JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- Oct 2017

B.Tech 7th Semester

COURSE CODE: 10B13CE742   MAX. MARKS: 25

COURSE NAME: Air Pollution Monitoring and Control

COURSE CREDITS: 3   MAX. TIME: 1Hr 30 Min

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. Determine the effective height of a stack, given the following data :

   (a) Physical stack is 170 m tall with a 1.25 m inside diameter

   (b) Wind velocity is 5.17 m/s

   (c) Air temperature is 18 °C

   (d) Atmospheric pressure is 1000 millibars

   (e) Stack gas velocity is 8.75 m/s

   (f) Stack gas temperature is 128 °C   (4)

2. A parcel of dry air rising over a grass fire has a temperature of 60 °C at 10 m. Assuming a dry adiabatic lapse rate, determine the temperature at 200 m.   (2)

3. Write short notes on dry adiabatic lapse rate and wet adiabatic lapse rate.   (2)

4. Define Air pollution and air pollutants. Discuss and state various sources of air pollution. (2)

5. The exhaust gas from an automobile contains 1.0 % by volume of CO. What is the concentration of CO in mg/ m^3 at 25°C and 1 atm pressure?   (2)

6. If SO_2, CO and NO_2 are found out to be 1000 ppm, 600 ppm and 200 ppm respectively in a air quality survey, What are concentrations in μg/m3?   (3)

7. Write a detailed note on – 'Structure of the atmosphere'.   (3)

8. Discuss general effects of air pollution.   (2)

9. A power plant of 1000 MW capacity burns 50 Ton coals/MW/Day. During thus burning process, the Plant has the following information.
   Sulphur in coal: 0.5% (weight/weight)
   Temperature in stack: 125°C
   Pressure in stack: 1.5 atm
   Stack exit velocity: 15m/s
   Diameter of stack: 10m
   Estimate SO_2 concentration in kg/day and ppm.   (5)