

# 22504

**12526**

**3 Hours / 70 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Answer each next main Question on a new page.
- (3) Illustrate your answers with neat sketches wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

- 1. Attempt any FIVE of the following :** **10**
- a) Define intake structure and types of intake structures.
- b) Define anaerobic process.
- c) Draw a neat sketch of Dead end System.
- d) List out different types of sewers. (Any four)
- e) List out different types of pipes used for conveyance and distribution of water. (Any four)
- f) Define trap with its function.
- g) State the objectives of water supply scheme.

P.T.O.

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

- a) Explain various factors affecting the rate of water demand.
- b) Define aeration and state its objectives.
- c) State the site selection criteria for intake structure.
- d) The following data is collected regarding population. Calculate demand of water for small residential area/colony and forecasting the population of area after 3 decades by Arithmetical increase method.

Year	1961	1971	1981	1991	2001
Population	4320	5200	7120	8000	9150

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

- a) Differentiate between slow sand filter and rapid sand filter. (Any eight points)
- b) Draw flow diagram of water treatment plant for metropolitan city.
- c) Explain Gravity method of distribution of water with a neat sketch.
- d) Explain the procedure for jar test with a neat sketch.

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

- a) Explain break point chlorination with a neat sketch.
- b) State the various types of valves used in distribution of water along with their use and location.
- c) State the importance of building sanitation.
- d) Explain grid iron system of distribution of water with a neat sketch.
- e) Draw a neat labelled sketch of a septic tank.

- 5. Attempt any TWO of the following :** **12**
- a) State the objectives of water treatment plant. (Any six)
  - b) Describe in detail, the procedure of laying of sewer.
  - c) Differentiate between one pipe plumbing and two pipe plumbing system with neat labelled sketch.
- 6. Attempt any TWO of the following :** **12**
- a) Draw a neat and labelled sketch of Drop Manhole.
  - b) Differentiate between BOD and COD. (Any six points)
  - c) Describe working of trickling filter with a neat sketch.
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