

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FIFTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

**Course Code: CH301**

**Course Name: ENVIRONMENTAL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions, each carries 15 marks.*

- |   |                                                                                                                                                                                          | Marks |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1 | a) Explain the lime soda softening process.                                                                                                                                              | (10)  |
|   | b) Mention the salient features of Air Act 1981.                                                                                                                                         | (5)   |
| 2 | a) Discuss the boiler feed water treatment methods.                                                                                                                                      | (7)   |
|   | b) Explain the physical, chemical and biological characteristics of wastewater.                                                                                                          | (8)   |
| 3 | a) Determine the 1 – day BOD and ultimate first stage BOD for a wastewater whose 5 – day, 20 <sup>0</sup> C BOD is 200 mg/l. The reaction constant k (base e) = 0.23 day <sup>-1</sup> . | (5)   |
|   | b) List the major contaminants found in wastewater. Suggest suitable methods for removing these contaminants.                                                                            | (10)  |

**PART B**

*Answer any two full questions, each carries 20 marks.*

- |   |                                                                                             |      |
|---|---------------------------------------------------------------------------------------------|------|
| 4 | a) Describe the working of trickling filter with a neat sketch.                             | (10) |
|   | b) Explain the importance of coagulation in wastewater treatment.                           | (5)  |
|   | c) Mention the different types of settling.                                                 | (5)  |
| 5 | a) Explain the activated sludge process. Mention its advantages and disadvantages.          | (6)  |
|   | b) Explain the working of rotating biological contactors.                                   | (4)  |
|   | c) How can you classify the solid waste? Suggest suitable methods for treating solid waste. | (10) |
| 6 | a) Mention the health effects associated with hazardous waste.                              | (5)  |
|   | b) Discuss the treatment of waste from a pulp and paper mill.                               | (8)  |
|   | c) Explain sludge thickening and sludge conditioning process.                               | (7)  |

**PART C**

*Answer any two full questions, each carries 15 marks.*

- |   |                                                                 |     |
|---|-----------------------------------------------------------------|-----|
| 7 | a) Write the classification of air pollutants                   | (5) |
|   | b) Explain the terms, global warming and ozone layer depletion. | (6) |
|   | c) Explain temperature lapse rate.                              | (4) |
| 8 | a) Discuss the different types of plume behaviour.              | (4) |

- b) Mention the effects of air pollution. (4)
- c) List and explain suitable methods for controlling noise pollution. (7)
- 9 a) Explain the working of an electrostatic precipitator with a neat sketch. (7)
- b) With a neat sketch, discuss the working of a cyclone separator. (8)

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