Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
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IV SEMESTER B.TECH. (CIVIL ENGINEERING)
END SEMESTER EXAMINATIONS, APRIL/MAY 2017
SUBJECT: AIR AND NOISE POLLUTION [CIE 3284]
REVISED CREDIT SYSTEM
(02/05/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- AQI table, Dispersion coefficient graph and tables are allowed
- Missing data may be suitable assumed.

Q.No	Questions	Marks	CO
1A.	With chemical equations comment on any two criteria air pollutant.	**3**	**1**
1B.	Discuss the various lapse rate used in meteorology study with necessary diagrams	**4**	**2**
1C.	Derive Dry Adiabatic Lapse rate (DALR) value for assessing atmospheric stability when air moves from sea level to a height of 1 Km.	**3**	**2**
2A.	Nitrogen dioxide is emitted at 110 *g/s* from stack with H=80 m, wind speed is *5m/s*, plume rise is 20m. Calculate the ground level concentration 100m from center line of plume and 1 Km from the source downwind when the pollutant lies on the center line of plume. Atmospheric stability condition is such that Environmental rate and Adiabatic rate are same.	**4**	**2**
2B.	Determine the air quality index for multiple pollutants with an 8 hour ozone value of 25 $\mu g/m^3$, 24 hour SO_2 value of 72 $\mu g/m^3$ and 8 hour CO value of 8 mg/m^3 for Indian Air quality index. Comment on the result based on AQI report format.	**4**	**4**
2C.	With a neat sketch describe any two plume behavior from stack.	**2**	**2**
3A.	Describe the effect of ozone in the atmosphere and the occurrence of Antarctic ozone hole in southern hemispheric spring.	**4**	**1**
3B.	Discuss any three economic instruments used to curb air pollution.	**3**	**4**
3C.	With a neat sketch explain the working of a High volume sampler	**3**	**3**
4A.	Explain the significance of cut diameter. Determine the cut diameter and overall efficiency of the cyclone separator having an inlet cross section area 0.125 D^2 where D is the diameter of the cylindrical portion of the cyclone chamber. Following details are given Flow rate is 150 m^3/min, density of particle is 1600 Kg/m^3, Diameter of the chamber is 1m, Width of inlet is 0.25D, Viscosity = 1.79 x 10-^{5} Kg/ms, Number of turns= 6.	**5**	**3**

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	Particle size distribution is given below Size range dp(μm): 13 | 3 | 5 | 8 | 14 | 24 | 40 | 75 Mass fraction: 0.01 | 0.09 | 0.1 | 0.3 | 0.3 | 0.14 | 0.05 | 0.01		
4B.	Explain the effect of building components in indoor air pollution.	**5**	**1**
5A.	Discuss on the legal actions that can be taken to curb noise pollution.	**3**	**5**
5B.	Comment on .the methods of noise measurement along with significance frequency weightage.	**4**	**5**
5C.	Explain the significance of Positive Crankcase Ventilation system (PCV) and catalytic converter in vehicular pollution control.	**3**	**3**