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25226

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) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) 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) Enlist any two sources of surface and subsurface water.
- (b) State any two physical and chemical characteristics of water.
- (c) Define demand of water.
- (d) Define Disinfection.
- (e) State the purpose of coagulation (Any two).
- (f) State any four types of pipes used for conveyance of water.
- (g) Enlist different types of traps.

2. Attempt any THREE of the following :

12

- (a) The population of a city from census record for last four decades are given in following table. Calculate population at the end of the year 2041 by, Incremental Increase Method.

Year	1971	1981	1991	2001
Population	1,42000	1,62000	1,78520	1,83652



- (b) Draw a labelled sketch of river intake and explain in brief.
- (c) State and explain four factors affecting demand of water.
- (d) Describe electrolysis process in advance water treatment.

3. Attempt any THREE of the following : 12

- (a) Explain bell and spigot joint with sketch.
- (b) Describe grid iron system layout of distribution of water with suitable sketch.
- (c) Enlist the different methods of distribution of water. Explain any one with sketch.
- (d) Draw neat and labelled sketch of Drop Manhole.

4. Attempt any THREE of the following : 12

- (a) Explain the procedure of laying of sewers.
- (b) Differentiate one pipe and two pipe system of plumbing (Any four points).
- (c) Draw the layout plan of drainage system for the residential building and label the components.
- (d) Draw neat sketch of Oxidation Pond.
- (e) Explain Activated Sludge Process with respect to sewage treatment.

5. Attempt any TWO of the following : 12

- (a) Explain Zeolite process and Reverse Osmosis treatment.
- (b) Explain with neat labelled sketch of cross-section of Rapid Sand Gravity Filter.
- (c) How can aeration improve water quality ? Explain any one method of aeration with neat sketches.

6. Attempt any TWO of the following : 12

- (a) List the different types of sewerage systems and explain any one.
 - (b) Explain working of trickling filter with a neat sketch.
 - (c) Draw the flow diagram of sewage treatment plant and state functions of each unit.
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