Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021

Course Name - –Instrumentation and Control
Course Code - DECE603

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( ) M.SC.(MM)

( ) B.A.(Eng)

Answer all the questions. Each question carry one mark.

9.   1.The sensitivity factor of strain gauges is normally of the order of

Mark only one oval.

( ) 1 to 1.5

( ) 1.5 to 2

( ) 0.5 to 1

( ) 5 to 10

10. 2.The LVDT can be used to measure

Mark only one oval.

◯ Level

◯ Acceleration

◯ Speed

◯ All of these

11. 3.A Voltmeter should have

Mark only one oval.

◯ Infinite resistance

◯ Very high resistance

◯ Low resistance

◯ Zero resistance

12. 4.One-Wattmeter method is used to measure

Mark only one oval.

◯ The power when load is balance in three phase circuit

◯ The power when load is unbalanced in three phase circuit

◯ (1) or (2)

◯ Single phase power with balanced load

13. 5.Which one represent active transducer?

Mark only one oval.

◯ Strain gauge

◯ Thermistor

◯ LVDT

◯ Thermocouple

14. 6.What is the principle of operation of LVDT?

Mark only one oval.

◯ Mutual inductance

◯ Self-inductance

◯ Permanence

◯ Reluctance

15. 7.Capacitive transducer is used for?

Mark only one oval.

◯ Static measurement

◯ Dynamic measurement

◯ Transient measurement

◯ Both static and dynamic

16.   8.Which of the following can be measured using Piezo-electric transducer?

Mark only one oval.

⬭ Velocity

⬭ Displacement

⬭ Force

⬭ Sound

17.   9.Using a low resistant shunt Moving coil, permanent magnet instrument can be converted to

Mark only one oval.

⬭ Volt meter

⬭ Ammeter

⬭ Flux-meter

⬭ Watt meter

18.   10.Resistance of the strain gauge must be

Mark only one oval.

⬭ zero

⬭ small

⬭ large

⬭ medium

19.　11.Strain gauge works on the principle of

Mark only one oval.

- ⬭ piezo-electric effect
- ⬭ piezo- resistive effect
- ⬭ barkhausen criterion
- ⬭ feedback element effect

20.　12.Charecteristics of Strain gauge is

Mark only one oval.

- ⬭ tangential
- ⬭ exponential
- ⬭ non-linear
- ⬭ Linear

21.　13.Value of temaparature coefficient of Strain gauge is

Mark only one oval.

- ⬭ low
- ⬭ High
- ⬭ zero
- ⬭ infinite

22. 14.Semiconductor strain gauges are used for

Mark only one oval.

◯ low gauge factor values

◯ high gauge factor values

◯ zero gauge factor value

◯ infinite gauge factor value

23. 15.A Wheatstone bridge has

Mark only one oval.

◯ low sensitivity

◯ zero sensitivity

◯ high sensitivity

◯ infinite sensitivity

24. 16.Photoconductive transducers produce output

Mark only one oval.

◯ due to change in inductance

◯ due to change in light

◯ due to change in resistance

◯ due to change in temperatur

25. 17.Piezoelectric transducer consists of

Mark only one oval.

◯ copper rod

◯ aluminum wire

◯ gold crystal

◯ quartz crystal

26. 18.The transducers that converts the input signal into the output signal, which is a discrete function of time is known as

Mark only one oval.

◯ Active

◯ Analog

◯ Digital

◯ Pulse

27. 19.Strain gauge, LVDT and thermocouple are examples of

Mark only one oval.

◯ Active transducers

◯ Passive transducers

◯ Asymptotically loose

◯ Primary transducers

28. 20.Bonded wire strain gauges are

Mark only one oval.

  ◯ Exclusively used for construction of transducers

  ◯ Exclusively used for stress analysis

  ◯ Used for both stress analysis and construction of transducer

  ◯ Pressure measurement

29. 21.LVDT windings are wound on

Mark only one oval.

  ◯ Steel sheets

  ◯ Aluminium

  ◯ Ferrite

  ◯ Copper

30. 22.The size of air cored transducers in comparison to the iron core parts is

Mark only one oval.

  ◯ Smaller

  ◯ Larger

  ◯ Same

  ◯ Unpredictable

31. 23.Photo conductive cell consists of a thin film of

Mark only one oval.

- Quartz
- Lithium sulphate
- Barium titanate
- Selenium

32. 24.The capacitance microphone is used for the detection of

Mark only one oval.

- Heart rate
- Blood flow
- Heart sound
- Foot pressure

33. 25.Fiber optic sensor can be used to sense

Mark only one oval.

- Displacement
- Power
- Current
- Resistance

34.   26.Shunt-type ohmmeters have on their scale

Mark only one oval.

⬭ zero ohm marking on the right corresponding to zero current

⬭ zero ohm marking on the right corresponding to full scale current

⬭ infinite ohm marking on the right corresponding to zero current

⬭ infinite ohm marking on the right corresponding to full scale current

35.   27.Controlling torque in a meggar is provided by

Mark only one oval.

⬭ control springs

⬭ balance weights

⬭ control coil

⬭ any one of the above

36.   28.any one of the above

Mark only one oval.

⬭ high value capacitances

⬭ dissipation factor of capacitances

⬭ low value resistances

⬭ high value resistances

37. 29.Potentiometers, when used for measurement of unknown resistances, give more accurate results as compared to the voltmeter–ammeter method because

Mark only one oval.

○ there is no error due to thermo-electric effect in potentiometers

○ the accuracy of voltage measurement is higher in potentiometers

○ personnel errors while reading a potentiometer is comparatively less

○ above all are correct

38. 30.Two sets of readings are taken in a Kelvin's double bridge with the battery polarity reversed in order to

Mark only one oval.

○ eliminate the error due to contact resistance

○ eliminate the error due to thermo-electric effect

○ eliminate the error due to change in battery voltage

○ all of these

39. 31.Kelvin's double bridge is called 'double' because

Mark only one oval.

○ it has double the accuracy of a Wheatstone bridge

○ its maximum scale range is double that of a Wheatstone bridge

○ it can measure two unknown resistances simultaneously, i.e., double the capacity of a Wheatstone bridge

○ it has two additional ratio arms, i.e., double the number of ratio arms as compared to a Wheatstone bridge

40.   [32.it](#) has two additional ratio arms, i.e., double the number of ratio arms as compared to a Wheatstone bridge

Mark only one oval.

○ voltmeter connected to the source side

○ ammeter connected to the source side

○ any of the two connections

○ readings are to be taken by interchanging ammeter and voltmeter positions

41.   33.In 2-wattmeter method for measurement of power in a star-connected 3 phase load, magnitude of the two wattmeter readings will be equal

Mark only one oval.

○ at zero power factor

○ at unity power factor

○ at 0.5 power factor

○ readings of the two wattmeters will never be equal

42.   34.In a CRT, the highest positive potential is given to

Mark only one oval.

○ cathode

○ focusing electrodes

○ vertical deflecting plates

○ post-deflection acceleration anode

43.　35.Sampling oscilloscopes are specially designed to measure

Mark only one oval.

◯ very high frequency

◯ very low frequency

◯ microwave frequency

◯ none of these

44.　36.In a digital oscilloscope, the A/D converters are usually

Mark only one oval.

◯ ramp type

◯ flash type

◯ integrating type

◯ successive approximate type

45.　37.Oscilloscope is

Mark only one oval.

◯ a ohmmeter

◯ an ammeter

◯ a voltmeter

◯ a multimeter

46.   38.Full form of CRO

Mark only one oval.

◯ Cathode Ray Oscilloscope

◯ Current Resistance Oscillator

◯ Central Resistance Oscillator

◯ Capacitance Resistance Oscilloscope

47.   39.Maxwell inductance capacitance bridge can be used for

Mark only one oval.

◯ measurement of inductance

◯ measurement of capacitance and inductance

◯ measurement of resistance

◯ measurement of voltage and current

48.   40.At high Q values, the angular balance condition is

Mark only one oval.

◯ satisfied

◯ not satisfied

◯ independent of Q factor

◯ partially affected

49.   41.Wheatstone bridge consists of

Mark only one oval.

     ( ) 4 resistive arms

     ( ) 2 resistive arms

     ( ) 6 resistive arms

     ( ) 8 resistive arms

50.   42.A thermocouple temperature indicator with reference junction at room temperature has a time constant of 1 s. It is dipped in a hot bath of 120°C. If the room temperature is 20°C, after 1 s the thermocouple type temperature indicator will read

Mark only one oval.

     ( ) 120°C

     ( ) 63.2°C

     ( ) 100°C

     ( ) 140°C

51.   43.In an open loop control system

Mark only one oval.

     ( ) Output is independent of control input

     ( ) Output is dependent on control input

     ( ) Only system parameters have effect on the control output

     ( ) None of the above

52.   44.A control system in which the control action is somehow dependent on the output is known as

Mark only one oval.

⬭ Closed loop system

⬭ Semiclosed loop system

⬭ Open system

⬭ None of the above

53.   45.Which of the following is an open loop control system ?

Mark only one oval.

⬭ Field controlled D.C. motor

⬭ Ward leonard control

⬭ Metadyne

⬭ Stroboscope

54.   46.The initial response when tune output is not equal to input is called

Mark only one oval.

⬭ Transient response

⬭ Error response

⬭ Dynamic response

⬭ Either of the above

55. 47.A control system working under unknown random actions is called

Mark only one oval.

○ computer control system

○ digital data system

○ stochastic control system

○ adaptive control system

56. 48.Any externally introduced signal affecting the controlled output is called a

Mark only one oval.

○ feedback

○ stimulus

○ signal

○ gain control

57. 49.Which of the following devices are commonly used as error detectors in instruments?

Mark only one oval.

○ Vernistats

○ Microsyns

○ Resolvers

○ Any of the above

58.   50._____ increases the steady state accuracy.

Mark only one oval.

○ Integrator

○ Differentiator

○ Phase lead compensator

○ Phase lag compensator

59.   51.As a result of introduction of negative feedback which of the following will not decrease ?

Mark only one oval.

○ Band width

○ heap sortOverall gain

○ Distortion

○ Instability

60.   52.The output of a feedback control system must be a function of

Mark only one oval.

○ reference and output

○ reference and input

○ input and feedback signal

○ output and feedback signal

61.   53.Regenerative feedback implies feedback with

Mark only one oval.

◯ oscillations

◯ step input

◯ negative sign

◯ positive sign

62.   54.A control system with excessive noise, is likely to suffer from

Mark only one oval.

◯ saturation in amplifying stages

◯ loss of gain

◯ vibrations

◯ oscillations

63.   55.Zero initial condition for a system means

Mark only one oval.

◯ input reference signal is zero

◯ zero stored energy

◯ ne initial movement of moving parts

◯ system is at rest and no energy is stored in any of its components

64.   56.Transfer function of a system is used to calculate which of the following ?

Mark only one oval.

⬭ The order of the system

⬭ The time constant

⬭ The output for any given input

⬭ The steady state gain

65.   57.On which of the following factors does the sensitivity of a closed loop system to gain changes and load disturbances depend ?

Mark only one oval.

⬭ Frequency

⬭ Loop gain

⬭ Forward gain

⬭ All of the above

66.   58.In a control system the output of the controller is given to

Mark only one oval.

⬭ final control element

⬭ amplifier

⬭ comparator

⬭ sensor

67.   59.The Static system can be defined as:

Mark only one oval.

   ⬭ Output of a system depends on the present as well as past input.

   ⬭ Output of a system depends only on the received inputs.

   ⬭ Output of the system depends only on the present input.

   ⬭ Output of the system depends on future inputs.

68.   60.The principle of homogeneity and superposition are applied to:

Mark only one oval.

   ⬭ Linear time invariant systems

   ⬭ Nonlinear time invariant systems

   ⬭ Linear time variant systems

   ⬭ linear time invariant systems

69.   61.In continuous data systems:

Mark only one oval.

   ⬭ Data may be continuous function of time at all points in the system

   ⬭ Data is necessarily a continuous function of time at all points in the system

   ⬭ Data is continuous at the inputs and output parts of the system but not necessarily during intermediate processing of the data

   ⬭ Only the reference signal is continuous function of time

70.   62.A transfer function has two zeroes at infinity. Then the relation between the numerator(N) and the denominator degree(M) of the transfer function is:

Mark only one oval.

⬭ N=M+2

⬭ N=M-2

⬭ N=M+1

⬭ N=M-1

71.   63.If the initial conditions for a system are inherently zero, what does it physically mean?

Mark only one oval.

⬭ The system is at rest but stores energy

⬭ The system is working but does not store energy

⬭ The system is at rest or no energy is stored in any of its part

⬭ The system is working with zero reference input

72.   64.The overall transfer function from block diagram reduction for cascaded blocks is :

Mark only one oval.

⬭ Sum of individual gain

⬭ Product of individual gain

⬭ Difference of individual gain

⬭ Division of individual gain

73.   65.Transfer function of the system is defined as the ratio of Laplace output to
       Laplace input considering initial conditions _____

Mark only one oval.

⬭ 1

⬭ 2

⬭ 0

⬭ 4

74.   66.Oscillations in output response is due to :

Mark only one oval.

⬭ Positive feedback

⬭ Negative feedback

⬭ No feedback

⬭ None of the mentioned

75.   67.Calculate the poles and zeroes for the given transfer function G(s) = 5 (s+ 2)/
       (s^2 + 3s + 2)

Mark only one oval.

⬭ -2, (-1, -2)

⬭ 2, (-1, 2)

⬭ 2, (1, 2)

⬭ -2, (1, -2)

76.   68.The capacitance, in force-current analogy, is analogous to

Mark only one oval.

- ( ) momentum
- ( ) velocity
- ( ) displacement
- ( ) mass

77.   69.Loop gain is equal to:

Mark only one oval.

- ( ) Product of all branch gains in a loop
- ( ) Product of all branch gains while traversing the forward path
- ( ) Summation of all branch gains in a loop
- ( ) Sum of all branch gains while traversing the forward path

78.   70.A system with the polynomial $s^4 + 5s^3 + 3s^2 + 6s + 5 = 0$ is:

Mark only one oval.

- ( ) Unstable
- ( ) Marginally stable
- ( ) In equilibrium
- ( ) Stable