Circuit Theory Questions

Q.1

Find the Thevenin's equivalent circuit of Fig. 3 and find the current in 3 Ω resistance.

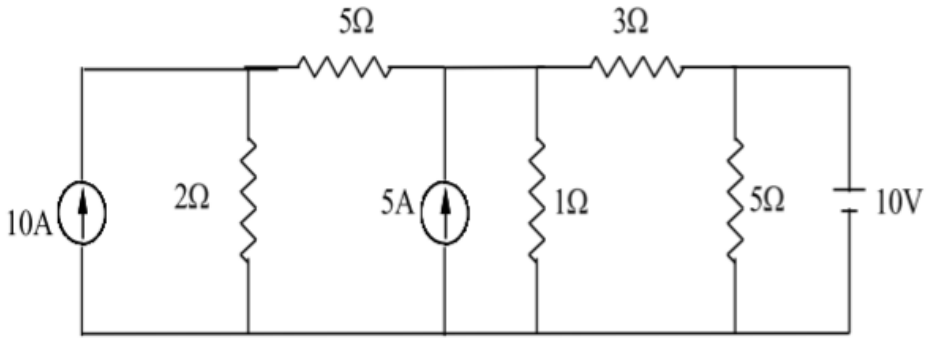

Fig. 3

Q.2

Find the Norton equivalent to right of a-b terminal in Fig. 4.

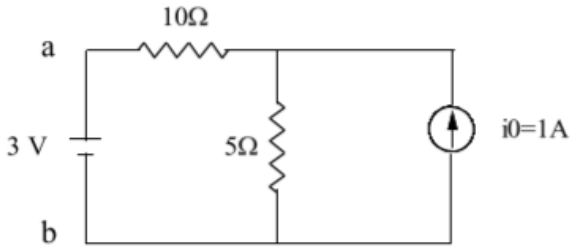

Fig. 4

Q.3

Use superposition theorem to find current 'I' in the given circuit. (Fig. 7)

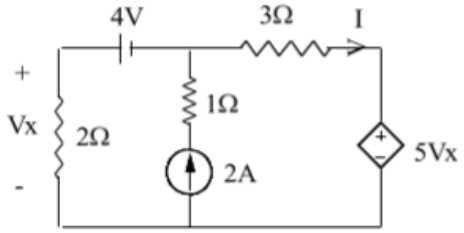

Fig. 7

Q.4

A practical Dc source when it is momentarily short circuited can provide a current of 2.5 A and it can supply a power of 80 W to a 20 Ω load. Determine the open circuit voltage and the value of R_L for maximum power transfer and find the maximum power in R_L.

Q.5

Three identical resistors of 20 Ω each connected in star to a 415 V, 50 Hz, 3-phase supply.

(i) The total power consumed.
(ii) The total power consumed, if they are connected in delta
(iii) The power consumed, if one of the resistors is opened

Q.6

In the Fig.4 L_1 draws 20 kW at unity P.F. L_2 draws 25 kVA at 0.8 P.F lag, L_3 draws 30 kW at 0.75 P.F. lag. Find the total power and apparent power supplied by the source. What is the source power factor?

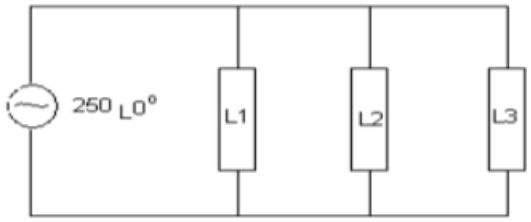

Fig. 4

Q.7

Jse superposition theorem to find V in the circuit shown in figure 6.

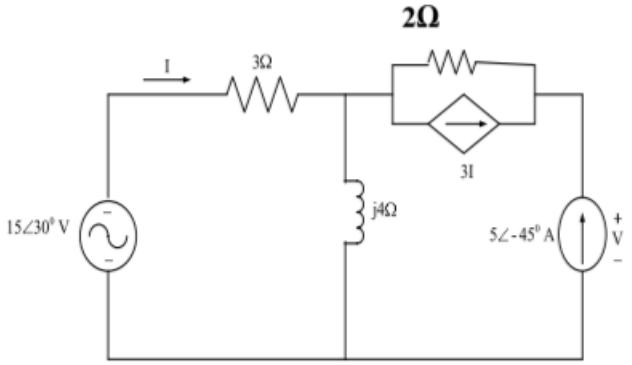

Fig. 6

Q.8

A balanced star connected load is supplied from a symmetrical 3 phase, 400 V system. The current in each phase is 30 A and lags $30°$ behind the phase voltage.
(a) Find the phase voltage, (b) The total power.

Q.9

Each phase of a 3-phase, delta connected load consists of an impedance Z = 20 L60^{U} ohms. The line voltage is 440 Volts at 50 c/s. Compute the power consumed by each phase impedance and the total power. What will be the readings of the two wattmeter connected?

Q.10

Find the current 'I' in the given circuit (Fig. 5) using superposition theorem.

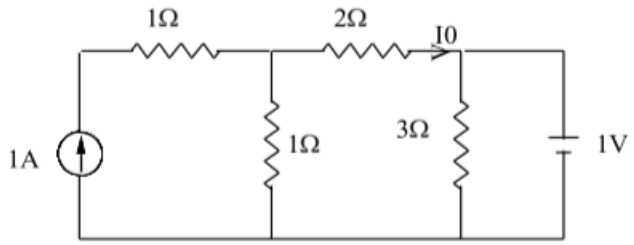

Fig. 5

Q.11

Find the current through 10Ω resistor using Thevenin's theorem (use star delta transformation also). (Fig. 8)

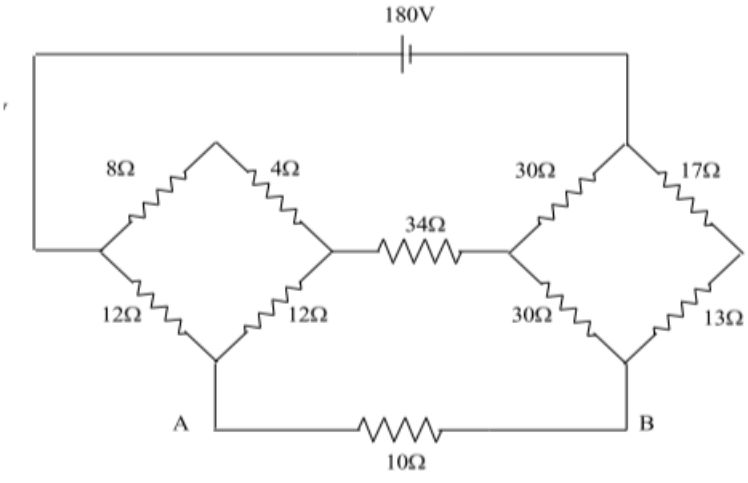

Fig. 8

Q.12

Use superposition theorem to solve the circuit of Fig. 13 for V_x and I_y.

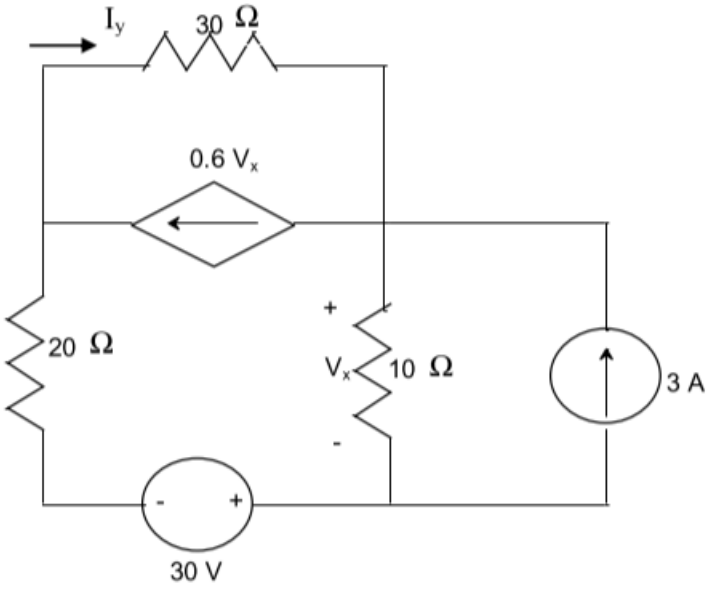

Fig. 13

Q.13

Determine Thevenin's and Norton's equivalent for the circuit of Fig. 18 across a and b.

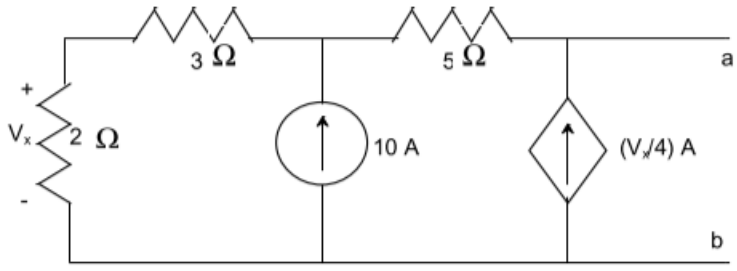

Fig. 18

Q.14

Determine the amount of power being delivered to 3 Ω resistance in the circuit given in Fig. 20 using Super Position theorem.

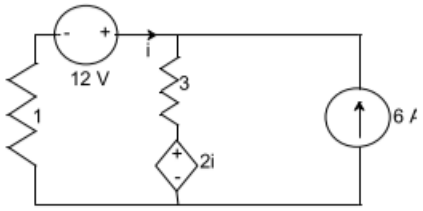

Fig. 20

Q.15

Find the Thevenin's equivalent circuit about a-b of the given circuit. (Fig. 12)

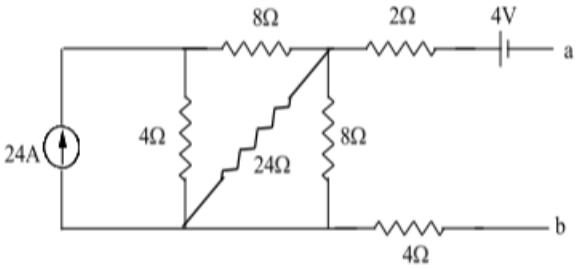

Fig. 12