

17503

21819

3 Hours / 100 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. a) **Attempt any THREE of the following:** **12**
 - (i) State the importance of Public Health Engineering.
 - (ii) State the factors governing the location of an intake structure.
 - (iii) State the importance and necessity of sanitation.
 - (iv) Differentiate between aerobic and anaerobic process.

- b) **Attempt any ONE of the following:** **6**
 - (i) Explain jar test with neat labeled sketch.
 - (ii) Draw general layout and flow diagram sewage treatment plant.

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- 2. Attempt any FOUR of the following:** **16**
- a) Draw flow diagram of water supply scheme.
 - b) List of sources of water.
 - c) Explain orthotolidine test with neat sketch.
 - d) State different types of valves in water supply and explain working of any one valve with sketch.
 - e) Explain with sketch two pipe system of plumbing.
 - f) Draw the sketch of dropmanhole with their components.
- 3. Attempt any FOUR of the following:** **16**
- a) State the factor's affecting rate of demand.
 - b) Explain the necessity of ground water recharging.
 - c) Explain rapid sand filter with neat labeled sketch.
 - d) Draw the layouts of distribution of water:
 - (i) Dead end system
 - (ii) Grid iron system
 - e) Explain recycling and reuse of domestic waste.
 - f) (i) Define:
 - 1) Sewage
 - 2) Sullage
 - (ii) List types of sewage.

- 4. a) Attempt any THREE of the following:** **12**
- (i) State the IS standards of following for drinking water.
 - 1) PH value
 - 2) Fluoride
 - 3) Hardness
 - 4) Chlorides.
 - (ii) State the advantages and disadvantages of radial system of distribution of water.
 - (iii) Explain:
 - 1) Self cleaning velocity
 - 2) Non scouring velocity
 - (iv) Draw the drainage plan for building sanitary fittings.
- b) Attempt any ONE of the following:** **6**
- (i) Explain advanced water treatment for
 - 1) Water softening
 - 2) Defluoridation technique
 - (ii) Explain working of septic tank with sketch.
- 5. Attempt any FOUR of the following:** **16**
- a) Enlist the methods of population for casting and explain any one.
 - b) State applications of chlorine and state forms of chlorine.
 - c) Explain gravity pumping with sketch
 - d) Define:
 - (i) Water pipe
 - (ii) Rain water pipe
 - (iii) Soil pipe
 - (iv) Vent pipe
 - e) State the factor's affecting on sewer design.
 - f) Explain girt chamber with neat labeled sketch.

6. Attempt any FOUR of the following:**16**

- a) State and explain theory of filtration.
 - b) Enlist the types of traps and draw the sketch of any one trap.
 - c) State the qualities of good trap.
 - d) State any four Norm's of Maharashtra Pollution Control Board.
 - e) State the impurities removed in skimming tank and state how it help in improving further biological treatment.
 - f) Describe rain water and sewage collection system for residential building.
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