1. The value of AC voltage shown on the name plate of an appliance is the:
   (a) average value
   (b) peak value
   (c) instantaneous value
   (d) r.m.s. value

2. The value of AC voltage that has the same heating effect as the equivalent value of DCvoltage is the:
   (a) rms value.
   (b) peak value.
   (c) average value.
   (d) peak to peak value.

3. For one complete cycle of an AC supply, the current flow:
   (a) will remain constant in magnitude.
   (b) will flow in one direction only.
   (c) will flow in one direction then reverses direction.
   (d) reaches a maximum in one direction then falls to zero.

4. The standard unit of frequency is the:
   (a) Hertz (Hz)
   (b) Volt (V)
   (c) period (T)
   (d) cycle per second (CPS)

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5. A sinusoidal wave has a maximum value of 340 volts. Determine the instantaneous value ofvoltage at angles of:
   (a) 45^0 (240V)

   (A sinusoidal wave has a frequency of 400 Hz.. Determine the period for this frequency. (2.5mS)

1. When measuring the phase difference with a CRO., the CRO.
   (a) must be able to show two waveforms.
   (b) needs to have a high sensitivity.
   (c) time base must be re-calibrated.
   (d) must be set to DC input.

2. Phasors are quantities which vary in:
   (a) magnitude and time only
   (b) magnitude and direction only
   (c) magnitude, direction and time
   (d) direction only

3. Two sinusoidal waves with a frequency of 50 Hz are displayed on a CRO. If the horizontal displacement between the waveforms is measured to be 3.5mS, determine the phase angle between the two waveshapes (63^0)

1. Current phasors are represented by an arrow with a/an_head, whilst voltage phasors arerepresented by an arrow with a/an___head.
   (a) closed, open
   (b) open, open
   (c) open, closed
   (d) closed, closed

2. The resultant of two or more voltages differing in phase angle may be determined by:
   (a) algebraic addition
   (b) averaging the voltage values
   (c) phasor addition
   (d) numerical addition

3. A 240 volt, 50Hz single phase motor draws 18A from the supply at a lagging phase angle of 40^0. A capacitor connected across the motor

dra ws 7A at a lead ing pha se angl e of 90^0. Usi ng a scal e of 1m m = 0.2 A, dete rmin e the curr ent dra wn fro m the sup ply, and the resu ltant circ uit pha se angl

e. [14.5A @ 18.5^0 lag]

and _____

1. The opposition to current flow in a purely capacitive circuit is known as__and is measuredin ___
   (a) capacitive reactance, ohms
   (b) resistance, ohms
   (c) capacitive reactance, farads
   (d) impedance, farads

2. The phase angle (ϕ) between voltage and current in a purely capacitive circuit is:
   (a) 180 electrical degrees.
   (b) 90 electrical degrees.
   (c) 45 electrical degrees.
   (d) 0 electrical degrees.

3. Adding extra capacitance to a purely capacitive circuit will cause the phase angle (ϕ) betweenvoltage and current to:
   (a) increase.
   (b) decrease.
   (c) remain unchanged.
   (d) become maximum.

4. Determine the capacitive reactance of a 47μF capacitor when connected to a 32V, 50Hz supply.(67.7Ω)]

5. Determine the current taken by a 390μF capacitor when connected to a 240V, 50Hz supply.(29.4A)

6. A capacitor takes 3A when connected to a 240V, 50Hz supply. Determine:
   (a) the capacitive reactance of the capacitor; (80Ω)
   (b) the capacitance of the capacitor. (39.8μF)

1. Adding extra inductance to an R.L. series circuit will cause the phase angle (ϕ) between voltageand current to:
   (a) remain unchanged.
   (b) increase.
   (c) become maximum.
   (d) decrease.

2. The opposition to current flow in any ac circuit containing___and reactive components is known as_____and is measured in ohms.
   (a) capacitive , reactance
   (b) inductive reactance
   (c) resistive, impedance
   (d) inductive, impedance

1. In a parallel resonant circuit, circuit impedance is a___, and circuit current is a_____.
   (a) maximum, maximum
   (b) minimum, minimum
   (c) maximum, minimum
   (d) minimum, maximum

2. Adding extra capacitance to a leading R.L.C. parallel circuit will cause the phase angle (ϕ)
   between voltage and current to:
   (a) remain unchanged.
   (b) increase.
   (c) become maximum.
   (d) decrease.

3. In a parallel L.C. circuit, the component with the largest___will determine the phase anglefor the circuit.
   (a) current
   (b) voltage
   (c) reactance
   (d) resistance

4. An L.C. parallel circuit is connected to a single phase 240V, 50Hz supply. If the current through the capacitor 12A, and the current through the inductor is 16A at a phase angle of 60^0 lagging, determine the:
   (a) impedance of the inductor; (15Ω)
   (b) resistance of the inductor; (7.5Ω)
   (c) impedance of the capacitor; (20Ω)
   (d) current drawn from the supply; (8.2A) (1mm = 0.2A)
   (e) circuit phase angle. (13.1^0 lag)
   (f) circuit impedance; (29.3Ω)

5. An 80Ω resistor connected in parallel with a 33μF capacitor is connected to a 250V, 50Hz supply. Determine by phasor diagram the current drawn from the supply and the circuit phase angle using a scale of 1mm = 0.05A. (4A; $\phi = 40^0$ lead)

1. 240 volt, 50Hz single phase motor draws 18A from the supply at a lagging phase angle of 400. A capacitor connected across the motor draws 7A at a leading phase angle of 90^0. Using a scale of 1mm = 0.2A, determine the current drawn from the supply, and the resultant circuit phase angle. [14.5A @ 18.5^0 lag]