

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSc
BRANCH: CHEMISTRY

SEMESTER : VIII
SESSION : SP/19

SUBJECT: SAC2109 ENVIRONMENTAL MONITORING & CONTROL
TIME: 3.00 HOURS

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 marks.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

- Q.1(a) Discuss the impact of any person or any movement that you believe has made the greatest and longest lasting contribution to environmental conservation in India. [6]
- Q.1(b) Discuss giving suitable examples the various processes that lead to transfer and transformation of pollutant from one segment of the environment to the other segment. [6]
- Q.2(a) What are criteria pollutants? Justify the inclusion of SO_x, NO_x, PM-10, RSPM_{2.5}, O₃ & CO as criteria pollutants. How do you calculate AQI and what is the significance of the AQI values? [6]
- Q.2(b) Briefly describe the methods for sampling & analysis of SO_x, giving the reactions and specifying the methods for the removal of interferences during the analysis. [6]
- Q.3(a) Evaluate various pre-combustion and during combustion control measures for vehicular emissions [6]
- Q.3(b) With the help of a schematic representation discuss the likely sources of emission from a thermal power plant suggesting suitable pre-combustion, during combustion and post combustion control measures commonly employed. [6]
- Q.4(a) Distinguish between the properties of ground water and surface water. Discuss the impact of oxygen demanding waste, salts, metals & pesticides in polluting a water source. [6]
- Q.4(b) What is the significance of MCL? Give the potability limit for As, Fe, Phenol, Fluoride & nitrate. Give a schematic representation of municipal water supply treatment emphasizing the differences between slow sand filtration and rapid sand filtration [6]
- Q.5(a) Define the terms BOD, NBOD, CBOD and COD. In a given water sample, of the two, BOD or COD which would be higher and why? With the help of a schematic representation explain oxygen sag curve. [6]
- Q.5(b) A 10ml sample of sewage mixed with enough water to fill a 300ml BOD bottle has a DO_i = 9.00mg/l. To help assure an accurate test it is desired to have at least a 2.0 mg/l drop in DO during the first five days run & the final DO should be at least 2.0mg/l. For what range of BOD₅ would this dilution produce the desired range? [6]
- Q.6(a) Discuss in brief the various horizons of the soil and their significance. What are the likely sources of contamination of soil and discuss their impact? [6]
- Q.6(b) What are the adverse effects of noise on human beings? Discuss various noise control measures [6]
- Q.7(a) Waste composition is the basis of all subsequent waste management programs. Do you feel that the changes in the composition of solid wastes will be significant in next 25 years? Explain. [6]
- Q.7(b) Discuss the harmful effects of radiation pollution and the steps taken for mitigation of radiation pollution. [6]

:::::01/05/2019:::::M