

Code No: R05320102

R05**Set No. 2**

III B.Tech II Semester Examinations, December 2010
ENVIRONMENTAL ENGINEERING-I
Civil Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What is turbidity and how turbidity is measured using Jackson turbidity water.
 (b) Explain about the physical water quality parameters and their standards for potable water. [8+8]
2. (a) Design a plain sedimentation tank for a town with a population of 50000 provided with per capita water supply of 200lit. Assume surface overflow rate as $20 \text{ m}^3/\text{m}^2/\text{day}$.
 (b) Draw the neat sketch of a circular radial up flow plain sedimentation tank and identify the various components. [8+8]
3. (a) Explain the Hardy Cross method used for pipe network analysis in water distribution system.
 (b) A pipe network consists of the following pipes:

Pipe	Length (metre)	Diameter (cm)	Friction factor
AB	400	30	0.014
BC	600	30	0.010
AD	500	40	0.012
DC	500	25	0.011

If flow at A is $1.0 \text{ m}^3/\text{sec}$, while outflows at B, C and D are 0.3, 0.5 and $0.2 \text{ m}^3/\text{sec}$, respectively, find the flow in each pipe taking only one trial. The pressure at A is 100 m of water. [8+8]

4. Write short notes on the following:

- (a) Humus tank
- (b) Contact bed
- (c) Dunbar filter
- (d) Bio-filter.

[4+4+4+4]

5. Write short notes on:

- (a) Estimating the design sewage discharge;
- (b) Design periods for different components of a sewerage scheme;
- (c) Per-capita sewage; and

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- (d) Time variations in sewage flow, and their effects on design of sewer capacities. [4+4+4+4]
6. Give the typical values of some of the important parameters such as TDS, Chloride, Color, Turbidity, Suspended Solids, M.P.N., Organic matter, Mercury, Arsenic etc. in a River, Open well, Tube well and Infiltration Galley. Also, mention the capacity of these sources in cu.m./day, hence, discuss the suitability of these sources for supplying water to a municipality. [16]
7. (a) Design and sketch a septic tank and soak pit for 100 people.
(b) What is the mechanism of waste treatment in an oxidation pond. [8+8]
8. (a) What are the advantages and disadvantages of using multimedia filters over conventional sand filters.
(b) Explain in detail with the help of a neat sketch how backwashing is done in case of rapid sand filters. [8+8]

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R05**Set No. 4**

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ENVIRONMENTAL ENGINEERING-I
Civil Engineering

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All Questions carry equal marks

1. (a) What is turbidity and how turbidity is measured using Jackson turbidity water.
 (b) Explain about the physical water quality parameters and their standards for potable water. [8+8]
2. (a) Design and sketch a septic tank and soak pit for 100 people.
 (b) What is the mechanism of waste treatment in an oxidation pond. [8+8]
3. (a) What are the advantages and disadvantages of using multimedia filters over conventional sand filters.
 (b) Explain in detail with the help of a neat sketch how backwashing is done in case of rapid sand filters. [8+8]
4. (a) Design a plain sedimentation tank for a town with a population of 50000 provided with per capita water supply of 200lit. Assume surface overflow rate as $20 \text{ m}^3/\text{m}^2/\text{day}$.
 (b) Draw the neat sketch of a circular radial up flow plain sedimentation tank and identify the various components. [8+8]
5. (a) Explain the Hardy Cross method used for pipe network analysis in water distribution system.
 (b) A pipe network consists of the following pipes:

Pipe	Length (metre)	Diameter (cm)	Friction factor
AB	400	30	0.014
BC	600	30	0.010
AD	500	40	0.012
DC	500	25	0.011

If flow at A is $1.0 \text{ m}^3/\text{sec}$, while outflows at B, C and D are 0.3, 0.5 and $0.2 \text{ m}^3/\text{sec}$, respectively, find the flow in each pipe taking only one trial. The pressure at A is 100 m of water. [8+8]

6. Write short notes on:

- (a) Estimating the design sewage discharge;
- (b) Design periods for different components of a sewerage scheme;

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- (c) Per-capita sewage; and
- (d) Time variations in sewage flow, and their effects on design of sewer capacities. [4+4+4+4]
7. Give the typical values of some of the important parameters such as TDS, Chloride, Color, Turbidity, Suspended Solids, M.P.N., Organic matter, Mercury, Arsenic etc. in a River, Open well, Tube well and Infiltration Galley. Also, mention the capacity of these sources in cu.m./day, hence, discuss the suitability of these sources for supplying water to a municipality. [16]
8. Write short notes on the following:
- (a) Humus tank
- (b) Contact bed
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- (d) Bio-filter. [4+4+4+4]

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R05**Set No. 1**

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1. (a) What are the advantages and disadvantages of using multimedia filters over conventional sand filters.
- (b) Explain in detail with the help of a neat sketch how backwashing is done in case of rapid sand filters. [8+8]
2. (a) Explain the Hardy Cross method used for pipe network analysis in water distribution system.
- (b) A pipe network consists of the following pipes:

Pipe	Length (metre)	Diameter (cm)	Friction factor
AB	400	30	0.014
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If flow at A is $1.0 \text{ m}^3/\text{sec}$, while outflows at B, C and D are 0.3 , 0.5 and $0.2 \text{ m}^3/\text{sec}$, respectively, find the flow in each pipe taking only one trial. The pressure at A is 100 m of water. [8+8]

3. Write short notes on:
 - (a) Estimating the design sewage discharge;
 - (b) Design periods for different components of a sewerage scheme;
 - (c) Per-capita sewage; and
 - (d) Time variations in sewage flow, and their effects on design of sewer capacities. [4+4+4+4]
4. (a) Design a plain sedimentation tank for a town with a population of 50000 provided with per capita water supply of 200lit. Assume surface overflow rate as $20 \text{ m}^3/\text{m}^2/\text{day}$.
- (b) Draw the neat sketch of a circular radial up flow plain sedimentation tank and identify the various components. [8+8]
5. (a) What is turbidity and how turbidity is measured using Jackson turbidity water.
- (b) Explain about the physical water quality parameters and their standards for potable water. [8+8]

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6. Give the typical values of some of the important parameters such as TDS, Chloride, Color, Turbidity, Suspended Solids, M.P.N., Organic matter, Mercury, Arsenic etc. in a River, Open well, Tube well and Infiltration Galley. Also, mention the capacity of these sources in cu.m./day, hence, discuss the suitability of these sources for supplying water to a municipality. [16]
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8. Write short notes on the following:
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R05**Set No. 3**

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1. (a) What is turbidity and how turbidity is measured using Jackson turbidity water.
 (b) Explain about the physical water quality parameters and their standards for potable water. [8+8]
2. (a) Design and sketch a septic tank and soak pit for 100 people.
 (b) What is the mechanism of waste treatment in an oxidation pond. [8+8]
3. Write short notes on:
 - (a) Estimating the design sewage discharge;
 - (b) Design periods for different components of a sewerage scheme;
 - (c) Per-capita sewage; and
 - (d) Time variations in sewage flow, and their effects on design of sewer capacities. [4+4+4+4]
4. (a) Design a plain sedimentation tank for a town with a population of 50000 provided with per capita water supply of 200lit. Assume surface overflow rate as $20 \text{ m}^3/\text{m}^2/\text{day}$.
 (b) Draw the neat sketch of a circular radial up flow plain sedimentation tank and identify the various components. [8+8]
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If flow at A is $1.0 \text{ m}^3/\text{sec}$, while outflows at B, C and D are 0.3, 0.5 and $0.2 \text{ m}^3/\text{sec}$, respectively, find the flow in each pipe taking only one trial. The pressure at A is 100 m of water. [8+8]

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6. Give the typical values of some of the important parameters such as TDS, Chloride, Color, Turbidity, Suspended Solids, M.P.N., Organic matter, Mercury, Arsenic etc. in a River, Open well, Tube well and Infiltration Galley. Also, mention the capacity of these sources in cu.m./day, hence, discuss the suitability of these sources for supplying water to a municipality. [16]
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