyl disaster.

**4.** (a) What do you mean by nuclear winter ? Discuss its effects on biosphere.

(b) Write down the working principle of XRF.

Write three basic difference between GLC and HPLC. 8+8

**5.** What is BOD ? How it is estimated ? What are the differences between BOD and COD ? State the significance of BOD estimation. 2+7+3+4

**6.** What is photochemical smog ? Where and why it is formed ? What are the health hazardous effect of photochemical smog. Write the consequences of ozone hole. 2+4+4+6

**7.** Write the process and applications of filtration technique. Write the sources of carcinogens present in air. What are the processes involves in maintaining soil nitrogen balance naturally ? (4+4)+4+4

**8.** Differentiate between the thermochemical and photochemical reactions in the atmosphere. How ozone layer is formed ? State the significance of H-bond in water ? 6+5+5

9. (a) Explain how arsenic toxicity leads to cancer?

(b) Explain how aluminium toxicity leads to anemia.

(c) Why As (III) is more toxic than As (V)? 7+6+3

10. (a) Explain how particulate matter related with lower and upper respiratory track infection.

(b) Differentiate between classical smog and photochemical smog.

(c) Explain the mechanism for ozone layer depletion by CFC's. 5+5+6

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