BRAINWARE UNIVERSITY

Term End Examination 2020 - 21

Programme – Diploma in Electronics & Communication Engineering

Course Name – Electronics Instruments and Measurements

Course Code - DECE502

Semester / Year - Semester V

Time allotted : 85 Minutes | Full Marks : 70

[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 70=70

1. *(Answer any Seventy)*

(i) A dynamometer wattmeter can be used for

a) D.C. only
b) A.C. only
c) both D.C. and A.C.
d) none of these

(ii) The full range of audibility in audio frequency oscillator is ……

a) 0 to 20 Hz
b) 20 Hz to 2 kHz
c) 20 Hz to 20 kHz
d) 20 Hz to 20 MHz

(iii) The frequency can be measure by

a) wien's bridge
b) Schering Bridge
c) De Sauty's Bridge
d) Anderson's Bridge

(iv) Error of measurement =

a) True value – Measured value
b) Precision – True value
c) Measured value – Precision
d) None of these

(v) At high frequencies the capacitive reactance.

a) is constant
b) increases
c) decreases
d) becomes zero

(vi) Noise is a function of _____

a) voltage
b) current
c) bandwidth
d) frequency

(vii) The commonly used detectors in ac bridges is/are

a) Head phones
b) Vibration galvanometers
c) Tuned amplifiers
d) all

(viii) In function generator, the output waveform of integrator is

a) Sinusoidal
b) Square
c) Triangular
d) Saw-tooth

(ix) A liquid crystal display requires

a) An AC drive
b) A DC drive
c) Both AC and DC drive
d) None of these

(x) Q meter is used to measure the properties of

a) Inductive coils
b) Non inductive coils
c) Capacitive coils
d) Both (Inductive coils) and (Capacitive coils)

(xi) Ballistic galvanometer are principally used for the measurement of

a) Current
b) Voltage
c) Power
d) Electric charges

(xii) The Wien's bridge is suitable for the measurement of frequency of the range of

a) Less than 100 Hz
b) 100 Hz to 100 kHz
c) 1 kHz to 100 MHz
d) More than 100 MHz

(xiii) Schering bridges are used for the measurement of

a) Unknown capacitance
b) Dielectric loss
c) Power factor
d) All of these

(xiv) Q meter works on the principle of

a) Series resonance
b) Parallel resonance
c) Both (Series resonance) and (Parallel resonance)
d) Neither series resonance nor parallel resonance

(xv) The Ac Bridge used for the measurement of inductance is/are

a) Maxwell's inductance bridge
b) Hay's bridge
c) Anderson's bridge, Owen's bridge
d) All of These

(xvi) CRO is a _____

a) fast x-y plotter
b) slow x-y plotter
c) medium x-y plotter
d) not a plotter

(xvii) Electron gun section _____

a) provides sharp beam
b) provides poorly focussed beam
c) doesn't provide any beam
d) provides electrons only

(xviii) In CRO Control grid is given _____

a) positive voltage
b) negative voltage
c) neutral voltage
d) zero voltage

(xix) What determines light intensity in a CRT?

a) voltage
b) current
c) momentum of electrons
d) fluorescent screen

(xx) Deflection system of a CRT consists of _____

a) 4 plates
b) 6 plates
c) 2 plates
d) 8 plates

(xxi) Input signals are amplified in CRO using _____

a) rectifier
b) amplifier
c) oscillator
d) op amp

(xxii) Why is a delay line used in a CRO?

a) to boost the signal
b) to distort the signal
c) to provide signal delay
d) for stability

(xxiii) What is the problem with using more than one oscilloscopes?

a) measuring the signal's parameters
b) triggering
c) supply voltage
d) errors in reading

(xxiv) In CRO,after pre-amplification the signals are fed into

a) an electronic switch
b) a signal generator
c) a rectifier
d) a regulator

(xxv) X and Y plates of a CRO are connected to unequal voltages of equal frequency with phase shift of 90 degree. The Lissajous figure on the screen will be?

a) Circle
b) Straight Line
c) Ellipse
d) Figure of Eight

(xxvi) In Q meter,oltage across the shunt is measured by _____

a) voltmeter
b) multimeter
c) thermocouple
d) thermometer

(xxvii) Wattmeter reading has errors induced by _____

a) resistance
b) self-capacitance
c) self-inductance
d) mutual inductance

(xxviii) A.C. voltages are measured using _____

a) oscillators and op amps
b) rectifiers and filters
c) resistor and capacitor
d) inductor and resistor

(xxix) What is the effect of the capacitor on the output of Dual slop converter?

a) no effect
b) charging effect
c) electrostatic effect
d) magnetic effect

(xxx) In ramp technique Resolution depends on

a) frequency
b) resistance
c) voltage
d) current

(xxxi) A successive approximation type DVM makes use _____

a) of a digital divider
b) of an analog divider
c) of an oscillator
d) of a transducer

(xxxii) Successive approximation type DVM is based on the principle of _____

a) acceleration of an object
b) weight of an object
c) velocity of an object
d) momentum of an object

(xxxiii) Resolution of a successive approximation type DVM is given by the relation.

a) $R = 1/10^n$

b) $R = 1/10$

c) $R = 10^n$

d) R = 10

(xxxiv) Speed of a successive approximation type DVM can be improved by making use of _____

a) electrical switches
b) mechanical devices
c) solid state devices
d) transformers

(xxxv) Digital voltmeters converts _____
a) analog to digital signal
b) digital to analog signal
c) current to voltage
d) resistance to voltage

(xxxvi) In a DVM, a transducer converts _____
a) input to proportional current
b) input to proportional power
c) input to proportional voltage
d) input to proportional resistance

(xxxvii) Input range of DVM is _____
a) 1 V to 1000 V
b) 0.1 V to 10 V
c) 0.01 V to 1 V
d) 0.001 V to 0.1 V

(xxxviii) What is the effect of IC chips on DVM?
a) increase in cost
b) increase in power
c) reduction in cost
d) increase in size

(xxxix) In D.C. circuits, power is measured using _____
a) ohmmeter and galvanometer
b) ohmmeter and voltmeter
c) ammeter and voltmeter
d) ammeter and galvanometer

(xl) A dynamometer type wattmeter consists of _____
a) only potential coil
b) potential and current coils
c) only current coil
d) no coils

(xli) When the moving coil in a Dynamometer type wattmeter deflects
a) pointer moves
b) pointer doesn't move
c) current flows
d) voltage is generated

(xlii) What is the effect of capacitance on wattmeter reading?

a) aiding the inductance
b) opposite to that of inductance
c) aiding the capacitance
d) opposite to that of resistance

(xliii) Dynamometer type wattmeter has _____

a) strong magnetic field
b) intermediate magnetic field
c) weak magnetic field
d) no magnetic field

(xliv) Wattmeters are compensated for errors due to inductance by _____

a) using a series capacitor
b) using a parallel capacitor
c) using a series resistance
d) using a parallel resistance

(xlv) What is the effect of frequency on the torque of a moving system?

a) torque is half of the frequency
b) torque is twice the frequency
c) torque is thrice the frequency
d) torque is four times the frequency

(xlvi) An Oscilloscope indicates_____

a) The peak to peak value of the voltage
b) DC value of the voltage
c) rms value
d) average value

(xlvii) The disadvantage of Maxwell Bridge is?

a) Inductance cannot be measured over a wide range
b) Measurement is not independent of frequency
c) Number of components is large
d) Inductance can be measured over a wide range

(xlviii) In CRO horizontal deflection is given by _____

a)
b)

$X= K_x$
$X=V_x$

c) $X=1$
d)

$$X=K_xV_x$$

(xlix) Schering bridge is used for _____

a) low voltages only
b) low and high voltages
c) high voltages only
d) intermediate voltages only

(l) For phase angles close to 90°, the power factor of the Schering bridge is _____

a) $p.f. = \omega R_x$

b) $p.f. = \omega C_x$

c) p.f. = Rx Cx

d) $p.f. = \omega R_x C_x$

(li) Quality factor is given by the expression

a) $Q = 1/R$

b) Q = R

c) $Q = X/R\,C$

d) Q = XR

(lii) Bridge must be balanced for _____

a) magnitude
b) angle
c) magnitude and angle
d) power

(liii) For inductive impedances, the phase angle is _____ for Bridge balance.

a) Positive
b) negative

c) zero
d) exponential

(liv) For capacitive impedances, the phase angle is _____ for Bridge balance.

a) tangential
b) negative
c) positive
d) logarithmic

(lv) At very low frequencies in a AC bridge, the source is _____

a) power line
b) e.m.f
c) galvanometer
d) tuned circuit

(lvi) Tuned amplifiers can be set to _____

a) low frequencies
b) high frequencies
c) any frequency
d) audio frequencies

(lvii) In the simplest form, an AC bridge consists of _____

a) arms, source and a detector
b) arms and source
c) source and detector
d) arms and detector

(lviii) What is the frequency range for a headphone as a detector?

a) 20 Hz to 20 kHz
b) 10 kHz to 1 MHz
c) 0 MHz to 1 GHz
d) 250 Hz to 4 kHz

(lix) Tuned detectors are used in the frequency range of _____

a) 1 Hz to 100 Hz
b) 10 Hz to 100 Hz
c) 1 kHz to 100 kHz
d) 1 MHz to 100 MHz

(lx) What is applied to the two opposite junctions of a bridge circuit.

a) source of voltage
b) source of current
c) source of power
d) source of impedance

(lxi) A bridge circuit uses which method of measurement?

a) absolute
b) relative
c) differential
d) comparison

(lxii) The accuracy of a bridge depends on the _____

a) null indicator
b) bridge components
c) current source
d) voltage source

(lxiii) Q factor of a coil measured by the Q Meter is _____ the actual Q of the coil.

a) Equal to
b) Same but somewhat lesser than
c) Same but somewhat higher than
d) Not equal to

(lxiv) Relationship at balance condition between the component values of the four arms of a bridge is known as

a) full load condition
b) open circuit condition
c) short circuit condition
d) balancing condition

(lxv) Accuracy of bridge circuit depends on _____

a) component values
b) null detector
c) voltage source
d) current source

(lxvi) The bridge circuit can be used in _____

a) high voltage circuits
b) low power circuits
c) control circuits
d) digital integrated circuits

(lxvii) Commonly used D.C. bridges are _____

a) Schering and Anderson
b) Maxwell inductance and capacitance
c) DeSauty and Wagner
d) Wheatstone and Kelvin

(lxviii) Electronic voltmeter are_____

a) measure high level signals
b) measure low level signals
c) measure medium level signals
d) do not measure any signals

(lxix) Loading effect in electronic voltmeter is _____

a) nil
b) high
c) low
d) medium

(lxx) A voltmeter has a sensitivity of 1000 ohm/V reads 200 V on its 300 V scale. When connected across an unknown resistor in series with a millimeter. When the milliammeter reads 10 mA. The error due to the loading effect of the voltmeter is _____

a) 0.0333
b) 0.0667
c) 0.1334
d) 0.1367