Worksheet: Alternating Current

ICSE · Class 12 · Physics · 9 questions · 27 marks

Name: _____ Date: _____ Score: _____ / 27

Q1. The peak voltage of an ac supply is 400 V. Find the rms voltage, and find the peak current if the rms current is 5.0 A. *[2 marks]*

Q2. An inductor of 0.20 H is connected to a 50 Hz supply. Find its reactance. *[2 marks]*

Q3. A 50 ohm resistor is connected to a 220 V, 50 Hz supply. Find the rms current and the power dissipated. *[2 marks]*

Q4. A 100 microfarad capacitor is connected to a 110 V, 60 Hz supply. Find its reactance and the rms current. *[3 marks]*

Q5. A series circuit has R = 30 ohm, X_L = 60 ohm and X_C = 20 ohm. Find the impedance and the phase angle, and say whether the current leads or lags. *[3 marks]*

Q6. A series LCR circuit has L = 2.0 H and C = 50 microfarad. Find the resonant angular frequency and the impedance at resonance if R = 25 ohm. *[3 marks]*

Q7. A circuit draws 4.0 A rms from a 200 V rms supply with a phase angle of 60 degrees. Find the average power, the apparent power, and the wattless current. *[4 marks]*

Q8. A transformer has 200 primary turns and 3000 secondary turns, with 220 V applied to the primary. If the secondary supplies 0.50 A, find the secondary voltage and the primary current for an ideal transformer. *[4 marks]*

Q9. A series LCR circuit with R = 20 ohm, L = 1.5 H and C = 35 microfarad is driven at its resonant frequency by a 200 V supply. Find the power absorbed. *[4 marks]*