

Total No. of printed pages = 5

Cv-602/EE/6th Sem/2018/J/A

ENVIRONMENTAL ENGINEERING

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer *all* the questions from PART – A any *five* questions from PART – B

PART – A

Marks – 25

1. Fill up the blanks : 1×10=10
- (a) The quantity of water required in litres per number per day in case of domestic animal cow is _____ litres.
- (b) The quantity of water required for a person for drinking purpose is _____ litres per day.
- (c) Lakes or streams are _____ sources for water supply schemes.

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- (d) Surface source is the primary _____ of water supply scheme.
- (e) Infiltration galleries are _____ sources of water.
- (f) The spacing of wells should be a distance equal to _____ of circle of influence.
- (g) Turbidity is a state of _____ water pollution.
- (h) Temperature is a _____ water pollution.
- (i) Black or brown colour of water is due to the presence of _____ in water.
- (j) Sedimentation with coagulation removes a large percentage of _____ particles in raw water.

2. Write true or false : 1×10=10

- (a) Chlorine does not remove bacteria from water.
- (b) Dechlorination means removal of zero chlorine from water.

- (c) Application of chlorine beyond the stage of break point is not super chlorination.
- (d) Chlorine when added to the raw water at more than one point is known as double chlorination.
- (e) When chlorine is added to the raw water before any treatment, it is known as psychochlorination.
- (f) Hard water never causes corrosion and incrustation of pipes and plumbing fixtures.
- (g) Hard water increases fuel costs.
- (h) Lime-soda process cannot remove permanent hardness of water.
- (i) Zeolite process removes permanent hardness of water.
- (j) Bleaching powder is a chlorinating agent.

3. Choose the correct words : 1×5=5

- (a) Temporary hardness of water is known as carbonate hardness / non-carbonate hardness.
- (b) Permanent hardness of water is known as carbonate hardness / non-carbonate hardness.

- (c) Reverse osmosis is used to remove temporary / permanent hardness of water.
- (d) Manhole is a collection chamber / re-collection chamber / drying chamber / inspection chamber .
- (e) Typhoid is caused by *Salmonella typhi* / egg / fish / mosquito.

PART – B

Marks – 45

Answer any *five* questions.

1. Explain the factors those effect the rate of demand of water. 9
2. What is the general classification of wells ? Explain them. 9
3. What are the requirements of potable water ? Cite five reasons for analysis of water. 4+5=9
4. What are the different types of filter ? Explain gravity type rapid sand filter. 9

5. What is break point chlorination ? Explain. 9
6. Explain with sketches one-pipe, two-pipe and single stack system of building sewerage. $3 \times 3 = 9$
7. Compare between conservancy and water carriage systems of carrying refuse. 9
8. Write short notes on drop manholes and flushing tanks. 9
9. Explain self purification of natural waters. 9