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Sr. No 019301

December 2023

B. Tech (ENV) ~~B. Tech~~ III SEMESTER

Environmental Chemistry (PCC-EED-201)

Time: 3 Hours

Max. Marks: 75

- Instructions:**
1. It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.
 2. Answer any four questions from Part -B in detail.
 3. Different sub-parts of a question are to be attempted adjacent to each other.

PART -A

- Q1 Write about (a) Radioactivity (1.5)
(b) Kinetics of chemical reactions (1.5)
(c) Acid-base equilibria (1.5)
(d) Precipitation (1.5)
(e) Redox Reactions (1.5)
(f) Base Saturation (1.5)
(g) Stratosphere (1.5)
(h) Sampling (1.5)
(i) Green chemistry (1.5)
(j) Sustainable Materials (1.5)

PART -B

- Q2 (a) Convert 140 mg/cc of SO₂ concentration into ppm and ppb. (10)
(b) Write about the structure of atmosphere. (5)
- Q3 (a) Differentiate between ionic and covalent bonds. (5)
(b) What is the Normality of a 3.75 M H₂SO₄ solution with a density of 1.230 g/mL? (10)
- Q4 Explain about Quality assurance and quality control in environmental analysis in detail. (15)
- Q5 (a) Explain sodium absorption ratio. (5)
(b) Write about the role of Organic matter, Nitrogen, Phosphorus and potassium in soil chemistry. (10)
- Q6 (a) Calculate the carbonate & non-carbonate hardness of a water sample if the total hardness and alkalinity of sample are 300 mg/L and 100 mg/L (as CaCO₃) respectively. (5)
(b) Effluent from an industry 'A' has a pH of 4.2. The effluent from another industry 'B' has double the hydroxyl ions concentration than the effluent from industry A. Calculate the pH of effluent B. (10)

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Q7 Explain the principles of green chemistry and their importance, Life cycle (15) assessment and environmental impact assessment in detail.

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R. J. ... (S.N.V.) ... III SEMESTER
Environmental Chemistry (16-119-2011)

PART A

- Q1 Write about (a) Radioactivity
- (b) Kinetics of chemical reactions
- (c) Acid base equilibria
- (d) Free energy
- (e) Redox reactions
- (f) Base catalysis
- (g) Photosynthesis
- (h) Soaping
- (i) Green chemistry
- (j) Sustainable Materials

PART B

- Q2 (a) Convert the range of SO₂ concentration into ppm and ppb
- (b) Write about the structure of atmosphere
- Q3 (a) Talk about the relationship between acid and carbonic acids
- (b) What is the molarity of a 10% H₂SO₄ solution with a density of 1.830 g/mL
- Q4 Explain about GOST, assurance and quality control of environmental analysis in detail
- Q5 (a) Explain sodium zeolite softening
- (b) Write about the role of organic matter, nitrogen, phosphorus and potassium in soil fertility
- Q6 (a) Calculate the carbonate & non-carbonate hardness of a water sample if the total hardness and alkalinity of sample are 300 mg/L and 180 mg/L as CaCO₃ respectively
- (b) Effluent from an industry A has a pH of 2. The effluent from another industry B has double the hydroxyl ion concentration than the effluent from industry A. Calculate the pH of effluent B

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