VIT
Vellore Institute of Technology

Final Assessment Test – June 2023

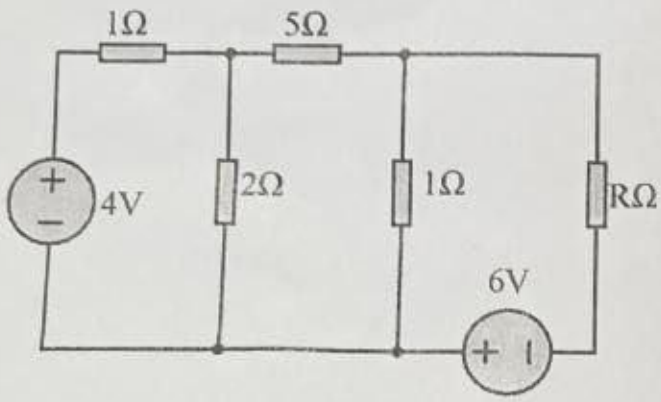
Course: BEEE102L - Basic Electrical and Electronics Engineering
Class NBR(s):4570 Slot: A1+TA1
Time: Three Hours Max. Marks: 100

KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE

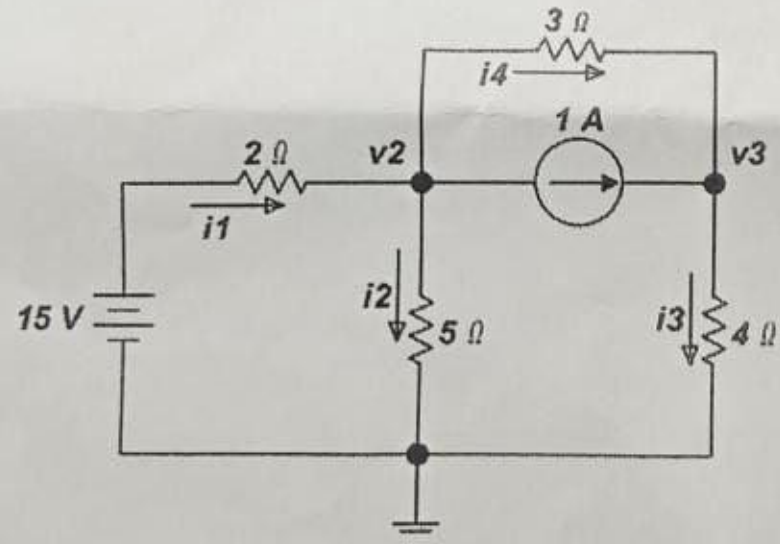
General Instructions: Assume suitable data if required.

Answer any FIVE Questions
(5 X 20 = 100 Marks)

1. a) Apply maximum power transfer theorem to calculate maximum power transferred through the load (RΩ) for the circuit given below. **[10]**



b) Calculate node voltages (***v2*** and ***v3***) and branch currents (***i1***, ***i2***, ***i3*** and ***i4***) currents for the circuit given below. **[10]**



2. a) A 240 V, 50 Hz AC supply is applied to a coil of 0.08 H inductance and 4 Ω resistance connected in series with a capacitor of 8 μF. Calculate the following (i) Impedance, (ii) Circuit current, (iii) Phase angle between voltage and current, (iv) Power factor (v) Power consumed, and (vi) Q-factor of the circuit at resonant frequency. Draw phasor diagram of the circuit. **[10]**

b) Three identical coils, each of resistance 10Ω and inductance 42mH are connected (a) in star and (b) in delta to a 415V, 50 Hz, 3-phase supply. Determine the total power dissipated in each case. **[10]**