

22504

24225

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) Design Period (ii) Intake Structure.
- (b) Enlist any two source of Surface and Sub-surface water.
- (c) State any two chemical & physical characteristics of water.
- (d) Define Coagulation & name any two Coagulant commonly used.
- (e) State location and function of Scour valve.
- (f) Define : (i) Self cleansing velocity
(ii) Sewer
- (g) State the function of : (i) Soil Pipe (ii) Vent Pipe.



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

- (a) Explain the factors affecting location of Intake Structure.
- (b) Draw neat labelled flow diagram of municipal water treatment plant.
- (c) Give comparison between Rapid sand filter and slow sand filter. (any eight points)
- (d) Define the terms-Sullage, Refuse, Garbage and Rubbish.
- (e) Enlist any eight types of Pipes used for conveyance of water.

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

- (a) State the factors affecting rate of water demand.
- (b) Calculate the population of a town at 2031 using Geometrical increase method with following census data :

Year	1971	1981	1991	2001	2011
Population	1,48,000	1,55,000	1,72,000	1,88,000	1,96,750

- (c) Define Aeration. State objectives of it.
- (d) What is Break point chlorination. Explain with neat sketch.
- (e) Explain two pipe system with neat labelled sketch.

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

- (a) State the precautions to be taken for collection of water sample.
- (b) List any two advance water treatment and explain any one in brief.
- (c) Explain theory of filtration.
- (d) Describe Expansion joint with neat sketch.
- (e) State the objects of Sewage treatment.

5. Attempt any TWO of the following : 12

- (a) What is system of Sewerage ? Describe separate system with its merits and demerits.
- (b) Draw sketch of Drop Manhole and state its location, spacing and construction details.
- (c) Draw flow diagram of activated sludge process and explain the working of the same.

6. Attempt any TWO of the following : 12

- (a) Differentiate between Gravity distribution system and Pumping distribution system. (any six points)
 - (b) Define Trap. State qualities of a good trap. Also state any two types of it.
 - (c) Explain working of Trickling filter with neat sketch.
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