

QP Code : 76286

(3 Hours)

[Total Marks : 75

- N. B. :** (1) All questions are **compulsory**.
(2) Use of log tables or non-programmable calculator is permitted.

1. Attempt any **five** of the following 15

- (a) Explain the terms "primary air pollutants" and "secondary air pollutants"?
- (b) Discuss the physical and chemical parameters determining the water quality.
- (c) What are the advantages of using microwave for chemical synthesis?
- (d) Give the objectives of environmental audit.
- (e) What is alloying? Why is it required?
- (f) Justify - "zone refining is effective method for the purification of solids".
- (g) What are different parameters used for expressing detergent quality?
- (h) Discuss classification of pesticides.

2. (a) Explain the West- Gaeke method for the determination of SO_2 in air. 5
How can the method be used for monitoring the SO_2 level in the atmosphere?

OR

- (a) What is "BOD" and "COD" of effluent? How can they be correlated? 5
- (b) What is solid waste management? Give its importance. 5

OR

- (b) With the help of suitable flow diagram, explain industrial effluent treatment plant. 5
- (c) 200 cm^3 of water sample required 10.6 cm^3 and 2.6 cm^3 of 0.011M EDTA before and after the treatment respectively with an ion exchange resin for removal of hardness. Calculate the hardness removed by the resin in terms of ppm of CaCO_3 . (At wt Ca = 40, C=12, O = 16) 5

3. (a) Discuss the steps taken for environmental assessment for petroleum industry located near residential areal. 5

OR

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VA-Con. 1377-17.

- (a) What is thermal pollution? Explain the role of cooling towers. 5
- (b) What is noise pollution? Why is it taken seriously? 5
- (b) Why is green chemistry a need of time? 5
- (c) Calculate the atom economy of acid hydrolysis of methyl acetate considering methanol as main product. 5
4. (a) Attempt any Two of the following 10
- (i) Explain opening of galena ore? Describe the method for the determination of lead in galena.
 - (ii) What is the need of the proper sampling in case of economically important ores.
 - (iii) Distinguish between vacuum fusion and vacuum extraction. Give applications of any one of them.
 - (iv) What are the different types of copper based alloys? Discuss the method of estimation of copper in bronze.
- (b) A sample of brass was found to contain 18% of Zinc and 41.5% of copper. 550 mg of sample was dissolved and the resulting solution was diluted to 250 cm³, of this 50 cm³ solution was electrolyzed with platinum electrodes. Calculate the amount of copper deposited on the cathode. (At wt Cu = 63.5). 5
5. Attempt any **three** of the following 15
- (a) What is the role of binders in paints? Describe methods for binder analysis.
 - (b) Suggest a method for separation and identification of inorganic pigments.
 - (c) How are organochlorine pesticides present in the sample determined?
 - (d) Explain pyrolysis GC with its applications in analysis of polymers with suitable example.
 - (e) Explain the following terms with respect to petroleum products:
 - (i) Doctor test (ii) Flash point (iii) Fire point