

[29]

SARDAR PATEL UNIVERSITY
M.Sc. (EST) (Second Semester) Examination
12st April 2018
10.00 a.m. to 1:00 p.m.

PS02CEST22: Meteorological and Environmental Instruments

Max. Marks: 70

- Note: 1. Answer all Questions (including Multiple Choice Questions) in Answer Books only.
 2. Draw Neat and Labelled Diagrams, Wherever Necessary.

Q.1. Multiple Choice Questions (Choose Correct Answer) [08]

- (1) Standard screens have internal dimensions of about.....m width, m height, m depth.
 (a) 2X0.5X0.3 (b) 1X0.5X0.3 (c) 1X0.5X3 (d) 0.5X1X3
- (2) The component which has more affinity towards the adsorbent, travels
 (a) Slower (b) Faster (c) None of the above (d) All of the above
- (3) Chlorinated compounds determined bytype of detector.
 (a) FID (b) ECD (c) TCD (d) none of the above
- (4) The reference point in thermometer is
 (a) 0 C (b) 10 C (c) 100 C (d) all of the above
- (5) Which instrument is used for determination of Functional element?
 (a) AAS (b) IR spectroscopy (c) HPLC (d) UV spectrophotometer
- (6) Following is better average for scale/numeric data:
 (a) Mean (b) Median (c) Mode (d) None
- (7) Commonness of data is achieved using
 (a) Column graph (b) Bar graph (c) Histogram (d) Ogive
- (8) _____ source emits the minimum amount of N₂O in atmosphere.
 (a) Industrial processes (b) Waste disposal & treatment
 (c) Residential & commercial (d) Power stations & Transportation fuels

Q.2. Write the correct options (Any Seven) (14)

1. Liquid in glass thermometer
2. Mercury Barometer
3. Limitations of Flame Photometer
4. Light source used in AAS
5. Define: RH, SVP
6. Types of rotors
7. Monochromators used in Spectroscopy
8. Differentiate between Weather, Climate, Climate variability, and Climate change
9. Enlist types of graphs used in Biostatistics with its applications.

[P.T.O.]

Q.3. a) What are different factors affecting all conventional rain gauge? Explain different effects of wind on rain gauge catch. (6)

b.1) Explain working of Cup anemometer (3)

b.2) Describe about the Wet and dry bulb method (3)

OR

b.1) Explain Working of Tipping bucket (3)

b.2) Write a note Hair Hygrometer (3)

Q.4. a) What is the basic principle behind the IR spectroscopy? Explain the different molecular vibration in IR. (6)

b) How plasma is generated in ICPAES? How does it work? Explain in detail with diagram (6).

OR

b) Describe Working, Principle, and Components of HPLC with diagram. (6)

Q.5. a) What do you mean by TLC ? Explain the Principle, Development methods and methods for application of adsorbents. (6)

b) How can we combat the climate change? Explain. Add a note on green house effect and global warming. (6)

OR

b) Describe natural and anthropogenic factors responsible for climate change in detail. (6)

Q.6. a) Following are results of height and weight of 1000 students. Mean height (y) = 170 cm, Mean weight (x) = 60 kg, $r = 0.6$, $\sigma_y = 6.5$ cm, $\sigma_x = 5$ kg, Anil's weight = 45 kg, Sunil's height = 165 cm. Estimate the height of Anil from his weight and weight of Sunil from his height. (6)

b) Calculate standard deviation for the daily sodium intake data. (6)

6.5, 7.0, 6.8, 7.0, 7.3, 7.1, 6.4

OR

b) A random sample of Hb% of 15 individuals with a mean 13.5 and standard deviation of 1.5. Test the hypothesis that the populations mean percentage of Hb is 14.3 more. (t-table value at 5% level of significance with 14 d.f. is 1.761) (6)

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