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Roll No.....

Total No. of Units : 04
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Code No. : 03/302

Third Semester Examination, Dec. 2018

M.Sc. CHEMISTRY

Paper - III

ENVIRONMENTAL CHEMISTRY

Time : 3 Hrs. **Max. Marks : 80**

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question will be answered in 200-250 words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit - I

Q.1 A. Write the reasons for negative lapse rate in troposphere and mesosphere. **(2)**

Q.1 B. Define the term biogeochemical cycle with example. **(2)**

Q.1 C. Explain how earth balances its heat budget. **(4)**

OR

What do you understand by MFC (Microbial Fuel Cell)? How this can be useful in generation of energy from distillery effluents.

Q.1 D. "Micro-organisms play vital role in biodistribution of elements". Explain. **(12)**

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OR

Why is it necessary to use proper waste management technique during establishment of nuclear power plants?

Unit - II

Q.2 A. Define terms 'Lentic' and 'Lotic' with reference to water reservoir. **(2)**

Q.2 B. Show the soil profile with completely labelled diagram and brief explanation. **(2)**

Q.2 C. Pesticides enhance the agricultural yield but disrupt the natural ecosystem, explain. **(4)**

OR

What are the effects of eutrophication?

Q.2 D. Write methods for solid waste treatment in the fields of biomedical and municipal waste management. **(12)**

OR

Explain biodegradability of pesticides. Write methods to achieve biodegradation of pesticides.

Unit - III

Q.3 A. What are anthropogenic sources of air pollution? **(2)**

Q.3 B. Write the components of photochemical smog. Give the favourable conditions for it's formation in the atmosphere. **(2)**

Q.3 C. 'Existence of life in Earth is attributed to green house effect; justify the statement. **(4)**

OR

Ozone layer thinning is most prominent over the polar region of Earth. Why?

Q.3 D. Explain the devices that can be used to control particulate emission in the atmosphere. **(12)**

OR

For continuous monitoring of NO_X in air which techniques can be used? Explain providing complete procedure.

Unit - IV

Q.4 A. Define chlorine demand and residual chlorine. **(2)**

Q.4 B. Name four instrumental techniques that are frequently applied for the analysis of metal contamination in water samples. **(2)**

Q.4 C. Describe Winkler method for DO determination. **(4)**

OR

Describe the methods for determination of total, temporary and permanent hardness.

Q.4 D. Explain analysis methods for total nitrogen and total phosphorus in the soil. **(12)**

OR

With reference to metals Hg, Cd and As explain biochemical effects of heavy metal contamination.

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