

[Electrical Measuring Instruments MCQ PDF](#)

1. A pointer of an instrument once deflected returns to zero position, when the current is removed, due to

- (a) action of gravity
- (b) mass of the pointer
- (c) **controlling torque**
- (d) damping torque

2. An instrument in which the value of electrical quantity to be measured can be determined from the deflection of the instrument, when it has been pre-calibrated by comparison with an absolute instrument is known as

- (a) absolute instrument
- (b) **secondary instrument**
- (c) recording instrument
- (d) integrating instrument

3. [Damping torque](#) in instruments is generally not produced

- (a) pneumatically
- (b) electro-magnetically
- (c) **electro-statically**

(d) by fluid friction.

4. Which of the following materials will be preferred as a [shunt for extending the range](#) of measurement of a voltmeter?

- (a) Copper
- (b) Steel
- (c) Aluminum
- (d) **Manganin.**

5. Low temperature coefficient of the resistance used for [extending the range of a voltmeter](#)

- (a) **reduces inaccuracies due to the temperature variations**
- (b) enables instrument to work at high temperatures
- (c) increases the least count of the instrument
- (d) enlarges the scale of reading.

6. The [deflecting torque](#) in an instrument may be produced

- (a) magnetically
- (b) electrostatically
- (c) thermally
- (d) **any of the above.**

7. To take-care the change in frequency of AC current, while using [moving iron type instruments](#)

- (a) an induction coil is used.

- (b) a condenser of suitable value is used in series with the swamp resistance.
- (c) **a condenser of suitable value is used in parallel with the swamp resistance.**
- (d) a balancing circuit is provided.

8. A portable instrument is likely to have

- (a) fluid friction damping
- (b) pneumatic damping
- (c) gravitational damping
- (d) **eddy-current damping.**

9. In [eddy-current damping systems](#), the disc is usually made of

- (a) non-conducting and non-magnetic material
- (b) non-conducting and magnetic material
- (c) conducting and magnetic material
- (d) **conducting and non-magnetic material**

10. Which type of wattmeter cannot be used for both AC and DC?

- (a) dynamometer type
- (b) electrostatic type
- (c) **induction type**
- (d) none of the above.

11. A moving iron type ammeter has few turns of thick wire so that

- (a) **resistance is less**
- (b) sensitivity is high
- (c) damping is effective
- (d) scale is large.

12. A repulsion type ammeter when used on AC circuits, reads

- (a) peak value of current
- (b) **RMS value of current**
- (c) mean value of current
- (d) equivalent DC value of current.

13. If [damping torque](#) is not provided in an instrument

- (a) the instrument will show full wave of quantity even under small values.
- (b) the pointer will move only when full rated load is provided.
- (c) the pointer will oscillate about its final deflected position and will never come to rest even under steady conditions.
- (d) **the pointer will oscillate about its final deflected position for quite time before coming to rest.**

14. When the damping of an instrument is adjusted to enable the pointer to rise quickly to its deflected position without overshooting, in that case the instrument is said to be

- (a) **dead beat**
- (b) off beat
- (c) over damped
- (d) under damped.

15. When the damping force is more than the optimum, the instrument will become

- (a) dead
- (b) oscillating
- (c) **slow and lethargic**
- (d) fast and sensitive.

16. In a moving iron type ammeter, the coil has

- (a) large number of turns of thick wire
- (b) large number of turns of thin wire
- (c) few turns of thin wire
- (d) **few turns of thick wire.**

17. In a repulsion type instrument, the force of repulsion is approximately proportional to

- (a) current
- (b) **square of the current**

- (c) inverse of the current
- (d) inverse of the square of the current.

18. In [moving iron type instruments](#) because of the hysteresis in the iron parts of the moving system, the readings are

- (a) **higher on descending values but lower on ascending values.**
- (b) higher on ascending values but lower on descending values.
- (c) higher on both ascending as well as descending values.
- (d) lower on both ascending as well as descending values.

19. Magnetic shielding of the working parts is obtained by using

- (a) anti-magnetic substance
- (b) a wooden case for meters
- (c) **covering case of cast iron**
- (d) glass covers.

20. If the torque/weight ratio of an instrument is low, then it can be concluded that

- (a) the meter will have uniform scale
- (b) the meter will have non-uniform scale
- (c) sensitivity of the meter will be high
- (d) **sensitivity of the meter will be low.**

21. Which of the following cannot be described as the advantage of moving coil permanent magnet type instrument?

- (a) they have uniform scale
- (b) they have low torque/weight ratio**
- (c) they have efficient eddy current damping
- (d) they have efficient eddy current damping

22. Which type of damping is generally preferred in case of instruments having weak magnetic field?

- (a) air friction damping**
- (b) fluid friction damping
- (c) eddy current damping
- (d) hysteresis damping.

23. 132 kV AC voltage can be measured by

- (a) moving iron voltmeter
- (b) moving coil voltmeter
- (c) hot wire voltmeter
- (d) electro static voltmeter.**

24. In which instruments the deflecting torque depends on frequency

- (a) hot wire instruments

- (b) moving coil instruments
- (c) moving iron instruments
- (d) **induction type instruments.**

25. On account of the effect of the inductance in [pressure coil](#), the wattmeter at leading power factor tends to read

- (a) **low**
- (b) high
- (c) normally
- (d) erratically.

26. To measure the voltages and currents in the radio frequency range, suitable instrument is

- (a) moving iron type
- (b) moving coil type
- (c) **electro-thermic type**
- (d) electrostatic type.

27. When a $10\ \mu\text{F}$ capacitor is connected across the terminals of an ohm meter, the instrument initially shows low resistance and then slowly the value of resistance rises to a very high value. What conclusion can be drawn about the condition of capacitor?

- (a) the capacitor is faulty
- (b) the capacitor is leaky
- (c) the capacitor has some initial charge

(d) **the capacitor is straight.**

28. A permanent magnet moving coil type ammeter and a moving iron type ammeter are connected in series with the output of a half wave rectifier. If the moving iron type instrument reads 5 amperes then moving coil type instrument is likely to be

(a) zero

(b) **5 A**

(c) 3.18 A

(d) 2.5 A

29. [Thermocouples](#) are generally used for accurate temperature measurements up to

(a) 100°C

(b) 250°C

(c) 500°C

(d) **1600°C**

30. The commonly used material for thermocouple is

(a) Chromel-copel

(b) Chromel-alumel

(c) Platinum-rhodium

(d) **any of the above.**

31. Bolometers are used for the measurement of

- (a) optical inputs
- (b) **thermal radiations**
- (c) electrical signals
- (d) temperature inputs.

32. A bolometer is an element which

- (a) **senses optical input and delivers thermal output**
- (b) senses thermal inputs
- (c) senses electrical input and delivers thermal output
- (d) senses optical input and delivers electrical output.

33. Least expensive instrument for DC measurement is

- (a) hot wire instrument
- (b) dynamometer type moving coil instrument
- (c) **attraction type moving iron instrument**
- (d) electrostatic type instrument.

34. To double the current range of a $50\ \mu\text{A}$ $2000\ \Omega$ meter movement, the [shunt resistance required](#) is

- (a) $20\ \Omega$
- (b) $200\ \Omega$
- (c) **$2000\ \Omega$**
- (d) $20000\ \Omega$

35. Which voltmeter has the least power consumption?

- (a) Induction type
- (b) Hot wire type
- (c) **Electrostatic type**
- (d) Moving-iron attraction type

36. Which of the following instrument can be used for the measurement of temperatures above 1500 K?

- (a) mercury thermometer
- (b) gas thermometer
- (c) **thermo-electric pyrometer**
- (d) any of the above.

37. Meter range is normally so selected that the indications are obtained

- (a) at the maximum of the scale
- (b) **at the middle of the scale**
- (c) near the initial zone of the scale.

38. Ideally the internal resistance of an ammeter should be

- (a) **zero**
- (b) 0.1 ohm
- (c) 1 ohm
- (d) infinite

39. In [two wattmeter method](#), if one of the wattmeter shows negative reading, the power factor of the load should be

- (a) unity
- (b) **lagging**
- (c) leading
- (d) zero

40. The scale of a wattmeter gives maximum indication of 100. The current and voltage ranges are 10 A and 220 V. The multiplication factor is

- (a) 2.2
- (b) **22**
- (c) 1/22
- (d) 0.5

40. Which of the following instruments can be used in ac bridges for low frequencies up to 200 Hz only?

- (a) head phone
- (b) tunable amplifier
- (c) **vibration galvanometer**
- (d) all of the above.

41. Maxwell bridge is used to measure

- (a) Resistance
- (b) **Inductance**
- (c) Capacitance
- (d) Frequency.

42. A bridge used for measurement of capacitance is

- (a) Wheatstone bridge
- (b) Wein bridge
- (c) Maxwell bridge
- (d) **Schering bridge.**

43. Which of the following instruments can be used in AC bridges for the frequencies up to 100 kHz?

- (a) Headphones
- (b) Vibration galvanometer
- (c) **Tunable amplifier detector**
- (d) Any of the above.

44. Hay's bridge can be used for measurements on

- (a) pure resistive circuits
- (b) **high Q inductive circuits**
- (c) radio frequency circuits
- (d) any of the above.

45. Capacitor type potential divider is used to extend the range of which type voltmeter?

- (a) Induction voltmeter

- (b) **Electrostatic voltmeter**
- (c) Hot wire voltmeter
- (d) Electrodynamic voltmeter.

46. Which of the following frequency meters can be used for the measurement of radio frequency?

- (a) Weston frequency meter
- (b) **Heterodyne frequency meter**
- (c) Electrical resonance frequency meter
- (d) Any of the above.

47. One wattmeter method is used to measure power in a three phase circuit when

- (a) the power factor is unity
- (b) the supply frequency is 50 Hz only
- (c) **the load is balanced in all three phases**
- (d) the supply voltage is 220 V.

48. Which method can be used to [measure the power in a three phase unbalanced load system?](#)

- (a) One wattmeter method
- (b) **Two wattmeter method**
- (c) Three voltmeter method

(d) Three ammeter method.

49. In the two wattmeter method if power factor is 0.5, then one of the wattmeters will read

- (a) **zero** (b) $W/2$
(c) $W/\sqrt{2}$ (d) $W/\sqrt{3}$

51. A meggar is basically a

- (a) moving iron type instrument
(b) **moving coil type instrument**
(c) hot wire instrument
(d) electrolytic instrument.

52. Highest flux density exists inside which of the following instrument?

- (a) moving iron type instrument
(b) **moving coil type instrument**
(c) hot wire instrument
(d) electro-dynamic instrument.

53. In a moving iron instrument 12 A current causes a deflection of the needle by 60 degrees. A deflection of 15 degrees will be obtained by a current of

- (a) **6 A** (b) 9 A

(c) 4 A (d) 3 A

54. In a moving coil instrument 12 A current causes a deflection of the needle by 60 degrees. A deflection of 15 degrees will be obtained by a current of

(a) 6 A (c) 9 A

(d) 4 A (d) **3 A**

55. A voltmeter has an accuracy of 5% on full scale. The percentage error while measuring 50 V will be

(a) 2.5% (b) 5%

(c) 7.5% (d) **10%**

56. Which of the following instruments does not use the effect of current for measurement purposes?

(a) **Electrostatic ammeter**

(b) Hot wire meter

(c) Rectifier ammeter

(d) Moving coil ammeter.

57. The number of turns in the primary of a current transformer is usually

(a) **1 to 5** (b) 10 to 50

(c) 100 to 500 (d) 1000 to 5000

58. The purpose of providing a swamping resistance in a dynamometer type moving coil instruments is

- (a) **to provide equal time constant for fixed coil and moving coil, when used for AC measurements.**
- (b) to reduce the bulk of the moving coil system.
- (c) to reduce the current flowing through the moving coil.
- (d) to control the deflecting torque.

59. Which of the following instruments will be suitable for the measurement of temperature of a furnace?

- (a) Clinical thermometer
- (b) Mercury thermometer
- (c) **Optical pyrometer**
- (d) Bimetallic thermometer.

60. An electrodynamic wattmeter is not considered suitable for low power factor circuits due to

- (a) inductance of voltage coil
- (b) reactance of current coil
- (c) **power loss in voltage coil**
- (d) power loss in current coil

62. In a [megger](#) when not in operation, the needle shows a resistance of

- (a) Zero ohms
- (b) **Infinity**
- (c) 100 ohms
- (d) 500 Ohms

34. A cadmium sulphide cell is a

- (a) solar cell
- (b) dry cell
- (c) **photo voltaic cell**
- (d) photo conductive cell.

35. A photo electric transducers are used for the measurement of any phenomenon which can be used to produce

- (a) variation in current
- (b) variation in voltage
- (c) **variation in light intensity**
- (d) variation in flux density.

37. A solar cell is

- (a) same as a photometer
- (b) same as a photo emissive cell
- (c) **same as a photo conductive cell**
- (d) same as a photo voltaic cell.

38. A [load cell](#) is a

- (a) **strain gauge**
- (b) photovoltaic cell
- (c) thermistor
- (d) pressure pickup.

39. Which of the following quantities cannot be measured by a load cell?

- (a) pressure
- (b) **temperature**
- (c) level
- (d) all of the above.

50. A cell in which a semiconductor having a negative illumination coefficient of resistance is used is known as

- (a) triode
- (b) **photo-conductive cell**
- (c) photo voltaic cell
- (d) photo meter.

51. Meggar will give resistance values which

- (a) increase with the speed of the hand driven dynamo
- (b) decrease with the speed of the hand driven dynamo

(c) **remain constant irrespective of the speed**

(d) any of the above.

52. For measuring an unknown electrical quantity, select the meter with

(a) **highest range and work down**

(b) lowest range and work up

(c) with middle range and work up and down on trial and error basis

(d) any of the above.

53. Moving iron meters are extensively used for the measurement of A.C. voltage and current because

(a) **no current flows through the moving element and is robust**

(b) its torque weight ratio is more

(c) it is very accurate.

54. Moving iron instruments are rarely used in low power high resistance circuits because of

(a) high resistance of the coil

(b) low reluctance of magnetic path

(c) **high reluctance of magnetic path**

(d) none of the above.

55. Scale of an instrument will be uniform if

(a) deflecting torque varies directly as the deflection angle

(b) control torque varies directly as the deflection angle

(c) deflecting torque varies directly as the deflection angle and control torque varies directly as the deflection angle

(d) damping torque varies directly as the deflection angle.

56. Which of the following instruments may be used to measure D.C. voltage accurately ?

(a) Moving iron type instrument

(b) Moving coil type instrument

(c) Electrodynamic type instrument

(d) None of the above.

57. A high resistance is usually connected in series with an electrostatic voltmeter

(a) for accuracy

(b) to increase the range

(c) for safety reasons

(d) none of the above.

58. In measuring instruments a mirror is provided behind the pointer with a purpose that

- (a) with the help of the mirror it may be seen whether the pointer is bent or not.
- (b) the scale is illuminated through the mirror.
- (c) reading errors due to inclined observation are eliminated by removing parallax between the pointer and its image in the mirror.**
- (d) any of the above.

59. The accuracy of a meter is determined by..... deflection.

- (a) one-tenth of full scale
- (b) one-fourth of full scale
- (c) half-scale
- (d) full-scale.**

60. The sensitivity inaccuracy of an instrument does not depend on

- (a) frequency response
- (b) hysteresis
- (c) amplitude distortion
- (d) all of the above.**

61. The error, when reading at half-scale in an instrument, is

- (a) equal to half of full-scale error

- (b) equal to full-scale error
- (c) less than full-scale error
- (d) **greater than full-scale error**

62. An instrument's reliability means

- (a) the extent to which the characteristics remain linear.
- (b) the life of the instrument.
- (c) **the degree to which the repeatability continues to remain within specific limits.**
- (d) all of the above.

63. Damping in an instrument provides

- (a) counter torque to deflection torque
- (b) good accuracy
- (c) **braking action on a meter pointer**
- (d) starting torque on the meter pointer.

64. In an instrument hysteresis means

- (a) the inaccuracy due to change in temperature
- (b) the reliability of the instrument
- (c) the repeatability of the instrument
- (d) **the change in same reading when input is first increased and then decreased.**

65. meter has the best accuracy.

(a) Thermocouple

(b) **Moving-coil**

(c) Moving-iron

(d) Rectifier type

66. damping method is common in moving coil instruments.

(a) **Eddy current**

(b) Fluid

(c) Spring

(d) Air

67. In an ammeter the shunt resistance is usually meter resistance.

(a) equal to

(b) **less than**

(c) greater than

(d) of any value.

68. A very accurate voltmeter, when used to measure voltage across a low resistance, gives inaccurate reading because

(a) the current drawn by the meter is too low

(b) the higher scale has been selected

(c) **the sensitivity of the meter is too low**

(d) any of the above

(e) none of the above.

69. Which of the following will happen if a voltmeter is connected like an ammeter in series to the load ?

(a) **There will be almost no current in the circuit**

(b) The measurement will be too high

(c) The meter will burn out

(d) A very high current will flow

70. The minimum number of wattmeters required to [measure power in an unbalanced three-wire system](#) is

(a) one (b) **two**

(c) three (d) four

71. The total power delivered to a three-phase load is equal to

(a) **algebraic sum of two-wattmeter readings**

(b) algebraic difference of two-watt meters readings

(c) vectorial sum of two-wattmeter readings

(d) vectorial difference of two-watt meters readings

72. An induction wattmeter measures

- (a) **only the true power**
- (b) the reactive power
- (c) the apparent power
- (d) the true power and the reactive power.

73. The Q-meter Works on the principle of

- (a) self-inductance
- (b) mutual inductance
- (c) **series resonant circuit**
- (d) parallel resonant circuit

74. Which of the following properties are measured by a Q-meter ?

- (a) **Electrical properties of the coils only**
- (b) Mechanical properties of the coils only
- (c) Electrical properties of capacitors only
- (d) Electrical properties of both the coils and capacitors.

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