Instrumentation

Ques.1. A measuring system consists of

A. Sensors
B. Variable conversion elements
C. Signal processing elements
D. All of these

Ques.2. An instrument in which the value of ethnical quantity to be measured can be determined from the deflection of the instrument when it has been precalibrated by comparison with an absolute instrument

A. Absolute instrument
B. Secondary instrument
C. Recording instrument
D. Integrating instrument

Ques.3. 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 Torques

Ques.4. In hot wire instrument, the sensing wire is made of

A. Copper
B. Silver
C. Platinum-iridium
D. Copper-Nickel

Ques.5. An ammeter

A. Is inserted in series in a circuit and current to be measured flows through it
B. Is inserted in series in a circuit and part of the current to be measured flows through it
C. Is connected in parallel in a circuit and current to be measured flows through it
D. Is connected in parallel in a circuit and only part of the current to the measured flows through it.

Ques.6. An ammeter is convertible to a voltmeter by

A. Changing the scale

B. Putting a large resistance in parallel with the actual measuring part of the instrument
C. Putting a large resistance in series with the actual measuring part of the instrument
D. Simply installing the instrument in parallel with the circuit

Ques.7. Which of the following material will be preferred as a shunt for extending the range of measurement of a voltmeter

A. Copper
B. Steel
C. Aluminum
D. Manganin

Ques.8. What should be the size of the slide wire of the potentiometer to make it to achieve high accuracy?

A. As long as possible
B. As short as possible
C. 1 meter
D. Neither too thin nor too thick

Ques.9. A resistance of 75 Ohms is connected in shunt of a galvanometer, having an internal resistance of 25 Ohms, to convert it into an ammeter. What is the value of current (in A) flowing through the galvanometer, if the total current in the circuit is 5 A?

A. 2
B. 2.5
C. 3.65
D. 3.75

Ques.10. Which of the following is not an integrating instrument?

A. Ampere-hour meter
B. Watt-hour meter
C. Voltmeter
D. All of the above

Ques.11. The deflecting torque in an instrument may be produced

A. Magnetically
B. Electrostatically
C. Thermally
D. Any of the above

Ques.12. To take care of change in frequency of the A.C current, while using a moving iron type instrument

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

Ques.13. The advantages of moving coil permanent magnet type instrument are

A. Low power consumption
B. No hysteresis loss
C. Efficiency eddy current damping
D. All of the above

Ques.14. A moving coil milliammeter having a resistance of 10 ohms gives full-scale deflection when a current of 5 mA is passed through it. If the instrument is to be used to measure current upto 1 A.

A. A resistance of 0.502 Ω must be connected in series with the instrument
B. A resistance of 0.502 Ω must be connected in parallel to the load
C. A resistance of 0.502 Ω must be connected parallel with the resistance of the ammeter
D. A resistance 0.50 Ω must be connected in series with the load

Ques.15. A PMMC type voltmeter, having a full-scale reading of 250 V and an internal resistance of 400 kilo-ohms, is connected with the series resistance of 100 kilo-ohms. Calculate the sensitivity of the voltmeter (in Ohms/Volts).

A. 2400
B. 2000
C. 20000
D. 24000

Ques.16. 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

Ques.17. Which of the following types of instrument can be used for D.C only?

A. Moving iron attraction type
B. Moving Iron repulsion type
C. Permanent magnet type
D. Hotwire type

Ques.18. Which type of wattmeter cannot be used for both A.C and D.C?

A. Dynamometer type
B. Electrostatic type
C. Induction Type
D. None of the above

Ques.19. 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

Ques.20. Which of the following types of instrument can't be used fo D.C

A. Moving iron-attraction type
B. Moving coil permanent magnets type
C. Hotwire type
D. Induction type

Ques.21. A repulsion type ammeter when used on A.C circuit reads

A. Peak value of current
B. R.M.S value of the current
C. Mean value of current
D. Equivalent D.C value of the current

Ques.22. Eddy current damping is not used on repulsion type instrument because

A. The presence of a permanent magnet required for damping would affect the deflection and hence the reading of the instrument
B. The presence of permanent magnet will result in overheating of the coil

C. An uneven scale will be required and the instrument will require calibration every time
D. Excessive vibrations will result in the disc due to eddy; currents, thereby affecting its accuracy.

Ques.23. The error due to hysteresis in moving iron type instrument is minimized by using

A. Stainless steel
B. High speed steel
C. Silver coating
D. Permalloy

Ques.24. If damping torque is not provided in an instrument

A. An 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 sometime before coming to rest

Ques.25. 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

Ques.26. 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

Ques.27. Which type of wattmeter can’t be used for D.C?

A. Electrostatic Type
B. Dynamometer type
C. induction type
D. None of the above

Ques.28. In moving iron type ammeter the coils has

A. A large number of turns of thick wire
B. Large number of turne of thin wire
C. Few turns of thin wire
D. Few turns of thick wire

Ques.29. In repulsion type instrument the force of repulsion is approximately proportional to

A. Current
B. Square of current
C. The inverse of the current
D. The inverse of the square of the current

Ques.30. In moving iron type instrument because of the hysteresis in the iron parts of the moving system the reading is

A. Higher on descending value but lower on ascending values
B. Higher on ascending values but lower and descending values
C. Higher on the both ascending as well as descending values
D. Lower on the both ascending as well as descending values

Ques.31. Ohmmeter is

A. A meter to record ohm
B. Used to measure resistance
C. Combination of Ohm and Meter
D. An indicatng instrument

Ques.32. A moving coil galvanometer has a resistance of 4 ohms and gives full-scale deflection when carrying 30 milliamperes. The instruments can be used to measure 150 volts by connecting in sereis with the instrument a resistance of

A. 9996 ohms
B. 5004 ohms
C. 5000 ohms
D. 4996 ohms

Ques.33. A 15-volt moving iron voltmeter has a resistance of 300 ohms and an inductance of 0.12 Henry. The instrument reads correctly on DC and on AC at 36 Hz when it shows a voltage of 14.75 V. What will its reading for the same voltage at 100 Hz?

A. 15.4 V
B. 15 V
C. 14.85 V
D. 14.5 V

Ques.34. If the torque/weight ratio of an instrument is low, then it can be concluded that

The meter will have a uniform scale
The meter will have the non-uniform scale
The sensitivity of the meter will be high
The sensitivity of the meter will be low

Ques.35. Hot wire instrument reads

A. Peak value
B. R.M.S value
C. Average value
D. None of the above

Ques.36. A moving coil instrument gives full deflection with 15 mA. The instrument has the resistance of 5 ohms. If a resistance of 0.80 ohms is connected in parallel with the instrument, the instrument will be capable of reading upto

A. 150 mA
B. 600 mA
C. 750 mA
D. 1087 mA

Ques.37. Which one of the following is the main cause of magnetic decay in PMMC type instrument?

A. Variation in the resistance of the moving coil
B. Quality of spring
C. Aging of the spring
D. Aging of the magnets

Ques.38. Which instrument has a necessarily the “square law” type scale?

A. The permanent magnet moving the coil
B. Hotwire instruments
C. Moving iron repulsion
D. None of the above

Ques.39. Which of the following cannot be described as the advantages of moving coil permanent magnets type instrument?

A. They have uniform scale
B. They have low torque/weight ratio
C. They have efficient eddy-current damping
D. They have no hysteresis loss

Ques.40. A moving coil ammeter having a resistance of 10 ohms gives full-scale deflection when a current of 5 mA is passed through it. The instrument can be used for the measurement of voltage upto 5 V by

A. Connecting a resistance of 990 ohm parallel to the ammeter
B. Connecting a resistance of 990 ohms parallel to the load
C. Connecting a resistance of 990 ohms series with the instrument
D. Connecting a resistance of 990 ohms in series with the load

Ques.41. Which of the following statements is incorrect about the hot wire instruments?

A. Their reading is independent of the wave form
B. Their reading is independent of frequency
C. They are unaffected by stray fields
D. Their response is instantaneous.

Ques.42. Which type of damping is generally preferred in case of instruments having a weak magnetic field?

A. Air friction damping
B. Fluid friction damping
C. Eddy current damping
D. Hysteresis damping

Ques.43. Voltmeter sensitivity is defined as

A. Reciprocal of the full-scale deflection current
B. Volts per ohm
C. Ohms per volts
D. Its degree of sensitiveness to impulse change

Ques.44. If the latter reading is obtained after reversing the connection to the current coil of W2, the power factor of the load is

A. Unity
B. 0.655
C. 0.5
D. 0.359

Ques.45. Which of the following instrument is undesirable for measurement of AC values?

A. Moving iron repulsion type
B. Moving iron attraction type
C. Dynamometer type
D. The permanent magnet moving coil type