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No. of printed pages : 2

**SARDAR PATEL UNIVERSITY**  
**B.Sc. INSTRUMENTATION (VOC.) (I Semester) (NC) Examination**  
**Tuesday, 19<sup>th</sup> April 2016**  
**2:30 am to 4:30 pm**  
**US01CINV02 – INSTRUMENTATION SYSTEM-I**

**Total Marks : 70**

Q. 1 Choose the correct answer.

[10]

- (1) \_\_\_\_\_ convert the energy from one form to electrical means.  
(A) Controller (C) regulator  
(B) Transducer (D) None of above
- (2) Any instrument which requires the services of human operator is \_\_\_\_\_ type of instrument.  
(A) Automatic (C) Manual  
(B) Advance (D) None of above
- (3) \_\_\_\_\_ Error is referring short coming of instrument such as defective or worn parts.  
(A) Gross (C) Systematic  
(B) random (D) None of above
- (4) \_\_\_\_\_ is a one of the type of error.  
(A) Transformer (C) Transducer  
(B) Random (D) None of above
- (5) \_\_\_\_\_ is unit of light .  
(A) Henry (C) Candela  
(B) Ampere (D) None of above
- (6) \_\_\_\_\_ is unit of temperature.  
(A) Flux (C) Candela  
(B) ampere (D) None of above
- (7) 1 yard = \_\_\_\_\_ meter  
(A) 0.91440 (C) 9.1.440  
(B) 91.440 (D) None of above
- (8) Working standard has accuracy of \_\_\_\_\_ ppm.  
(A) 2 (C) 3  
(B) 4 (D) 5
- (9) Data presentation element response should be \_\_\_\_\_  
(A) Medium (C) Fast  
(B) slow (D) None of above
- (10) \_\_\_\_\_ is referring to the deviation from true value of measured quantity.  
(A) Accuracy (C) Significant figure.  
(B) error (D) None of above

- Q.2 Answer the following.(attempt any ten, each two marks) [20]**
- (1) State different typical application of instrumentation system.
  - (2) What is systematic error?
  - (3) List the different system of units.
  - (4) What is function of transducer in system?
  - (5) Define sensitivity and resolution.
  - (6) State formula for standard deviation.
  - (7) State the definition of standard time and standard length.
  - (8) What is accuracy and error?
  - (9) State the definition of standard weight gram, and its different units.
  - (10) Explain working and secondary standard in short.
  - (11) Enlist classification of standards.
  - (12) Explain international and primary standard in short.
- Q.3 Discuss the each functional element of the instrument system with necessary block diagram. [10]**
- OR**
- Q.3 Describe manually operated and automatic type instrument with proper diagrams. [10]**
- Q.4 (A) Write not on gross error and random error. [05]**  
**(B) What is systematic error? Why systemic error occurs? How it can be reduce? [05]**
- OR**
- Q.4 Discuss different methods of statistical analysis of observation with necessary equations. [10]**
- Q.5 (A) The floor area of building is 2000 m<sup>2</sup> calculate the floor area in cm<sup>2</sup> and foot<sup>2</sup>. [05]**  
**(B) Velocity of light in free space is given as  $2.99 \times 10^8$  m/s. calculate the velocity of light in km/s and km/hr. [05]**
- OR**
- Q. 5 (A) Derived and equation for electrical and magnetic unit. [06]**  
**(B) Discuss concept of conversation of units. [04]**
- Q. 6 Describe the standard for mass, length and volume in detail [10]**
- OR**
- Q. 6 Describe the standard for time and frequency. [10]**
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