



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Diploma in Electronics & Communication Engineering

Course Name – Instrumentation and Control

Course Code - DECE603

(Semester VI)

Time allotted : 1 Hrs.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

- (1) The sensitivity factor of strain gauges is normally of the order of

a) 1 to 1.5	b) 1.5 to 2
c) 0.5 to 1	d) 5 to 10
- (2) What will be the reading of megger if the measuring terminals are open circuited?

a) infinity	b) 500 ohm
c) 0 ohm	d) 10000 ohm
- (3) Which of the method one will choose for the low resistance measurement?

a) Schering bridge method	b) Maxwell bridge method
c) Kelvin's double bridge method	d) Potentiometric method
- (4) The linear variable differential transformer transducer is

a) Capacitive transducer	b) Inductive transducer
c) Resistive transducer	d) Non-inductive transducer
- (5) What is the principle of operation of LVDT?

a) Mutual inductance	b) Self-inductance
c) Permanence	d) Reluctance
- (6) Which transducer is known as 'self-generating transducer'?

a) Active transducer	b) Passive transducer
c) Secondary transducer	d) Analog transducer
- (7) What is the purpose of making internal resistance of milli-ammeter very low?

a) High sensitivity	b) High accuracy
c) Minimum voltage drop across meter	d) Maximum voltage drop across meter
- (8) Using a low resistant shunt Moving coil, permanent magnet instrument can be converted to

a) Volt meter	b) Ammeter
c) Flux-meter	d) Watt meter

- (9) Which of the following unit is used to express the sensitivity of analog voltmeter?
- a) Ohms
 - b) Voltage
 - c) No unit
 - d) Ohms per volt
- (10) Strain gauge works on the principle of
- a) piezo-electric effect
 - b) piezo- resistive effect
 - c) barkhausen criterion
 - d) feedback element effect
- (11) Gauge factor in a strain gauge must be
- a) high
 - b) low
 - c) medium
 - d) small
- (12) Characteristics of Strain gauge is
- a) tangential
 - b) exponential
 - c) non-linear
 - d) linear
- (13) Semiconductor strain gauges are used for
- a) low gauge factor values
 - b) high gauge factor values
 - c) zero gauge factor value
 - d) infinite gauge factor value
- (14) A Wheatstone bridge has
- a) low sensitivity
 - b) zero sensitivity
 - c) high sensitivity
 - d) infinite sensitivity
- (15) Commonly used electrical strain gauge is
- a) open type
 - b) closed type
 - c) unbounded type
 - d) bonded type
- (16) Piezoelectric transducer consists of
- a) copper rod
 - b) aluminum wire
 - c) gold crystal
 - d) quartz crystal
- (17) When a compressive force is applied to a quartz crystal then
- a) positive charges are induced
 - b) negative charges are induced
 - c) no charge is induced
 - d) both positive and negative charges are induced
- (18) A transducer that converts measurand into the form of pulse is called
- a) Active transducer
 - b) Analog transducer
 - c) Digital transducer
 - d) Pulse transducer
- (19) Bonded wire strain gauges are
- a) Exclusively used for construction of transducers
 - b) Exclusively used for stress analysis
 - c) Used for both stress analysis and construction of transducer
 - d) Pressure measurement
- (20) Quartz and Rochelle salt belongs to what type of piezo-electric materials
- a) Natural group
 - b) Synthetic group
 - c) Natural or Synthetic group
 - d) Fiber group
- (21) The size of air cored transducers in comparison to the iron core parts is
- a) Smaller
 - b) Larger
 - c) Same
 - d) Unpredictable
- (22) The two secondary voltages in a LVDT
- a) Are independent of the core position
 - b) Vary unequally depending on the core position
 - c) Vary equally depending on the core position
 - d) Are always in phase quadrature
- (23) Photo conductive cell consists of a thin film of
- a) Quartz
 - b) Lithium sulphate

- c) Barium titanate
d) Selenium
- (24) Fiber optic sensor can be used to sense
a) Displacement
b) Power
c) Current
d) Resistance
- (25) Shunt-type ohmmeters have on their scale
a) zero ohm marking on the right corresponding to zero current
b) zero ohm marking on the right corresponding to full scale current
c) infinite ohm marking on the right corresponding to zero current
d) infinite ohm marking on the right corresponding to full scale current
- (26) The loss of charge method is used for measurement of
a) high value capacitances
b) dissipation factor of capacitances
c) low value resistances
d) high value resistances
- (27) When measuring cable insulation using a dc source, the galvanometer used is initially short circuited to
a) discharge the stored charge in the cable
b) bypass the high initial charging current
c) prevent the galvanometer from getting damaged due to low resistance of the cable
d) all options correct
- (28) Schering bridge can be used for measurement of
a) capacitance and dissipation factor
b) dissipation factor only
c) inductance with inherent loss
d) capacitor but not dissipation factor
- (29) When measuring power in a circuit with low current, the wattmeter current coil should be connected
a) to the load side
b) to the source side
c) anywhere, either load side or source side, does not matter
d) in series with the load along with CT for current amplification
- (30) In a CRT, the highest positive potential is given to
a) cathode
b) focusing electrodes
c) vertical deflecting plates
d) post-deflection acceleration anode
- (31) The patterns used to measure phase and frequency with a cathode ray oscilloscope are called
a) Faraday's pattern
b) Ohm's patterns
c) Lissajous pattern
d) Phillips pattern
- (32) A double beam oscilloscope has
a) two screens
b) two electron guns
c) two different phosphor coatings
d) one waveform divided into two parts
- (33) In a digital oscilloscope, the A/D converters are usually
a) ramp type
b) flash type
c) integrating type
d) successive approximate type
- (34) Oscilloscope is
a) a ohmmeter
b) an ammeter
c) a voltmeter
d) a multimeter
- (35) Full form of CRO
a) Cathode Ray Oscilloscope
b) Current Resistance Oscillator
c) Central Resistance Oscillator
d) Capacitance Resistance Oscilloscope
- (36) Maxwell inductance capacitance bridge can be used for
a) measurement of inductance
b) measurement of capacitance and inductance
c) measurement of resistance
d) measurement of voltage and current
- (37) What is the significance of the balance equation on losses?

- a) independent of losses in inductance
 c) independent of losses in resistance
- b) independent of losses in capacitance
 d) independent of losses in the circuit
- (38) At high Q values, the angular balance condition is
- a) satisfied
 c) independent of Q factor
- b) not satisfied
 d) partially affected
- (39) A galvanometer is used as a
- a) current source
 c) null detector
- b) voltage source
 d) input impedance
- (40) 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
- a) 120°C
 c) 100°C
- b) 63.2°C
 d) 140°C
- (41) For open control system which of the following statements is incorrect?
- a) Less expensive
 c) Construction is simple and maintenance easy
- b) Recalibration is not required for maintaining the required quality of the output
 d) Errors are caused by disturbances
- (42) In closed loop control system, with positive value of feedback gain the overall gain of the system will
- a) decrease
 c) be unaffected
- b) increase
 d) any of the above
- (43) Which of the following statements is not necessarily correct for open control system ?
- a) Input command is the sole factor responsible for providing the control action
 c) Less expensive
- b) Presence of non-linearities causes malfunctioning
 d) Generally free from problems of non-linearities
- (44) _____ has tendency to oscillate.
- a) Open loop system
 c) Both (a) and (b)
- b) Closed loop system
 d) Neither (a) nor (b)
- (45) A car is moving at a constant speed of 50 km/h, which of the following is the feedback element for the driver ?
- a) Clutch
 c) Needle of the speedometer
- b) Eyes
 d) Steering wheel
- (46) A control system working under unknown random actions is called
- a) computer control system
 c) stochastic control system
- b) digital data system
 d) adaptive control system
- (47) An automatic toaster is a _____ loop control system.
- a) open
 c) partially closed
- b) closed
 d) any of the above
- (48) Any externally introduced signal affecting the controlled output is called a
- a) feedback
 c) signal
- b) stimulus
 d) gain control
- (49) A closed loop system is distinguished from open loop system by which of the following ?
- a) Servomechanism
 c) Output pattern
- b) Feedback
 d) Input pattern
- (50) By which of the following the control action is determined when a man walks along a path ?
- a) Brain
- b) Hands

- c) Legs
d) Eyes
- (51) Which of the following devices are commonly used as error detectors in instruments?
a) Vernistats
b) Microsyns
c) Resolvers
d) Any of the above
- (52) _____ increases the steady state accuracy.
a) Integrator
b) Differentiator
c) Phase lead compensator
d) Phase lag compensator
- (53) Regenerative feedback implies feedback with
a) oscillations
b) step input
c) negative sign
d) positive sign
- (54) Traffic light system is the example of:
a) Open-loop system
b) Closed-loop system
c) Both (a) and (b)
d) None of these
- (55) A control system with excessive noise, is likely to suffer from
a) saturation in amplifying stages
b) loss of gain
c) vibrations
d) oscillations
- (56) Transfer function of a system is used to calculate which of the following ?
a) The order of the system
b) The time constant
c) The output for any given input
d) The steady state gain
- (57) On which of the following factors does the sensitivity of a closed loop system to gain changes and load disturbances depend ?
a) Frequency
b) Loop gain
c) Forward gain
d) All of the above
- (58) Which of the following statements is correct for any closed loop system ?
a) All the co-efficients can have zero value
b) All the co-efficients are always non-zero
c) Only one of the static error co-efficients has a finite non-zero value
d) None of the above
- (59) In a control system the output of the controller is given to
a) final control element
b) amplifier
c) comparator
d) sensor
- (60) The Static system can be defined as:
a) Output of a system depends on the present as well as past input.
b) Output of a system depends only on the received inputs.
c) Output of the system depends on future inputs.
d) Output of the system depends only on the present input.