

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

## A Constituent Institution of Manipal University I SEMESTER M.TECH. (ENVIRONMENTAL ENGINEERING) END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: AIR AND NOISE ENVIRONMENT [CIE 5123] REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:							
<ul> <li>Answer ALL the questions.</li> </ul>							
Missing data may be suitably assumed							
1A.	Discuss briefly about the various sources of Air pollution with examples						5
1B.	Explain with a neat sketch the different atmospheric stability regions						5
2A.	Compare the plume behaviors under different conditions of atmospheric stability.						5
2B.	List and explain various meteorological parameters which influence the dispersion of pollutants in atmosphere?						5
3A.	Find the eff atmospheric $27^{\circ}C$ and 4 wind veloc 5km and 1 condition. X, km $\sigma_y$ $\sigma_z$	fective stack c pressure is 00°C.The s ity is 1.8m/ 0km distan 1 4 30	tack diamet s 10.8 <i>m</i> of v tack diamet sec. Also f nees in the 2 133 50	40m stack water. The t ter is 2.3m.s ind the grou direction of 5 300 95	releases SPI emperature stack gas ve and level co of wind ass 10 510 150	M at a rate of 1.25g/s. The of ambient air and gas are clocity is 6.0m/sec and the oncentration at 1km. 2km. suming moderately stable	4
3B.	What are the effects of primary air pollutants on vegetation						3
3C.	How do exposure time and type of population influence the air quality standards established for the community and the workplace?						3
4A.	Calculate the length of a simple gravity collector required to remove 90% of 45µlm diameter particles of density 2000kg/m <sup>3</sup> . The bulk gas velocity is 0.5m/s and the chamber is 3m in height. Calculate the length if two trays are used for same efficiency. Density of air, $\rho_a = 1.2$ kg/m <sup>3</sup> and viscosity, $\mu = 1.8 \times 10^{-5}$ kg/m.sec.						4
4B.	"Activated carbon is used as an effective adsorbent in the removal of gaseous pollutants" Justify your answer.						3
4C.	What are the operational problems associated with the use of fabric filters? Discuss the filter cleaning mechanism?						3
5A.	Write a brief note on Sound pressure level and Weighing networks method.						4
5B.	Explain various control measures to reduce noise pollution at the source.						3
5C.	Differentiate between cyclones and electrostatic precipitators.						3