

NTK/KW/15 – 7466

**Sixth Semester B. E. (Civil Engg.) (CBS)
Examination**

ENVIRONMENTAL ENGINEERING – II

Paper - II

Time : Three Hours]

[Max. Marks : 80

- N. B. :
- (1) All questions carry marks as indicated.
 - (2) Solve Question 1 OR Question No. 2.
 - (3) Solve Question 3 OR Question No. 4.
 - (4) Solve Question 5 OR Question No. 6.
 - (5) Solve Question 7 OR Question No. 8.
 - (6) Solve Question 9 OR Question No. 10.
 - (7) Solve Question 11 OR Question No. 12.
 - (8) Assume suitable data whenever necessary.
 - (9) Diagrams and Chemical equations should be given whenever necessary.
 - (10) Illustrate your answers whenever necessary with the help of neat sketches.
 - (11) Use of non programmable calculator is permitted.

1. (A) Define sewage, sewer and sewerage system. Explain the data required in the planning of sewerage system. 7
- (B) Discuss the relative merits and demerits of separate, combined and partially separate system of sewerage. 6

OR

2. (A) What are the various methods for calculating the quantity of storm water ? 6

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Contd.

(B) Design a circular sewer from following data :

- (1) Area : 150 ha
- (2) Population : 50,000.
- (3) Maximum permissible velocity : 3.2 M/sec.
- (4) Water supply rate : 270 Lpcd.
- (5) Impermeability Factor : 0.45.
- (6) Inlet Time : 5 minutes.
- (7) Flow Time : 20 minutes. 7

3. (A) Describe the methods of construction and laying of sewer. 6
- (B) Enlist the sewer Appurtenances. Explain with the help of neat sketch the working of manhole. 8

OR

4. (A) State various types of traps used in house drainage. Explain with the help of neat sketch the traps used according to shape. 7
 - (B) Explain with the help of neat sketches various system of house plumbing for drainage of building. 7
5. (A) Draw a Flow sheet of sewage treatment plant and explain function of each unit. 6
 - (B) The 5 days BOD at 20⁰C of a waste water sample is 500 mg/lit. Determine it's ultimate BOD. Assume $K_D = 0.23/\text{day}$ with base e. Also find out 4 days BOD at 30⁰C. 7

OR

6. (A) Design a Grit chamber of rectangular cross-section for maximum waste water flow of 10,000 m³/day to remove particles of 0.2 mm size having sp.gr. = 2.65. 7
- (B) Explain with the help of neat sketch working of Bar screen. 6
7. (A) What do you understand by Self-purification capacity of a stream? Explain the process involved in self purification of a system. 6
- (B) What do you understand by activated sludge ? Explain with a flow diagram the secondary treatment of sewage using activated sludge process. 7

OR

8. (A) Explain with the help of neat sketch the working of trickling filters. What are the principles on which it works ? 7
- (B) Explain various Land Disposal Methods of sewage. 6
9. (A) What are the different types of privies ? Explain with a neat sketch "Aqua privy". 6
- (B) Design a septic tank for a small colony of 150 persons provided with adequate water supply from Municipal head works at the rate of 120 Lpcd. Assume any data if required. 8

OR

10. (A) Discuss in brief various treatment processes adopted for treating industrial waste water. 8
(B) Explain with the help of neat sketch working of 'Gobar Gas plant'. 6
11. (A) What is Air pollution ? Classify various sources of Air Pollution. 7
(B) Explain the various effects of Air Pollution on Human Beings. 6

OR

12. (A) Give the List of Air pollution controlling equipments and explain any one in detail. 7
(B) Explain the various effects of Air pollution on materials. 6