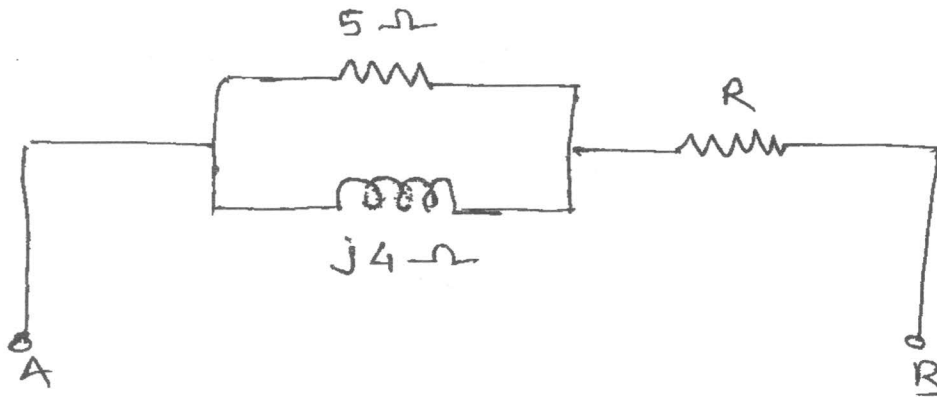
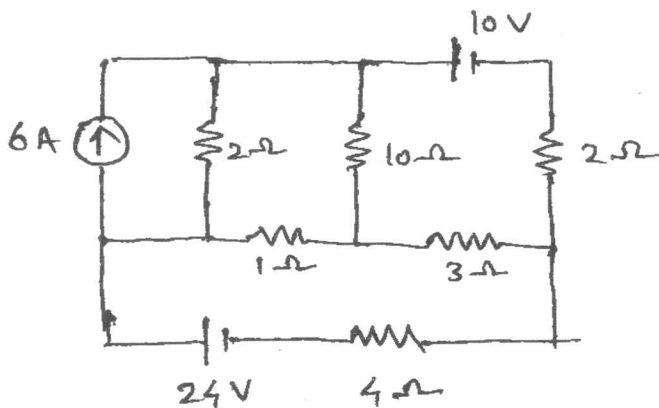


- ∴ (1) Question No. 1 is **compulsory**.
 (2) Solve any **four** questions from remaining **six** questions.
 (3) **Figures** to the **right** indicate **full** marks.
 (4) Assume suitable **data** if **necessary**.

- (a) What are the losses in the transformer ? Explain why the rating of transformer **20** in KVA not in kW.
 (b) Derive the relation between power in Delta and Star system.
 (c) A lamp rated 110 Volt, 60 W is connected with another lamp rated 110 Volt, 100 W across 220 volt mains. Calculate the resistance that should be joined in parallel with the first lamp so that both the lamps may take their rated power.
 (d) Explain the effect of temperature on resistance of different material.
- (a) Explain full wave rectifier circuit using centre tap transformer. Find the expression **10** for RMS and average load current, TUF, rectifier efficiency.
 (b) The voltage of 150 V applied between A and B produces a current of 32 A. For **10** the circuit shown in **figure**. Find the value of R and p.f. of the circuit.



- (a) Explain two wattmeter method power measurements in 3 ϕ star-connected **10** balanced load.
 (b) Find the current across $4\ \Omega$ by superposition theorem. **10**

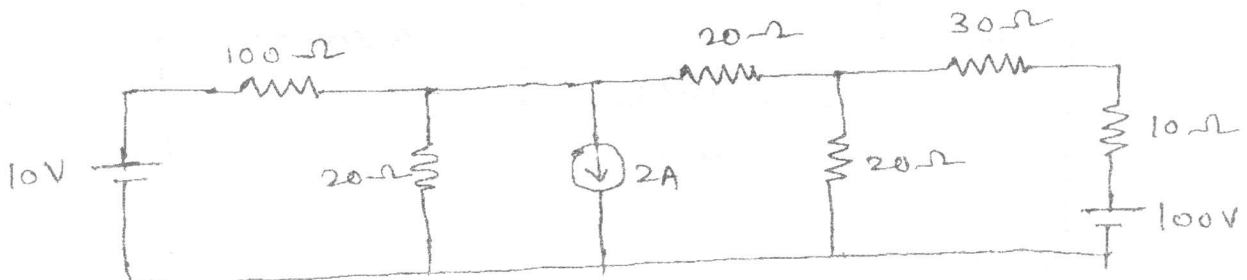


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4. (a) Draw and explain input and output characteristics of CE transistor.
 (b) 3 ϕ , 220 V, 50 Hz, 11.2 kW Induction Motor has full load efficiency of 88% and draws a line current of 38 Amp. under full load, when connected to 3 ϕ , 220 V supply find the reading on Two wattmeter connected in the circuit to measure the input to the motor. Determine also p.f. at which motor is operating.
5. (a) An R-L-C series circuit has a current that lags behind applied voltage by 45° . The voltage across the inductance has maximum value equal to twice the maximum value of voltage across capacitance. The voltage across inductance is $300 \sin(1000t)$ and $R = 20 \Omega$. Find the values of inductance and capacitance.
 (b) Explain double field revolving theory of single phase Induction Motor.
6. (a) 5 KVA, 200/400 V, 50 Hz 1 ϕ transformer give following results.

O. C.	200 V	0.7 A	60 W
S. C.	22 V	16 A	120 W

- (i) Draw equivalent circuit referred to primary and insert all the parameters.
 (ii) Efficiency at 0.9 p.f. at full load.
- (b) Draw the resonance graph for the following :—
 (i) X_L (ii) R (iii) Z (iv) $\cos \phi$ (v) I
7. (a) Using Norton's theorem, find the current flowing through 100Ω .



- (b) Write short notes on the following (any **two**) :—
 (i) Shaded Pole Motor
 (ii) Three Phase Induction Motor
 (iii) Classification and Application of D. C. Motor.