BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – Dip.EE-2022
Course Name – Electrical Measurement and Control
Course Code - DEEPC502
(Semester V)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Potentiometric resistance transducer can be applied to measure _____
   a) linear displacement b) rectangular displacement
   c) square displacement d) triangular displacement

(ii) Select the efficiency of a resistive transducer -
   a) medium efficiency b) low efficiency
   c) high efficiency d) zero efficiency

(iii) Identify helipot is a
   a) inductive element b) helicopter
   c) helipad d) resistive element

(iv) Stress is defined as _____
   a) diameter per unit area b) length per unit area
   c) weight per unit area d) force per unit area

(v) Select the capacitance of a parallel plate capacitor -
   a) $C = A\epsilon/d$ b) $C = \epsilon/d$
   c) $C = A/d$ d) $C = A$

(vi) Select the frequency response of capacitive transducers is
   a) high b) medium
   c) low d) zero

(vii) Transfer function of a system can be employ to study its
   a) Steady state behavior b) Transient behavior
   c) Both Steady state behavior and Transient behavior d) None of these

(viii) Identify in an open loop system

a) Output control the input signal
b) Output has no control over input signal
c) Some other variable control the input signal
d) Neither output nor any other variable has any effect on input

(ix) Identify that an oscilloscope shows _____

a) The peak to peak value of the voltage
b) DC value of the voltage
c) Rms value
d) Average value

(x) In a dual slop integrating type digital voltmeter, the first integrating is carried out for 10 periods of the supply frequency of 50 Hz. If the reference voltage used is 2 V, compute the total conversion time for an input of 1 V is

a) 0.01 s
b) 0.05 s
c) 0.1 s
d) 1 s

(xi) Bonding element in a strain gauge must have employ_____

a) zero insulation resistance
b) low insulation resistance
c) high insulation resistance
d) infinite insulation resistance

(xii) Select commonly used elements for wire strain gauges are _____

a) nickel and copper
b) nickel and gold
c) gold and brass
d) silver and aluminium

(xiii) Compute the overall transfer function of two blocks in parallel are :

a) Sum of individual gain
b) Product of individual gain
c) Difference of individual gain
d) Division of individual gain

(xiv) Select a controller is basically -

a) Sensor
b) Comparator
c) Amplifier
d) Clipper

(xv) Identify that general characteristics equation is ,

a) 1+G(s)H(s) = 0
b) G(s)H(s) = 0
c) 1- G(s)H(s) = 0
d) 1/1+G(s)H(s) = 0

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Compare Analog & Digital Sensors. (3)
3. Define primary sensing element and its importance. (3)
4. Define transfer function with example. (3)
5. Discuss vertical deflection system. (3)
6. Explain the need of aquadag in CRO. (3)

OR

Explain electro static deflection. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Compare Sensor and Transducer. (5)
8. Discuss the working principle, construction and characteristics of anyone of the Resistive Transducers. (5)
9. Explain the principle operation and contractional details of a thermistor. (5)
10. Choose the most important five rules of block diagram reduction technique. (5)
11. Explain how the brightness of display in a CRO is controlled. (5)

12. Define a gauge factor for a strain gauge and derive the expression of it. (5)

OR

Explain the construction, working and applications of strain gauge. (5)

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