

314314

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) 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 wholesome water.
- (b) State the principle of sedimentation with coagulation.
- (c) Enlist different forms of chlorination.
- (d) List any four types of pipes used for conveyance of water.
- (e) Define (i) Sewage (ii) Sullage.
- (f) State any two significance of BOD.
- (g) State two functions of Grit Chamber.

2. Attempt any THREE of the following :

12

- (a) Define Intake structure. State its types and draw any one.
- (b) State Permissible & Desirable limits of following parameters for water :
(i) Temperature (ii) Chlorides (iii) MPN (iv) Total Solids.
- (c) State Jar Test to determine approximate dose of coagulant with the help of figure.
- (d) Differentiate between Gravity and Pumping Distribution System on any four points.



3. Attempt any THREE of the following : 12

- (a) Define Aeration. Enlist any four objects of Aeration.
- (b) Compare between Rapid Sand Filter & Slow Sand Filter with respect to :
 - (i) Rate of filtration (ii) Method of cleaning (iii) Cost (iv) Period of cleaning
- (c) What are Valves ? State its types with their suitable location to use.
- (d) Enlist any four principles regarding design of building drainage.

4. Attempt any THREE of the following : 12

- (a) Draw the layout of drainage plan for building sanitary fittings.
- (b) Draw a labelled sketch of manhole stating their location.
- (c) State Grid Iron System with a neat sketch.
- (d) Differentiate between BOD & COD.
- (e) State any four objects of sewage treatment.

5. Attempt any TWO of the following : 12

- (a) The following is the population data for a town. Water supply is to be designed for the town with a design period of 30 yrs. Find the population at the end of year 2040 by incremental increase method.

Year	1970	1980	1990	2000	2010
Population	35,000	37,500	43,500	52,000	57,500

- (b) State types of chlorination & state significance of residual chlorine.
- (c) Define Trap. State the functions of trap and draw sketches of P, Q & S trap.

6. Attempt any TWO of the following : 12

- (a) Explain working of Septic Tank & state its two advantages & disadvantages.
 - (b) State working of clariflocculator with a neat sketch.
 - (c) Draw a neat sketch of one pipe system in case of house drainage work and state its advantages.
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