SARDAR PATEL UNIVERSITY

[29]   M. Sc. (Industrial Chemistry), Second (2nd) Semester Examination
April - 2018
PS02EICH22—Air Pollution Control Technology
Thursday, 19th April, 2018

Time: 10:00 a.m. to 01:00 p.m.

Total Marks: 70

Note: i) Attempt all the questions.
ii) Figures to right indicate full marks.
iii) Draw neat diagrams wherever it requires.

Q-1   Answer the following Multiple Choice Questions.

Marks
(08)

1. _____air pollutants are the ones that are formed as a result of reactions between primary pollutants and other elements in the atmosphere, such as ozone.

   a) Primary   c) Pollen

   b) Secondary   d) Acid

2. Air pollutants come in the form of gases and finely divided solid and liquid _____.

   a) gas   c) pollen

   b) aerosols   d) droplet

3. _____ is commonly associated with inversions.

   a) Fog   c) Smog

   b) Air   d) CO_2

4. _____ is used as a absorbing media in SO_2 determination.

   a) NEDA   c) starch

   b) Pararosaniline HCl   d) Ki solution

5. London smog was caused by_____ combustion during the winter.

   a) atomic   c) heavy coal

   b) fossil fuel   d) all of these

6. A carbon_____ is a measure of the impact our activities have on the environment and in particular climate change.

   a) Introduction   c) footprint

   b) Decline   d) Growth

7. The number of items or values belonging to each class-interval is called the Class _____.

   a) frequency   c) raw

   b) value   d) distribution

8. In order to estimate the best average values of the two variables, _____ regression equations are required.

   a) two   c) three

   b) four   d) multiple

(P.T.O.)

Q-2   Answer the following short questions. Each question carries equal mark.(**Any Seven**)   **(14)**

1. What is air pollution?
2. List out the air pollutants that affect plants.
3. Define secondary meteorological parameter 'precipitation'.
4. Define plume behaviour.
5. Write the nitrogen dioxide photochemical reaction.
6. What is photochemical smog?
7. What is a carbon footprint?
8. Define: statistics, survey
9. Define: standard deviation

Q-3 (a)   Write a note on carbon dioxide as a pollutant.   **(06)**

Q-3 (b)   Write a note on aldehyde and organic vapour as a pollutant.   **(06)**

OR

Q-3 (b)   What is aeroallergen? Describe it's source and it's health effects.   **(06)**

Q-4 (a)   Discuss atmospheric stability and temperature inversions.   **(06)**

Q-4 (b)   Discuss in brief the sampling and analytical technique for the SO_2 pollutant.   **(06)**

OR

Q-4 (b)   Discuss in brief the sampling and analytical technique for SPM pollutant.   **(06)**

Q-5 (a)   Briefly explain the causes and effects of 'London smog disaster'.   **(06)**

Q-5 (b)   Discuss natural and artificial Carbon Sequestration   **(06)**

OR

Q-5 (b)   Briefly explain the causes and effects of 'Bhopal gas disaster'   **(06)**

Q-6 (a)   Discuss with a suitable example the general rules like a number of ways, permutations, and combinations of probability to know the number of different possibilities of certain events.   **(06)**

Q-6 (b)   Explain with suitable example regression analysis.   **(06)**

OR

Q-6 (b)   1) Seasonal variation in Suspended Particulate Matter (SPM) was measured at Connaught Place, New Delhi for 50 days. Calculate the standard deviation of the following data.   **(03)**

Days	1-10	10-20	20-30	30-40	40-50
SPM ($\mu g/m^3$)	410	370	470	250	400

2) What is group frequency distribution?   **(03)**

——X——