

**B.Tech. Civil (Construction Management) /
B.Tech. Civil (Water Resources Engineering)**

00102

Term-End Examination

December, 2016

**ET-507(A) : POLLUTANTS AND WATER
SUPPLY**

Time : 3 hours

Maximum Marks : 70

Note: Answer any *five* questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. (a) Discuss in detail the various components of our environment. 7
- (b) Explain briefly, the methods followed for the disposal of solid waste. 7
2. (a) A 20.0 ml sample of water mixed with dilution water to fill the BOD bottle of 300 ml was found to have an initial DO of 7.0 mg/l; and after 5 days of incubation its DO was 4.5 mg/l. Compute its BOD₅ at 20°C. 7

- (b) Explain the significance of the following from the point of view of water quality criteria : 7

- (i) Turbidity
- (ii) Chlorides
- (iii) Hardness
- (iv) Iron
- (v) Phenols
- (vi) Fluoride
- (vii) Pathogens

3. (a) The laboratory analysis of an industrial waste water sample indicated an ultimate BOD of 750 mg/l and rate constant (k) of 0.20/d at 20°C. Calculate the 5-day BOD at 20°C and at 30°C. 8

- (b) What are the desirable limits of the following for drinking water as per Indian drinking water standards ? 6

- (i) TDS
- (ii) Lead
- (iii) Turbidity
- (iv) Fe
- (v) Nitrates
- (vi) Calcium

4. (a) Discuss the factors that influence per capita demand of water. 6
- (b) What are the points to be considered in selecting a particular source of water for a town or city ? Explain briefly. 6
- (c) Enumerate the components of a water intake structure. 2
5. (a) What are the physical and chemical treatments for purification of water for drinking purposes ? Explain. 10
- (b) Define surface loading and detention period in sedimentation basin. 4
6. (a) Draw a cross-section of a slow sand filter bed. 4
- (b) Distinguish between slow sand and rapid sand gravity filters. 6
- (c) Explain the factors influencing the Disinfection Efficiency in brief. 4
7. (a) Write the different types of valves used in a water pipeline. Give their respective purposes also. 6
- (b) Discuss the different joints in water supply pipeline with suitable sketches. 8

8. Write short notes on any **four** of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Bib Cocks
 - (b) Methods of Distribution
 - (c) Reciprocating Pumps
 - (d) Reverse Osmosis
 - (e) Bleaching Powder
 - (f) Coagulation
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