

22504

21222

3 Hours / 70 Marks

Seat No.

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15 minutes extra for each hour

- 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 demand of water.
- (b) List sub-surface of sources of water.
- (c) Define coagulation.
- (d) List any four types of pipes used for conveyance of water.
- (e) Name any four types of pipe joints.
- (f) Define self-cleansing velocity.
- (g) Define Trap.

2. Attempt any THREE of the following : 12

- (a) Explain the various water demands and give values of each.
- (b) Explain jar test. State its significance.
- (c) Draw a neat labelled sketch of drop manhole.
- (d) Explain activated sludge process with a flow chart.

3. Attempt any THREE of the following : 12

- (a) State the IS standards for drinking water for (i) pH (ii) Turbidity (iii) Total solids (iv) MPN
- (b) Explain principle of sedimentation with coagulation. Name any two types of coagulants.
- (c) Describe grid iron system layout of distribution of water with suitable sketch.
- (d) Draw the layout drainage plan for building sanitary.

4. Attempt any THREE of the following : 12

- (a) State the precaution required to be taken during water sampling.
- (b) Draw a flow diagram of water supply scheme.
- (c) State the advantages and disadvantages of radial system of distribution of water.
- (d) State the necessity and importance of sanitation.
- (e) Explain combined system of distribution of water.

5. Attempt any TWO of the following : 12

- (a) Explain the working of rapid sand filter with the help of a neat labelled sketch.
- (b) Explain the procedure for laying of sewers.
- (c) Explain the working of trickling filter with neat sketch.

6. Attempt any TWO of the following : 12

- (a) Define disinfection. Enlist its various methods and explain any one.
 - (b) State suitability of two pipe plumbing system and draw a labelled sketch on it.
 - (c) Explain sludge digestion tank with neat sketch.
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