

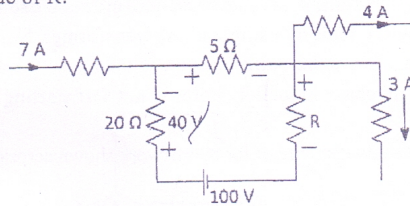
QP Code : 1017

(3 Hours)

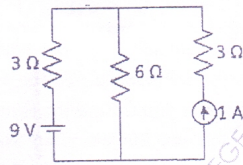
[Total Marks : 100]

- N.B. :** (1) Question No. 1 is compulsory.
 (2) Attempt any four out of remaining.

1. (a) Find value of R.

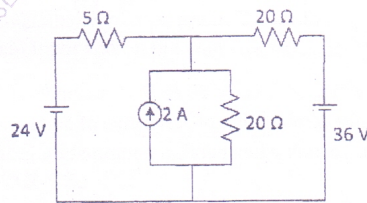


(b) Find current through 2Ω superposition theorem.



- (c) Define peak factor and form factor. 2
 (d) Draw variation of R, Z, and $\cos\phi$ with frequency in RLC series resonant circuit. 3
 (e) In a three phase delta connected circuit phase current $\bar{I}_{RY} = 10\angle 20^\circ$ A. Find line current \bar{I}_R . Phase sequence is RYB. 2
 (f) Draw circuit diagram to carry out open circuit test on a single phase transformer. 3
 (g) Explain slip in a three phase induction motor. 2
 (h) Define ripple factor in case of rectifier. 2

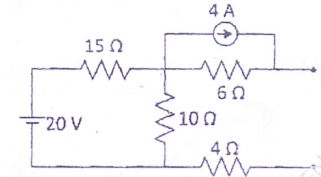
2. (a) Find current in 5Ω by nodal analysis.



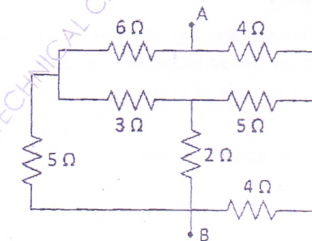
QP-Con. 11412-15.

[TURN OVER

- (b) A 100Ω resistance is connected in series with a choke coil. A voltage of 400 V, 50 Hz is applied across this combination. The voltages across resistance and coil are 200 V and 300 V respectively. Find resistance and reactance of a coil. 6
 (c) Draw the phasor diagram of transformer on leading power factor load. 8
 3. (a) Derive the relation between line and phase quantities in three phase star connected load. 8
 (b) Draw an equivalent circuit of a single phase transformer. Name all the components of it. 4
 (c) Explain why single phase induction motor is not self starting. 8
 4. (a) Find the Norton's equivalent circuit for the network shown across terminals A & B. 7



- (b) Three currents are meeting at a point. Find the resultant current. 4
 $i_1 = 15 \sin(\omega t)$ A, $i_2 = 20 \cos(\omega t - 20^\circ)$ A, $i_3 = 5 \sin(\omega t + 45^\circ)$ A.
 (c) In a three phase RYB system, line voltage is 173.2 V. Wattmeter in line R and Y read 301 W and 1327 W respectively. Find line current in the circuit. 4
 (d) Explain full wave rectifier with centre tap transformer. Draw suitable waveforms. 5
 5. (a) Find equivalent resistance between A & B in the network shown. 7



- (b) A series circuit having resistance 20Ω & inductance of 0.07H is connected in parallel with a series combination of resistance of 50Ω and a capacitor of 60μF. Calculate the total current when parallel combination is connected across 230V, 50 Hz supply. 5

QP-Con. 11412-15.

[TURN OVER

- (c) The OC & SC test on a 5 KVA, 200 V/400 V, 50 Hz, single phase transformer gave following test results :

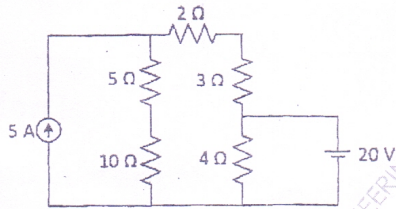
OC Test (meters on LV) 200V, 1A, 100W

SC Test (meters on HV) 15V, 10A, 85W.

Calculate equivalent circuit parameters referred to primary.

Calculate efficiency of transformer at full load, 0.8 pf Lag.

6. (a) Find current through 3Ω by superposition theorem.



- (b) A series resonant circuit has an impedance of 500Ω at the resonant frequency. The upper and lower cut off frequencies are 10KHz and 100Hz respectively. Find resonant frequency, values of R, L, C and quality factor.
- (c) Prove that the two wattmeter method can measure power input taken by a three phase star connected circuit.
7. (a) A current flowing through a pure inductor is $i = 50 \sin(500t - 20^\circ)$ A. If voltage applied to it is 200V. Write an instantaneous equation of a voltage across it.
- (b) A series circuit contains resistance of 10Ω & an inductive reactance of 20Ω . Find admittance of the circuit and its components.
- (c) A 15 KVA transformer was loaded as follows :—
- 4 KVA at 0.5pf for 12 hours
 - 15 KVA at 0.8 pf for 6 hours
 - 18 KVA at 0.9 pf for 6 hours. If iron loss and full load copper loss both are equal to 153 W, Find all day efficiency.
- (d) With the neat diagrams, explain types of DC motor.
- (e) Draw and explain input and output characteristics of CE configuration of BJT.

QP-Con. 11412-15.

F.E. (R-2007) (ALL BRANCHES) (SEM - I) (PROG- T0111)

Code: 1017

Correction:

Original Question is

Que. No. 1(b). Find the Current through 2ohm by superposition theorem.

Corrected Question is

Que. No. 1(b). Find current through 6 ohm by superposition.

Query Update time: 14/12/2015 12:15 PM

Block (4) - 2 STUDENTS ABSENT.

SEM-IV-BEE-OLD-

Shaikh
14/12/15