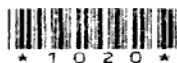


M.E. Fourth Semester (Civil (Environmental Engineering)) (CBS)  
**13402 : Industrial Waste Water Treatment : 4 SCEE 1**

P. Pages : 2

Time : Three Hours



**AW - 3668**

Max. Marks : 80

- Notes :
1. All question carry marks as indicated.
  2. Answer **three** question from Section A and **three** question from Section B.
  3. Due credit will be given to neatness and adequate dimensions.
  4. Assume suitable data wherever necessary.
  5. Diagrams and chemical equations should be given wherever necessary.
  6. Illustrate your answer necessary with the help of neat sketches.
  7. Use of pen Blue/Black ink/refill only for writing the answer book.

**SECTION – A**

1. a) What are the ill effects of discharge of industrial waste on streams? Explain D.O. sag curve with the help of neat sketch. 7  
b) Explain in detail the social aspect of industrial waste. 7
2. a) Discuss the variation in quality and quantity of industrial waste water. 7  
b) What are the various types of benefits of water pollution control by doing treatment of industrial waste? 6
3. a) Explain briefly the different method of sampling and their suitability. 6  
b) How the reduction in volume and strength is achieved while treating the industrial wastes? Explain briefly. 7
4. a) Explain briefly the different method of removal of inorganic dissolved solids from the industrial waste water. 7  
b) What is neutralization? Why is it necessary? How is it carried out? 6
5. Explain the following:-
  - i) Cleaner technologies of production for waste minimization. 4
  - ii) Good House keeping. 5
  - iii) Flow equalization. 4

**SECTION – B**

6. a) Write in details the operational problems in an industrial effluent treatment plant. Explain remedies for it. 7  
b) Explain various low cost water treatment process. 7

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|-----|----|---|----|
| 7.  | a) | Discuss with example the suitability of discharge of partially treated industrial waste directly to streams.                          | 7  |
|     | b) | Explain the suitability of discharge of raw wastes in to streams.   | 6  |
| 8.  |    | What are the toxic metals commonly present in the waste water? Explain the methods use for removal of toxic metal.                    | 13 |
| 9.  | a) | What are the Alkyl Benzene sulphate (ABS) detergents? Why are they no longer used?  | 7  |
|     | b) | Explain briefly the method of removal of colour from waste water?   | 6  |
| 10. | a) | List the various alternatives for treatment of sugar factory waste? Comment on their cost, land requirement & performance efficiency. | 7  |
|     | b) | Comment on pollution control aspect in pulp and paper industry.   | 6  |

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