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**0305E330**

Candidate's Seat No : \_\_\_\_\_

**M.Sc. (Sem.-II) Examination**

**407**

**Environmental Science**

**May-2017**

**Time : 3 Hours]**

**[Max. Marks : 70**

**Note: Draw the diagram where ever required.**

**Q.1 Answer the following in detail (each question carries 07 marks): [14]**

a) Explain the vertical structure and chemical composition of the Jovian atmosphere.

**OR**

a) Define: Residence Time. Explain the stratification of the Earth's atmosphere.

b) Define: Greenhouse effect. Elaborate on various radiatively active gases.

**OR**

b) Discuss the evolution of the primitive atmosphere of the Earth.

**Q.2 Answer the following in detail (each question carries 07 marks): [14]**

a) Discuss Montreal Protocol.

**OR**

a) Elaborate on: (i) Polar ozone hole and (ii) Brominated CFC analogue.

b) What is Chapman mechanism ? Explain the additional reactions of ozone in the stratosphere.

**OR**

b) Explain various Chlorofluorocarbons replacement compounds.

**Q.3 Answer the following in detail (each question carries 07 marks): [14]**

a) Define: catalytic converter. Elaborate on different types of catalytic converters.

**OR**

a) Explain the action of hydroxyl radical as an oxidant in the troposphere.

b) Explain any three wet scrubbers used to control the emission of particles.

**OR**

b) Elaborate on various particles responsible for atmospheric pollution.

(P.T.O)

**Q.4** Answer the following in **detail** (each question carries 07 marks):

**[14]**

a) Explain the sources and chemistry of acid rain.

**OR**

a) Describe the various contaminants which affect the indoor air quality.

b) Explain the oxidation mechanism and deposition of sulphur.

**OR**

b) Explain the different sources, types and effects of the asbestos.

**Q.5** Answer the following in **short** (each question carries 01 mark):

**[14]**

a) What is Ozone Depleting Potential ?

b) Define: primary atmospheric aerosols.

c) Give the examples of 'Criteria Pollutants'.

d) What is Farmer's Lung ?

e) Which is the brightest planet in the Solar System ?

f) Give the difference between Basal and Squamous Cell Carcinoma.

g) Electrostatic Precipitator works on which principle ?

h) Write the common example of similar toxic compounds.

i) Which planet of the Solar System spins on its axis at the fastest rate ?

j) Define: Ozone Depleting Potential.

k) Give the toxic effects of Methyl Isoocyanate.

l) Mention the full forms of: (i) pCi (ii) UFFI.

m) What is Xeroderma Pigmentosum ?

n) What is Runaway Greenhouse Effect ?

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**0505E379**

Candidate's Seat No : \_\_\_\_\_

**M.Sc. (Sem.-II) Examination**

**408**

**Environmental Science**

**May-2017**

**[Max. Marks : 70**

**Time : 3 Hours]**

**Note: Draw the diagram where ever required.**

**Q.1 Answer the following questions in detail (each question carries 07 marks): [14]**

a) Explain the risk and incident communication process.

**OR**

a) Give the significance of Environmental Audit and explain the different steps of EHS Compliance Audits.

b) Describe the Key EHS Regulations enacted from 1969 to 1997 with their Principle Focus Areas.

**OR**

b) Elaborate on: (i) ISO 14000 (ii) ISO 14001.

**Q.2 Answer the following questions in detail (each question carries 07 marks): [14]**

a) Enlist various physical treatment technologies for waste disposal and explain any five.

**OR**

a) Elaborate on Design for Environment (DfE) with reference to work place.

b) Discuss organic concentration measurement system in the atmosphere with appropriate diagram.

**OR**

b) Describe the biological and thermal treatment technologies of waste disposal.

**Q.3 Answer the following questions in detail (each question carries 07 marks): [14]**

a) Elaborate on Personal Protective Equipment.

**OR**

a) Explain Electrical Safety.

b) Define: "Ergonomics". Describe the cumulative trauma disorders.

**OR**

b) What is a respirator ? Describe different types of respirator.

(P.T.O)

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**Q.4** Answer the following questions in **detail** (each question carries 07 marks): **[14]**

a) Discuss the key elements of noise pollution (Regulation and Control) (Amendment) 2010.

**OR**

a) Enlist and explain the basic techniques employed for noise control.

b) Explain hearing mechanism with suitable diagram.

**OR**

b) What are possible effects of noise? Explain any two effects in detail.

**Q.5** Answer the following **short** questions (each question carry 01 mark): **[14]**

a) Explain Raynaud's syndrome.

b) Describe the four phases of operational response for oil removal.

c) Define: Pyrophorics with suitable examples.

d) Explain sound scales in short.

e) Give the full forms of: (i) MSHA (ii) FWPCA.

f) State the design concepts for aboveground storage tank systems.

g) Define: (i) Fume (ii) Mist.

h) What is the range of frequency in which a man can hear the sound ?

i) How accident prevention can be observed in the industry ?

j) Mention the major routes for chemicals to enter into the body.

k) What is Fire Point ?

l) Draw the diagram of NFPA Fire Diamond.

m) Define: Sound Wave.

n) Mention different methods of risk communication at industry to public and interested parties

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**0805E429**

Candidate's Seat No : \_\_\_\_\_

**M.Sc. (Sem.-II) Examination**

**409**

**Environmental Science**

**May-2017**

**[Max. Marks : 70]**

**Time : 3 Hours]**

**Note: Draw the diagram where ever required.**

**Q.1 Answer the following:**

**[14]**

a) Describe mercury cycle in detail .

**OR**

a) Explain salinity along estuary as well as conservative and non-conservative behavior found in surface water.

b) Explicate the properties of water in detail.

**OR**

b) Elaborate on biogenic and biological excreted product found in natural water.

**Q.2 Answer the following:**

**[14]**

a) Describe the process of accumulation of heavy metals by aquatic organisms.

**OR**

a) Define Buffer and explain it in detail.

b) Explain acidity of water in detail.

**OR**

b) Write a note on (i) The concentration ratio diagram and (ii) Log (concentration) diagram.

**Q.3 Answer the following:**

**[14]**

a) Explain aggregation of colloid and secondary treatment of wastewater.

**OR**

a) Draw pE-pH stability diagram for hydrolysis of  $Fe^{+2}$  and interconversion of  $Fe(OH)_3$  and  $Fe^{+2}$  in aquatic zone.

b) Give an account on weathering process of silicates and iron minerals.

**OR**

b) What are the natural limits of redox in natural waters ?

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**Q.4 Answer the following:**

**[14]**

a) Give significance of remote sensing in hydrospheric study.

**OR**

a) Elaborate on SAR system.

b) Explain the importance of remote sensing in biospheric study.

**OR**

b) Write a note on Geographical Positioning System.

**Q.5 Answer the following in short (one mark for each):**

**[14]**

a) Define: Salinity.

b) What is mean residence time ?

c) Explain the term polyprotic acid.

d) State the electromagnetic spectrum employed in remote sensing.

e) What is chelating agent?

f) Give the full forms of: (i) JERS (ii) MSS.

g) What is zero point charge ?

h) Explain the term Biosphere.

i) What is the range of size of phytoplankton?

j) Define: Association colloids.

k) Give classification of remote sensing techniques.

l) State the main components of water.

m) What is Henry's Law constant for methane?

n) Give the distribution of metal ions present in freshwater and seawater.

## M.Sc. (Sem.-II) Examination

410

## Environmental Science

May-2017

Time : 3 Hours]

[Max. Marks : 70

**Note: Draw the diagram where ever required.****Q.1 Answer the following in detail:****[14]**

a) Write a note on: Chemical weathering of soil.

OR

a) Describe the components of soil.

b) Describe the acid-base reactions and ion-exchange reactions in soil.

OR

b) Sketch and explain the soil profile.

**Q.2 Answer the following in detail:****[14]**

a) Justify: "Industrial and urban wastes are major sources for soil pollution."

OR

a) Write a note on: Sedimentation in any one Indian river.

b) Discuss in detail the various ways in which the pesticides damage environment.

OR

b) Elaborate on the health impacts of soil pollutants.

**Q.3 Answer the following in detail:****[14]**

a) Explain the different types of soil erosion.

OR

a) Explain the control measures of soil erosion.

b) Write a note on: Detrimental effects of soil erosion.

OR

b) Discuss the various mechanisms by which the soil is lost during erosion.

(P.T.O)

E 470-2

**Q.4 Answer the following in detail:**

**[14]**

- a) Write a note on: Determination of soil pH.  
OR  
a) Elaborate on Kjeldhal method for total nitrogen determination.
- b) Write a note on: Determination of nitrate from a soil sample.  
OR  
b) Write a note on: Flame photometer.

**Q.5 Answer the following in short (each carry one mark):**

**[14]**

- a) What are major factors affecting soil formation?  
b) Which properties are indicated by soil colour?  
c) Give the function of micronutrients.  
d) Enlist the passive factors affecting soil formation.  
e) Define: Bulk Density.  
f) What is the role of time in soil formation process?  
g) What is frost wedging?  
h) Enlist various components of urban waste.  
i) What are transitional horizons in soil profile?  
j) What is contour farming?  
k) Sketch the glass electrode for pH measurement.  
l) Give the advantages of glass electrode.  
m) What is tensiometer?  
n) What is the difference between gully and contour?  
o) What is saltation in context of erosion?
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