BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – Dip.EE-2021

Course Name – Electrical Measurement and Control

Course Code - DEE502

(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) Identify the source of emission of electrons in a circuit is _____

a) p-n junction diode
b) a barium and strontium oxide coated cathode
c) accelerating anode
d) post-accelerating anode

(ii) Identify resistance potentiometer consists of _____

a) capacitive element
b) resistive element
c) inductive element
d) no elements

(iii) Stress is defined as _____

a) diameter per unit area
b) length per unit area
c) weight per unit area
d) force per unit area

(iv) Identify transient response in the system is basically due to

a) Forces
b) Friction
c) Stored Energy
d) Coupling

(v) Choose mechanical transducers sense

a) electrical changes
b) physical changes
c) chemical changes
d) biological changes

(vi) Describe loop which do not possess any common node are said to be _____ loops.

a) Forward gain
b) Touching loops
c) Non touching loops
d) Feedback gain

(vii) Select the input to a controller is

a) Sensed signal
b) Error signal
c) Desired variable value
d) Signal of fixed amplitude not dependent on desired variable value

(viii) Explain principle of homogeneity and superposition are applied to:

a) Linear time invariant systems
b) Nonlinear time invariant systems
c) Linear time variant systems
d) Nonlinear time invariant systems

(ix) Identify continuous data systems:

a) Data may be continuous function of time at all points in the system
b) Data is necessarily a continuous function of time at all points in the system
c) Data is continuous at the inputs and output parts of the system but not necessarily during intermediate processing of the data
d) Only the reference signal is continuous function of time

(x) Choose when deriving the transfer function of a linear element

a) Both initial conditions and loading are taken into account
b) Initial conditions are taken into account but the element is assumed to be not loaded
c) Initial conditions are assumed to be zero but loading is taken into account
d) Initial conditions are assumed to be zero and the element is assumed to be not loaded

(xi) Identify a measuring system consists of

a) Sensors
b) Variable conversion elements
c) Signal processing elements
d) All of these

(xii) In DSO identify that the waveform is stored in _____

a) compressed form
b) analog form
c) digital form
d) mixed form

(xiii) Choose the output of electrical transducer is

a) inversely proportional to displacement
b) proportional to square of displacement
c) proportional to displacement
d) constant

(xiv) Choose the oscilloscope used in a digital storage oscilloscope

a) multi trace
b) dual trace
c) modern
d) conventional

(xv) Identify in sequential repetitive sampling how many samples are captured

a) Ten
b) Five
c) two
d) one

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Determine the Zeros of the transfer function (3)

$$G(s) = \frac{s(s+2)(s+4)}{s(s+3)(s+4)}$$

3. Discuss vertical deflection system. (3)
4. Recognize the desired characteristic of a sensor. (3)
5. State the various application of oscilloscope. (3)
6. Judge the rule for shifting the summing point ahead of a block. (3)

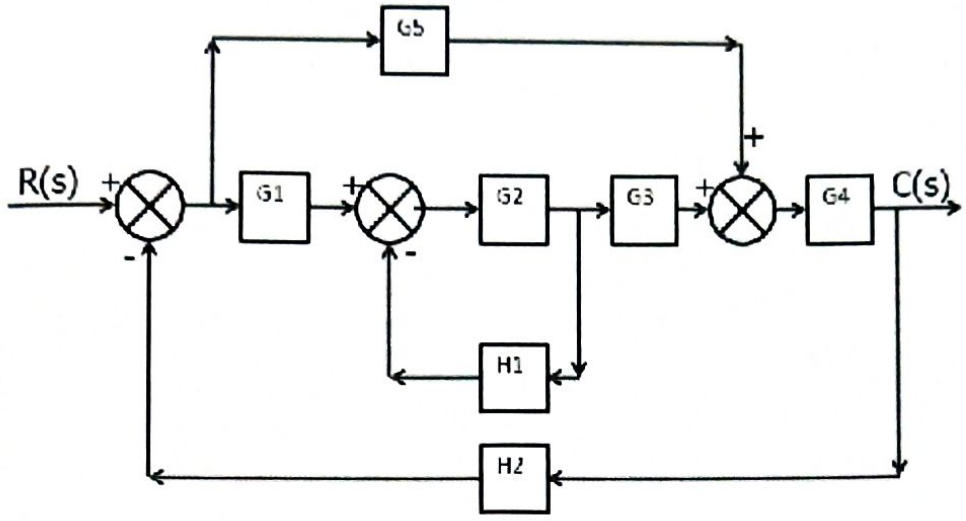
OR

Judge the rule for shifting the summing point after a block. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Derive the transfer function of (5)



8. With the help of suitable diagram describe the working of CRT. (5)
9. Choose the most important five rules of block diagram reduction technique. (5)
10. Explain the factors to be considered while selecting a transducer. (5)
11. Explain Resistive Transducers. (5)
12. Define a gauge factor for a strain gauge and derive and expression of it. (5)

OR

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

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