Registration No: | | | | | | | | | | |

Total Number of Pages:02 **M.TECH**

P2EVCC01

2nd Semester Regular Examination 2016-17

AIR & NOISE POLLUTION

BRANCH: ENVIRONMENTAL SCIENCE & ENGINEERING, ENVIRONMENTAL ENGINEERING

Time: 3 Hours

Max Marks: 100

Q.CODE: Z350

Answer Question No.1 which is compulsory and any FOUR from the rest.

The figures in the right hand margin indicate marks.

Q1 Answer the following questions: ***Short answer type*** **(2 x 10)**

a) What do you mean by primary and secondary air pollutants?
b) What is lapse rate?
c) State the different stability classes of the atmosphere.
d) What is ozone hole?
e) Which gases are generally classified as asphyxiants?
f) State one primary effect of each of the pollutants; lead, SO_2, NO_x and O_3.
g) What are the constituents of photochemical smog?
h) Indian air quality standards for different areas in terms of SPM and SO_2.
i) What are conventional and high efficiency cyclones?
j) What do you mean by 50 dB of L_{60}?

Q2 **a)** What do you mean by air pollution? Name the different sources with their corresponding pollutants. **(10)**

b) What are the effects of various air pollutants on human health and materials? **(10)**

Q3 **a)** Describe the various types of plume behavior with neat sketches. **(10)**

b) What are the methods of collecting gaseous samples from a stack? Describe any one in detail with sketch. **(10)**

Q4 **a)** What is inversion? Explain the various types of inversion. **(10)**

b) Estimate the effective height of a stack with a physical height of 120 m, the wind speed being 5 m/sec, stack gas speed 10 m/sec and stack exit diameter of 1.15 m. Given that the atmospheric pressure is 1030 milli-bars and temperatures of air and stack gas are 22^0C and 180^0C respectively. **(10)**

Q5 **a)** Discuss the principle of electrostatic precipitation and merits and demerits of ESPs. **(10)**

b) A foundry emits 550 kg/day of SO_2 for a stack of effective height 75 m. Find concentration of SO_2 at a ground horizontal distance of 1500 m at the centre line of the plume, given u= 3 m/sec and for stability class C, σ_y=210 m and σ_z=120 m. **(10)**

Q6 **a)** Discuss the various noise monitoring techniques. **(10)**

b) What is meant by equivalent noise level? Find **Leq**of a sound 70 dB lasting for 20 minutes followed by 60 dB for 30 minutes and then followed by 90 dB for 20 minutes. **(10)**

Q7 **a)** Discuss the different sources of noise including rating system of noise. **(10)**

b) State the principle of scrubbers including their type, efficiency and advantages over other equipment. **(10)**

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