

Examrace

Competitive Exams: Physics MCQs (Practice_Test 16 of 35)

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1. For measuring potential difference in a circuit a potentiometer is a superior instrument as compared to a voltmeter because it has
 - a. greater sensitivity
 - b. a low internal resistance at null-point
 - c. an infinitely large internal resistance at null-point
 - d. zero internal resistance at an currents
2. An aircraft with a wing span of 20 m flies at a horizontal speed of 360 km/h in a region where the vertical component of the earth's field is 5×10^{-5} T. The potential difference between the tips of the wings will be
 - a. 0.10 V
 - b. 0.15 V
 - c. 0.20 V
 - d. 0.30 V
3. A current passing through a self-inductance of 2 mH changes at the rate of 20 mA/s. The emf induced in the coil is
 - a. 10mV
 - b. 40 mV
 - c. 10mV
 - d. 40mV
4. Two inductors, 0.4 H and 0.6 H are connected in parallel. If this combination is connected in series with an inductor of inductance, 0.76 H, then the equivalent inductance of the circuit will be
 - a. 2.0 H
 - b. 1 H
 - c. 0.2 H
 - d. 0.1 H

5. The magnetic field energy in an inductor changes from minimum to maximum value in 2.5×10^{-3} s when connected to an ac source. The frequency of the source is
- 12.5 Hz
 - 25 Hz
 - 50 Hz
 - 100 Hz
6. The power factor of a series LCR circuit connected to an ac source of frequency, ω is given by
7. Two parallel wires separated by 25 cm carry currents of $i_1 = 25$ A and $i_2 = 35$ A flowing in opposite direction. The force per unit length acting between them is
- a repulsive force of 7×10^4 N/m
 - an attractive force of 7×10^{-4} N/m
 - a repulsive force of 35×10^2 N/m
 - an attractive force of 35×10^2 N/m
8. In the case of a series LCR circuit, the sharpness of resonance curve is determined by the quality factor 'Q' given by
- XL/XC
 - $L\omega/R$ at resonance frequency
 - $L\omega/R$ at any frequency other than resonance
9. Measurement of the Hall emf for a sample gives information about
- magnitude and sign of the charge carriers
 - sign of the charge and density of the carriers
 - only sign of the charge carriers
 - only density of the charge carriers
10. A device used to measure the magnetic field makes use of Hall effect. In a magnetic field of 200 G, it gives a Hall voltage of 16mV: If with the same current and orientation, it gives a Hall voltage of 24 mV in another field, then its magnitude is
- 1600 G
 - 480 G
 - 300 G
 - 150 G

11. For a certain thermocouple, the emf = $at + bt^2$ where t (in $^{\circ}\text{C}$) is the temperature the hot junction, the cold junction being at 0°C . If $a = 10 \text{ mV}/^{\circ}\text{C}$ and $b = 0.02 \text{ mV}/^{\circ}\text{C}^2$ then the temperature (degree C) of inversion, will be
- 150
 - 250
 - 500
 - 750
12. In an electromagnetic wave, the direction of the magnetic induction B is:
- parallel to the electric field %
 - perpendicular to the electric field %
 - anti parallel to the Pointing's vector, S
 - Random
13. If an electromagnetic wave is propagating in a medium with permittivity and permeability μ , then μ/ϵ is the
- intrinsic impedance of the medium
 - square of the refractive index of the medium
 - refractive index of the medium
 - energy density of the medium
14. A cyclotron magnet has pole pieces of radius R and produces a maximum magnetic field B . The maximum energy to which charged particle can be accelerated is proportional to
- BR
 - B^2R^2
 - B^2R
 - BR^2