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**B.TECH**  
**PEN41103****4<sup>th</sup> Semester Regular Examination 2016-17****AIR POLLUTION****BRANCH: ENVIRONMENTAL****Time: 3 Hours****Max Marks: 100****Q.CODE: Z425**

**Answer Part-A which is compulsory and any four from Part-B.**  
**The figures in the right hand margin indicate marks.**

**Part – A (Answer all the questions)****Q1 Answer the following questions: *dash fill up type* (2 x 10)**

- PM<sub>10</sub> is otherwise known as \_\_\_\_\_
- PSI is an abbreviation of \_\_\_\_\_
- The Major component of flue gas is \_\_\_\_\_
- Troposphere and stratosphere are \_\_\_\_\_
- SO<sub>x</sub> and NO<sub>x</sub> gasses when mixed with rain water cause \_\_\_\_\_
- Chimneys are also known as \_\_\_\_\_
- The pocket of pollutants rising from the Chimney is known as \_\_\_\_\_
- Humidity, wind speed and temperature are \_\_\_\_\_ factors.
- Rate of change of temperature with altitude is known as \_\_\_\_\_
- CO<sub>2</sub> and CO are known as \_\_\_\_\_ gases.

**Q2 Answer the following questions: *Short answer type* (2 x 10)**

- Define ELR and ALR.
- Name the different zones of atmosphere with corresponding altitude.
- What will be the noise level if 30 dB is added to 40 dB?
- Explain the terms stable and unstable environment.
- Give Pasquill Gifford's stability classes.
- What do you mean by stationary and mobile sources of air pollutants?
- What is aerosol? What are its effects?
- What is heat island effect?
- What is temperature inversion? How the dispersion of air pollutants is affected by this.
- Name the criteria air pollutants. bput question papers visit <http://www.bputonline.com>

**Part – B (Answer any four questions)****Q3 a) Define environmental lapse rate (ELR) and adiabatic lapse rate (ALR). (8)**  
Show how they affect the atmospheric stability with a neat sketch.**b) Discuss the impact of wind on the dispersion of air pollutants (7)**

- Q4 a)** List out the types of collection equipment for aerosols and describe any one of them in detail. (8)
- b)** Determine the effective stack height for stack 180m tall with internal diameter of 0.87m. The wind velocity is 2.86m/sec and the air temperature is 20°C. The barometric pressure is 1000 millibars, stack gas velocity 11.45 m/sec and stack gas temperature is 160°C. (7)
- Q5 a)** What is noise? Discuss the different sources of noise and its harmful effects on human being. (8)
- b)** What do you mean by equivalent noise level? Find **Leq** of a sound of 80 dB lasting for 30 minutes followed by 60 dB for 40 minutes and then followed by 100 dB for 20 minutes. (7)
- Q6 a)** Briefly discuss about the various types of plumes with neat sketches. (8)
- b)** A coal fired thermal power plant burns 7.15 tons of coal per hour and discharges the combustion products through a stack having an effective height of 90 m. The coal has a sulphur content of 5.2%, and the wind velocity at the top of the stack is 7.0 m/sec. Atmospheric conditions are moderately to slightly unstable. Determine the maximum ground level concentration of SO<sub>2</sub> and the distance from the stack at which this maximum occurs. (7)
- Q7 a)** Discuss the methods of measurement of CO and particulate matter. (8)
- b)** Briefly discuss about the development and use of wind rose diagram. (7)
- Q8 a)** What is Ozone hole? State the reasons for depletion of ozone layer and list out its adverse effects. (8)
- b)** What do you mean by level of noise? Discuss the noise rating system in detail. (7)
- Q9 a)** What are air pollution indices? Discuss the various methods of determination of air pollution indices? (10)
- b)** Discuss about sampling train. (5)