

B.TECH. CIVIL ENGINEERING

BTCLEVI

Term-End Examination

June, 2014

BICE-018 : ENVIRONMENTAL ENGINEERING-II

Time : 3 hours

Maximum Marks : 70

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- Note :*
- (i) *Attempt any seven questions.*
 - (ii) *All questions carry equal marks.*
 - (iii) *Use of scientific calculator is permitted.*
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1. (a) Write the disadvantages of conservancy system. 5
- (b) What is combined water carriage ? Explain the factors governing choice of combined system. 5
2. A stone - ware sewer, 30 cm in diameter is laid at a gradient of 1 in 100. Using $N=0.013$ in Manning's formula, calculate the velocity, discharge and Chezy's coefficient when the sewer is running full. 10
3. (a) What do you understand by 'sewer appurtenances' ? Enumerate various appurtenances commonly used. 5
- (b) Describe with the help of a neat sketch the components of a manhole. 5

4. (a) A sample of waste water has 4 day 20°C BOD value of 75% of the final. Find the rate constant (to the base 10) per day. 5
- (b) Find the rate constant (to the base 10) at a temperature of 30°C, if its value at 20°C is 0.12 per day. 5
5. What do you understand by sedimentation of waste water ? Prove that the area and the overflow rates, rather than detention period govern the design of an ideal settling tank. 10
6. (a) Explain briefly the biological process in a trickling filter. 5
- (b) Write the advantages and disadvantages of activated sludge process. 5
7. Define following terms with reference to aeration tank : 4x2½=10
- (a) HRT
- (b) Volumetric BOD loading
- (c) F/M ratio
- (d) SRT
8. Describe with the help of a neat sketch, the various components of a septic tank and explain the functions of each component. 10
9. Give the characteristics of the waste from a paper and pulp mill. How do you treat the waste water ? Explain with the help of a flow diagram. 10
10. Write short notes on **any four** of the following : 4x2½=10
- (a) Self purification of waste water stream
- (b) Aerobic and Anaerobic decomposition
- (c) Sedimentation with coagulation
- (d) Various shapes of sewers
- (e) Self cleansing velocity
- (f) TOC and TOD