22504

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

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) Define intake structure. Enlist different types of intakes.

(b) List any four sources of surface water.

(c) Enlist four types of valves provided in water supply scheme.

(d) Define self-cleansing velocity and non-scouring velocity.

(e) Define the terms B.O.D. and C.O.D.

(f) Enlist different types of pipes used for water distribution purpose.

(g) State any four objects of sewage treatment.

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

(a) Explain the need for analysis of water to check its quality.

(b) State the acceptable limits of drinking water for below listed parameter according to IS-10500 :

(i) Fluoride

(ii) Chlorides

(iii) Hardness

(iv) Colour

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

Year	1951	1961	2001	2011
Population	1,00,000	1,09,000	1,16,000	1,28,200

(d) Define sedimentation. State different types of sedimentation tanks.

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

(a) Explain jar test to determine approximate dose of coagulant with the help of figure.

(b) Draw flow diagram of water treatment planet.

(c) What are valves ? Why are they required ? State any two types of valves with their suitable locations.

(d) Explain break point chlorination with neat labelled sketch.

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

(a) Describe electrolysis process in advance water treatment.

(b) Explain bell and spigot joint with sketch.

(c) What are the various systems of distribution of water in a city ? Explain dead end system with suitable sketch.

(d) What is two pipe system of plumbing ? What are its advantages ?

(e) Draw layout of sewage treatment plant.

5. Attempt any TWO of the following : **12**

(a) How can aeration improve water quality ? Explain any two methods of aeration with neat sketches.

(b) Enlist the essential qualities of a good trap. Draw neat labelled sketch of various types of traps.

(c) Explain the procedure for laying of sewers.

6. Attempt any TWO of the following : **12**

(a) Compare one pipe and two pipe system of plumbing on any six points.

(b) Differentiate between :

(i) Aerobic and anaerobic process

(ii) BOD and COD

(c) Explain working of trickling filter with a neat sketch.