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TEST -3 EXAMINATION (May-2019)

B. Tech. (VIII- SEM.)

COURSE CODE: 14M31CE215

MAX. MARKS: 35

COURSE NAME: SURFACE WATER QUALITY MANAGEMENT

COURSE CREDITS: 03

MAX. TIME: 2 Hr

*Note: All questions are compulsory. Calculator allowed. Graph Paper allowed.*

Q.1. a) what are the objectives of undertaking surface water quality monitoring? Under surface water quality management plan, what procedure you would follow to assess the nature and magnitude of the pollution in a river water body. [2 Marks]

b) Distinguish between: [4 Marks]

- i) Baseline Station and Trend Station
- ii) Time-Composite and Flow-Composite sample

c) Provide information on sample collection method, container type, preservation and holding time for the following parameters: [3 Marks]

Parameter	Sample collection method	Container type	Preservation	Holding time
Total Suspended Volatile Solids				
Kjeldahl Nitrogen				
Chlorophyll a				

Q.2. a) What are the various options available for restoration of water quality in surface water bodies? Emphasize your answer on waste minimization and clean technologies [2 Marks]

b) Write a note on Ganga Action Plan [4 Marks]

Q.3. a) What are the assumptions made in deriving the DO-BOD relationship in streams (Streeter – Phelps Model). What are the limitations of the model? [5 Marks]

b). (a) if the per capita contribution of suspended solids and BOD is 90 gm and 55 gm, find the population equivalents of:-

- (i) A combined system serving 1000 persons and having 75 gm per capita daily of BOD and

(ii) 40,000 litres daily of industrial waste water containing 1800 mg/l of suspended solids. [3 Marks]

Q.4. a) what do you mean by “Eutrophication” and what are the factors responsible for Eutrophication of lakes. [3 Marks]

b) How do you measure water clarity/turbidity in surface waters? Give description of the equipment used with the help of a neat sketch. [2 Marks]

Q.5. a) How thermal stratification in lakes affects DO. Discuss with the help of neat figures. [2 Marks]

b) Discuss the sampling procedures adopted for water quality monitoring in lakes [2 Marks]

c) BOD tests performed on 5ml samples of river through 300 ml standard BOD bottles at different times have yielded the following results. Compute:-

(i) The value of BOD rate constant

(ii) The value of BOD<sub>5</sub>

(iii) The value of ultimate BOD

Bottle No.	Initial DO (mg/l)	Incubation period in days	Final DO (mg/l)
1	8.4	0.5	7.45
2	8.4	1.0	6.7
3	8.4	1.5	6.1
4	8.4	2.0	5.5
5	8.4	3.0	4.6
6	8.4	5.0	3.6

[3Marks]