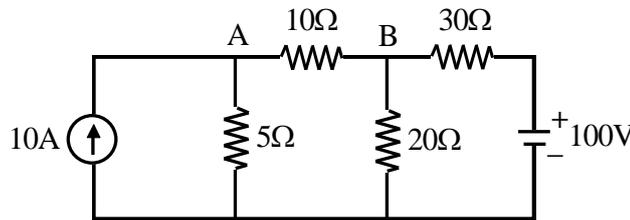




- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.
 5. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.

1. a) State and explain ideal and practical voltage and current source. Draw the V-I Characteristics of ideal and practical voltage and current source. 8
- b) State superposition theorem. Find the current through branch AB using super position theorem. 8



OR

2. a) Draw & Explain the impedance triangle for series 'R-L-C' circuit with $X_L < X_C$. Also explain its resonance. 8
- b) A series RLC series consists of $R = 10\Omega$, $L = 0.318H$, $C = 63.6\mu F$ and emf source $e(t) = 100\sin 314t$, calculate (i) Expression for $i(t)$ (ii) Phase angle between voltage and current (iii) power factor (iv) power factor (v) active power consumed. 8
3. a) What is B-H curve. Compare Magnetic and Electrical Circuit. 8
- b) Two bars of same material with relative permeability is 800 having equal mean lengths of 10 cm. but area of cross sections 2 cm^2 and 1 cm^2 are bent in the form of semicircle and joined to form a close ring. Calculate AT required to produce 1 wb/m^2 flux density in the smaller ring. Neglect air gap leakage and fringing effect. 8

OR

4. a) Derive & explain the condition for maximum efficiency & regulation of a transformer. 8
- b) The following test data is obtained on 5 kVA, 220/440 volt single phase transformer: 8
 O.C. Test : 220V, 2 Amp, 100W L.V. side
 S.C. Test : 40 V, 11.4 Amp, 200W,H.V. side
 Find all the parameters of equivalent circuit of transformer refer to primary side. Also draw the equivalent circuit.

