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SARDAR PATEL UNIVERSITY

M. Sc. (Industrial Chemistry), Semester- 2 Examinations

March - 2019

PS02EICH22— Air Pollution Control Technology

Tuesday, 26th March 2019

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.

Marks
(08)

Q-1 Answer the following Multiple Choice Questions.

1. The degree to which air pollutants discharge from various sources and concentrate in a particular area depends largely on _____ conditions.

a) meteorological	c) inversion
b) secondary	d) air
2. _____ are the primary natural sources of VOC emissions.

a) Forests	c) Automobile
b) Sea	d) Land erosion
3. _____ is the primary metrological parameter.

a) Mixing height	c) Precipitation
b) Humidity	d) Visibility
4. The sampling height of about _____ meter from the ground level.

a) 3 to 10	c) 8 to 9
b) 1 to 2	d) 15 to 20
5. Carbon _____ is the process involved in carbon capture and the long-term storage of atmospheric carbon dioxide (CO₂).

a) sequestration	c) sinks
b) foot print	d) photosynthesis
6. Photochemical smog forms primarily because of interactions among _____.

a) carbon monoxide	c) nitrogen
b) phosphorous	d) carbon
7. According to M. M. Blair, _____ is the measure of the average relationship between two or more variables in terms of the original units of the data.

a) frequency	c) regression
b) std. deviation	d) relative std. deviation
8. Data recorded in an arbitrary manner after their collection from the field of enquiry are called _____.

a) study data	c) secondary data
b) raw data	d) presentation data

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[P.T.O.]

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

1. List out the pollutants that affect plants.
2. What is aeroallergen?
3. Write the classification of sampling methods for air pollution.
4. What is the duration and frequency of air sampling?
5. Write the aldehydes photochemical reaction.
6. What is sulfurous smog?
7. What is carbon footprint?
8. Define: Regression equation.
9. Define: Relative frequency

Q-3 (a) What are the effects of air pollution on human health? (06)

Q-3 (b) Enlist various ambient and vehicle emission standard. (06)

OR

Q-3 (b) What is aeroallergen? Describe its sources and its 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 SPM pollutant. (06)

OR

Q-4 (b) Write a note on plume behavior. (06)

Q-5 (a) What are the effects of photochemical smog? (06)

Q-5 (b) i) How to mitigate the carbon footprint? (03)

ii) What is a carbon sink? Define natural and artificial sinks. (03)

OR

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

Q-6 (a) Explain the four types of measurements of statistical data. (06)

Q-6 (b) i) Data for NO₂ emission in ppm for the UK from 1973 to 2018 are given below. Calculate the mean of SO₂ emission. (03)

Year	1973	1978	1983	1988	1993	1998	2003	2008	2013	2018
SO ₂	100	105	111	119	138	140	100	90	80	75

ii) What is group frequency distribution? (03)

OR

Q-6 (b) ii) The following mass concentrations, q, of PM₁₀ (in µg/m³) were measured in Los Angeles. Find the mean and standard deviation concentration of PM₁₀. (03)

80.2	105.2	94.2	89.2	94.1	112.4	101.7	83.5	100.2	98.2
96.5	116.1	112.4	97.3	101.5	118.9	100.3	89.0	87.2	84.8

ii) Explain with illustration the distinction between qualitative and quantitative data. (03)

All the Best!

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