7. Write short notes on: **(Any two)** 2×5

a) Ideal and practical sources

b) Quality factor and bond width

c) Power factor and its significance.

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2016

Programme: BE Full Marks: 100

Course: Basic Electrical Engineering Pass Marks: 45

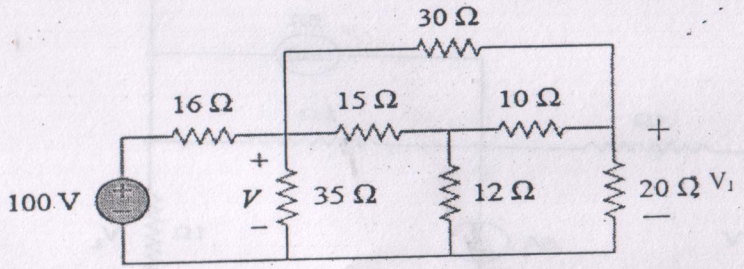
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

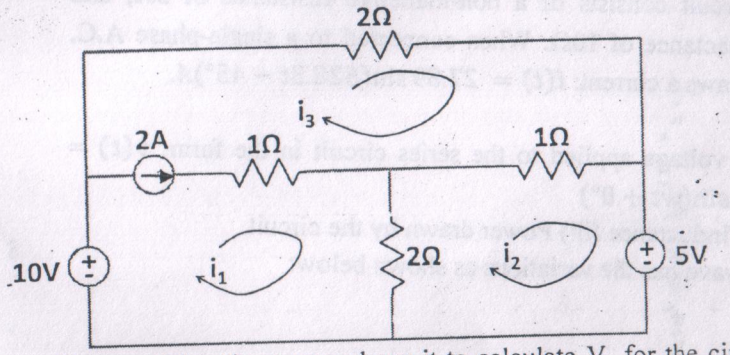
The figures in the margin indicate full marks.

Attempt all the questions.

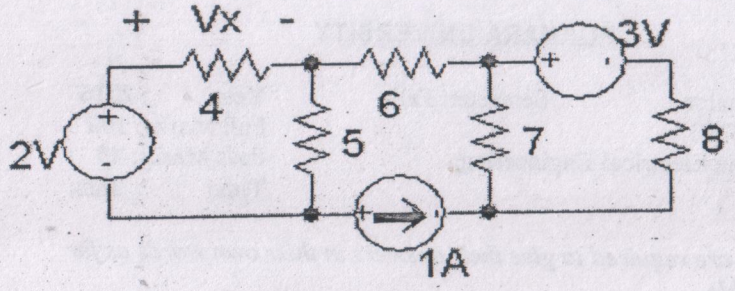
1. a) Obtain the equivalent resistance seen from source terminal and find V_1. 7



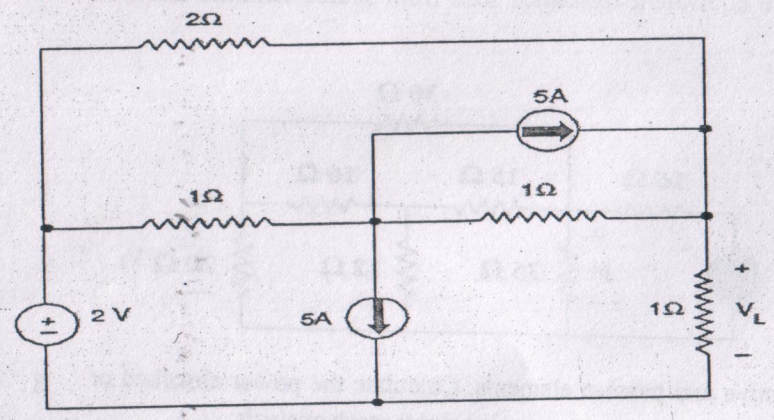
b) Define active and passive elements. Calculate the power absorbed or delivered by 2A current source using super mesh analysis. 8



2. a) State Superposition theorem and use it to calculate V_x for the circuit shown below (All resistors are in Ohm). 7



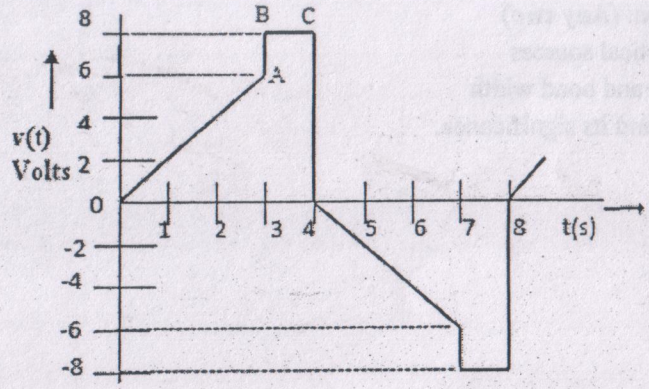
b) State Thevnin theorem and calculate V_L for the below ckt using Thevnin theorem. 8



a) A series circuit consists of a non-inductive resistance of 5Ω, and inductive reactance of 10Ω. When connected to a single-phase A.C. supply, it draws a current: $i(t) = 27.89\sin(628.3t - 45°)A$. 7
Find:

i. the voltage applied to the series circuit in the form: $v(t) = V_m \sin(\omega t + 0°)$
ii. the inductance (iii) Power drawn by the circuit.

b) A voltage wave has the variations as shown below: 8



Find the average, and effective values of the voltage. If above voltage is applied to a 50Ω resistors, calculate power dissipated in watts.

4. a) Explain the measurement of 3ϕ power by two wattmeter method with phasor diagram. 7

b) Three similar coils having resistance of 10Ω and inductance of 0.25H are connected in star to 3ϕ 400V, 50Hz supply. Calculate: 8

i. Line and phase currents
ii. Pf
iii. Power consumed

5. a) Define transformer and derive the expression for emf induced in transformer. 7

b) A single phase, 25KVA, 250/500V transformer has following results on tests: 8

Open circuit test	250V	1A	80W
Short circuit	25V	10A	100W

Obtain the parameters of the transformer referred to both LV and HV sides.

6. a) A 240v shunt motor runs at 1450 rpm at full load with an armature current of 11 A. The total resistance of armature and brush is 0.6Ω. If the speed to be reduced to 1000rpm with the same armature current, calculate the value of resistance to be connected in series with the armature. 8

b) Explain the construction and operating principle of 3ϕ induction motor. 7