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SARDAR PATEL UNIVERSITY

B.Sc. INSTRUMENTATION (V)

SEM-I, OCTOBER-2018(NC) EXAMINATION

SUB. CODE:-US01CINV02

SUB: INSTRUMENTATION SYSTEM-I

DATE:-27/10/2018, Saturday TIME:-2:00 pm to 4:00 pm

MARKS-70

Q-1 Choose correct answer

[10]

1. _____ is referring to the deviation from true value of measured quantity.
(A) Error (C) Significant figure
(B) Random (D) none of above
2. _____ converts one form of energy to another form of energy.
(A) Transducer (C) Transformer
(B) Wheatstone bridge (D) none of above
3. _____ is a device for determining the value of variable.
(A) Transformer (C) Transducer
(B) Instrumentation (D) none of above
4. _____ error is referring short coming of instrument such as defective or worn parts.
(A) Systematic (C) Random
(B) Gross (D) none of above
5. _____ is expressed as reproducibility of measurements.
(A) Precision (C) Error
(B) Accuracy (D) none of above
6. Working Standards has Accuracy of ____ ppm.
(A) 9.144 (C) 0.9144
(B) 91.44 (D) none of above
7. A derived unit is recognized by its ____.
(A) Physical quantities (C) Dimensions
(B) Symbol (D) none of above
8. The unit of light intensity is ____.
(A) Meter (C) Candela
(B) Celsius (D) none of above
9. Response of data representation should be ____.
(A) Fast (C) Very Slow
(B) Slow (D) none of above
10. The unit of ____ is derived quantity.
(A) Length (C) Volume
(B) Mass (D) none of above

Q-2 Short answer type question. (any ten)

[20]

1. List different typical applications of instrumentation System.
2. What is instrumentation error?
3. Briefly explain inductance standard.
4. State the importance of signal conditioning element.
5. State Different standard of Measurement.
6. List basic SI quantities with their units and symbol.
7. What do you mean by average deviation and sensitivity?
8. Define Sensitivity and Resolution.
9. Write a short note on Standard for time.
10. Briefly explain importance of conversation of unit.
11. Draw diagram of feedback type measurement system.
12. What do you mean by significant figures? Explain with suitable example.

- Q.3(A) Discuss analog and digital types of instruments with necessary figures. [06]
 Q.3(B) Enlist characteristics of a transducer. [04]
- OR**
- Q.3 List different types of instrument and explain it in detail. [10]
- Q.4(A) A set of independent current measurements was taken by six observers and recorded as 12.8 mA, 12.2 mA, 12.5 mA, 13.1 mA, 12.9 mA and 12.4 mA. Determine; [06]
 (i) Arithmetic mean (ii) Deviation from the mean (iii) Average deviation.
- Q.4(B) Write a note on accuracy and precision. [04]
- OR**
- Q.4(A) What is Error? List different types of error and explain any two in detail. [06]
 Q.4(B) A set of independent voltage measurement taken by four observers was recorded as 117.2 V, 117.11 V, 117.08 V and 117.03 V. Calculate (i) average voltage (ii) the range of error. [04]
- Q.5(A) Give an account of Electric And Magnetic units. [07]
 Q.5(B) The speed limit on a highway is 60 km/hr. Calculate the limit in ; [03]
 (i) mi/hr (ii) ft/s.
- OR**
- Q.5(A) List fundamental and derived units of measurement. And explain in detail with suitable example. [07]
 Q.5(B) Discuss concept of conversion of units. [03]
- Q.6(A) Explain in detail resistance standard with necessary diagrams. [07]
 Q.6(B) Explain in short Capacitance standard. [03]
- OR**
- Q.6 Write a note on voltage standard. [10]

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 (3)