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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION – December 2018
B.Tech VII Semester

COURSE CODE: 14M31CE114 **MAX. MARKS: 35**
COURSE NAME: EIA AND RISK MANAGEMENT
COURSE CREDITS: 03 **MAX. TIME: 2 Hrs**

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Assume suitable data if required.*

Q1. a) Define "Pollutant Standard Index (PSI)". What pollutants are considered in estimating PSI and why are they considered? **[02 Marks]**

b) Explain the procedure used to calculate PSI **[03 Marks]**

Q2. a) Define the terms "Environmental Index" and "Environmental Indicator". Explain briefly about the Delphi technique used in the development of WQI. **[02 + 03 Mark]**

b) Groundwater sample was tested for its quality for drinking purpose. Estimate the "Water Quality Index" (WQI) for the data given below and comment on your results. **[05 Marks]**

Sl.No.	Water Quality Variable	Measurement	Sub-index Value	Importance Weights
1.	pH	8.5	70	0.1
2.	Total Hardness as CaCO3	1060.0	50	0.09
3.	Calcium	174.0	30	0.05
4.	Magnesium	229.0	30	0.04
5.	Bicarbonates	550.0	55	0.05
6.	Chlorides	662.0	90	0.05
7.	Total Dissolved Solids	1500.0	60	0.1
8.	Fluoride	3.2	50	0.15
9.	Manganese	5.5	70	0.05
10.	Nitrate	261.0	90	0.12
11.	Iron	4.7	50	0.1
12.	Sulphates	174.0	50	0.1

Descriptor Words	Excellent	Good	Poor	Very Poor	Unsuitable for Drinking
Range	<50	50 - 100	100 - 200	200 - 300	>300

Q3. a) Define "Emission Factor" and its significance in prediction and assessment of air quality impacts **[02 Marks]**

b) Estimate the quantity of fugitive dust emissions from an unpaved road, per vehicle-mile of travel using the following empirical expression: **[03 Marks]**

$$E = k^*(5.9)\,(s/12)\,(S/30)\,(W/3)^{0.7}\,(w/4)^{0.5}\,\{(365-p)/365\}$$

where E = emission factor in pounds (lb) per vehicle miles traveled (VMT)

Given:

k = particle size multiplier (dimensionless) = 0.36 for PM_{10}
Silt content of road surface material = 12%
Average vehicle speed = 25 mph
W = mean vehicle weight = 20 tons
w = mean number of wheels – assumed to be 4
p = number of days with at least 0.01 inches of precipitation per year – average of 37 days per year

Q4. a) Describe the conceptual approach for addressing Air Environment Impacts. **[03 Marks]**

b) What mitigation measures would you suggest to reduce impact of activities on Air Environment? **[02 Marks]**

Q5. a) Define the terms: **[02 Marks]**

I. Waste Load Allocation (WLA) and
II. Best Management Practice (BMP)

b) Wastewater generated from News and Paper Print Plant in Tamil Nadu is as follows: **[03 Marks]**

Category	Wastewater Generation, m^3/day	BOD_5, mg/L
Pulp Mill (Hardwood, Chemical bagasse and Mechanical Bagasse)	21480	200
Paper Mill	13685	377

Calculate the population equivalent based on the organic constituents in the above wastewater.

Q6. a) Mention at least 5 projects/activities which have significant impacts on surface water environment. Mention some of the salient features of "QUAL – IIE" model? **[03 Marks]**

b) According to EPA, what is meant by "Risk Assessment"? What are the factors on which risk depends? **[02 Marks]**