

22504

23124

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks**1. Attempt any FIVE of the following :****10**

- (a) Define :
 - (i) Population Forecasting
 - (ii) Intake Structure
- (b) State two factors governing location of an Intake Structure.
- (c) State the acceptable limits of drinking water for the below listed parameters according to IS-10500
 - (i) Fluorides
 - (ii) Hardness
 - (iii) pH
 - (iv) Chlorides
- (d) State the principle of sedimentation with coagulation.
- (e) State the location and function of Reflux valve.
- (f) Define Self Cleansing Velocity.
- (g) State any two objects of sewage treatment plant.

2. Attempt any THREE of the following :**12**

- (a) Draw flow diagram of water treatment plant.
- (b) Estimate probable population for data provided for year 2031 and 2041 using incremental increase method.

Year	1991	2001	2011	2021
Population	9,876	10,865	11,509	13,852



- (c) List the various types of demand of water with their percentage for a town.
- (d) Give comparison between Slow Sand filter and Rapid Sand filter on any eight points.

3. Attempt any THREE of the following : 12

- (a) Define Disinfection and enlist the different methods of disinfection.
- (b) State and explain the theory of filtration.
- (c) Explain Jar Test with neat labelled sketch.
- (d) Define valve and enlist the different types of valves.

4. Attempt any THREE of the following : 12

- (a) State Break Point chlorination and its importance with neat sketch.
- (b) Define the terms (i) B.O.D. (ii) C.O.D.
- (c) Differentiate between Dead end and Circular system.
- (d) Enlist any eight types of pipes used for conveyance of water.
- (e) Explain with neat sketch two pipe system of plumbing.

5. Attempt any TWO of the following : 12

- (a) Define trap and draw labelled sketch of any two trap and state two qualities of good trap.
- (b) Define Aeration. Enlist the objects and different methods of Aeration.
- (c) Draw sketch of Drop manhole and state its location, spacing and construction details.

6. Attempt any TWO of the following : 12

- (a) State the systems of sewerage. Describe separate system with merits and demerits.
 - (b) Explain working of septic tank with sketch.
 - (c) State the impurities removed in skimming tank and state how it helps in improving further biological treatment.
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