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ICS 404

I Semester M.Sc. Degree Examination, November/December 2019

INDUSTRIAL CHEMISTRY

Environment Health & Safety Measures

Time : 3 Hours]

[Max. Marks : 70

Instructions :

- 1) Answer any five questions from Part A and any five questions from Part B.
- 2) Figures to the right indicate marks.

PART – A

Answer **any five** questions :

(5 × 2 = 10)

1. (a) What are peroxyacyl nitrates (PAN)? Explain.
(b) Write the chemical reactions involved in the formation of acid rain.
(c) A 25.0 mL water sample required 12.5 mL of 0.025 N AgNO₃ solution in a titration using K₂CrO₄ indicator. Calculate the amount of Cl⁻ present in water sample. (Given A of Cl⁻ = 35.5)
(d) Mention the minimum standards of potable water.
(e) What is ISI and MINAS?
(f) What is chemical warfare? Comment on it.
(g) Comment on the segregation of laboratory waste.
(h) What is incineration of chemicals? Give its significance.

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PART – B

Answer **any five** full questions :

(5 × 12 = 60)

2. (a) List the common air pollutants and mention their effects on health.
(b) Discuss SO_x sources and their control techniques.
(c) How are the greenhouse gases contribute to global warming? Explain. **(5 + 4 + 3)**
3. (a) Discuss the prevention of particulate matter in air by using (i) settling chambers and (ii) electrochemical precipitators.
(b) Discuss NO_x sources and their control techniques.
(c) Write a brief note on various environmental segments. **(5 + 4 + 3)**
4. (a) Discuss the maximum containment levels of inorganic and organic chemicals in drinking water.
(b) With suitable chemistry, describe the procedure for the determination of different forms of nitrogen in polluted water.
(c) Write a note on radiological contaminants. **(5 + 4 + 3)**
5. (a) What is hardness of water? Explain its determination by titration method.
(b) Explain the measurement of chloride and sulphate content in water.
(c) Write a note on microbial contaminants. **(5 + 4 + 3)**
6. (a) Write the ISO/IEC 17025 general requirements for the competence of testing and calibration laboratories.
(b) Discuss the importance of quality control and assurance in pharmaceutical industries.
(c) Mention about laws related to quality control. **(5 + 4 + 3)**
7. (a) Explain the basics of ISO 9000 and ISO 14000 series.
(b) Comment on the basic concepts of quality control in raw materials, production and finished products.
(c) Write a note on chemical weapons. **(5 + 4 + 3)**



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8. (a) Discuss the safety and protective measures in a chemical laboratory.
- (b) Discuss the IPR issues and their significance.
- (c) Write a note on personal protective equipments. **(5 + 4 + 3)**
9. (a) Explain the emergency measures required during 'radiation spills' and 'biohazard spills'.
- (b) Discuss the importance of data management and its security.
- (c) Comment on the steps to be taken during transport of hazardous chemicals. **(5 + 4 + 3)**
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