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BICE-018

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

00456

June, 2015

BICE-018 : ENVIRONMENTAL ENGINEERING – II

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any* ***seven*** *questions. Use of scientific calculator is permitted.*

1. Explain the hourly variation in the sewage flow. What factors directly affect it ? *6+4=10*

2. Compare between Separate and Combined system of sewers. Mention their merits and demerits. *10*

3. Explain attached growth system and suspended growth system with their applications in brief. *10*

4. Design a high rate trickling filter to treat domestic sewage having BOD of 200 mg/L for an average flow of 22·5 MLD with target BOD effluent of 10 mg/L. Peak factor = 2·25. *10*

5. (a) Compare oxidation ditch with aerated lagoon. *5*

(b) How is industrial wastewater different from domestic wastewater ? Explain in brief. *5*

6. (a) List the inherent merits and demerits of UASB. *5*

(b) Explain in brief the digestion process of BOD/COD anaerobically to yield methane gas. *5*

7. Design a septic tank for a society of 100 average users. Expected cleaning of the septic tank is 3 years with average water supply rate as 60 *l*/head/day. Space provision for digestion is 0·0425 m^3/head and cleaning after 3 years requires 0·085 m^3. *10*

8. Prepare a common effluent treatment plant (CETP) for a sugar industry with 2 MLD discharge and leather tanning industry with 1 MLD discharge. Justify the units you propound. *10*

9. Write short notes on the following : *5+5=10*

(a) Stabilization pond

(b) Tolerance limits for industrial effluents

10. Explain the following terms : $4 \times 2\frac{1}{2} = 10$

(a) Sludge Digestion

(b) Self Purification of Streams

(c) Sludge Drying Bed

(d) Manhole