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

CLASS: BE **SEMESTER : VII**
BRANCH: CIVIL **SESSION : MO/19**

SUBJECT: CE8001 ENVIRONMENTAL POLLUTION AND 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) When will you consider a waste as hazardous? [2]
Q.1(b) Differentiate between garbage and rubbish. [4]
Q.1(c) What are the factors which affect waste generation rate? [6]

Q.2(a) What is trench method of landfilling? [2]
Q.2(b) What are the various ways to reduce solid waste quantities? Explain with examples [4]
Q.2(c) Explain the composting method of waste disposal. [6]

Q.3(a) Why SO_2 mass in clean dry air is so small compared to annual emissions from anthropogenic sources? [2]
Q.3(b) Describe in detail about any two indoor air pollutants [4]
Q.3(c) What is photochemical smog? What are the conditions for its formation? Explain the reactions which cause its formation. [6]

Q.4(a) Which atmospheric stability is desirable from the point of view of preventing pollution? Why? [2]
Q.4(b) A chimney with design stack height 225m is emitting sulphurdioxide at a rate of 450g/s. Estimate the concentration of sulphurdioxide downwind for the following situation: $< \rho_{so2} >$ (1500,0,0,225) and if $< \rho_{so2} >$ (1500,y,0,225) is 125 $\mu g/m^3$, what is the value of y in metres? Wind speed=8m/s, $\alpha = 0.25$, A=0.295, B =0.0579 and P =1.09 [4]
Q.4(c) Explain different types of plume behaviour [6]

Q.5(a) Define cut size for a cyclone separator. Write the formulae for the same. [2]
Q.5(b) Explain how atmospheric carbon monoxide levels measured using NDIR. [4]
Q.5(c) A multitray settling chamber handles 6 m^3/s of air at 20^0C.there are 8 trays including the bottom surface, spaced 0.25 m apart. the chamber is 4 m long and 1 m wide. For particles of density 2000 kg/m^3 and size 70μm, calculate the residence time, the distance settled and efficiency of collection. Assume laminar flow. [6]

Q.6(a) Differentiate between threshold of pain and threshold of audibility. [2]
Q.6(b) How is sound intensity defined? Derive the relation between sound intensity, root mean square of effective sound pressure, velocity of sound and density of air. [4]
Q.6(c) The noise spectrum of a cutter equipment at a 6 feet distance is analysed and the results are given in table1.What are the total sound pressure level and total sound level generated by equipment? What is the r.m.s.pressure generated at the given distance and what is the corresponding total sound power and intensity level? [6]

Q.7(a) How does ozone depletion take place? [2]
Q.7(b) India refused to sign Montreal protocol. Why? Give 4 reasons [4]
Q.7(c) Explain salient provisions of Copenhagen Accord (any 6) [6]

Center Frequency(Hz)	Sound Pressure Level(dB)	Relative response from graph	Center Frequency(Hz)	Sound Pressure Level(dB)	Relative response from graph
65	60	-24	600	85	0
150	72	-12	1500	79	+1
300	78	-4	3000	62	-1

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