

Code: CS1T5, IT1T5, IT2T3RS

I B.Tech - I Semester – Regular Examinations – November 2015

BASIC ELECTRICAL ENGINEERING
(Common for CSE, IT)

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

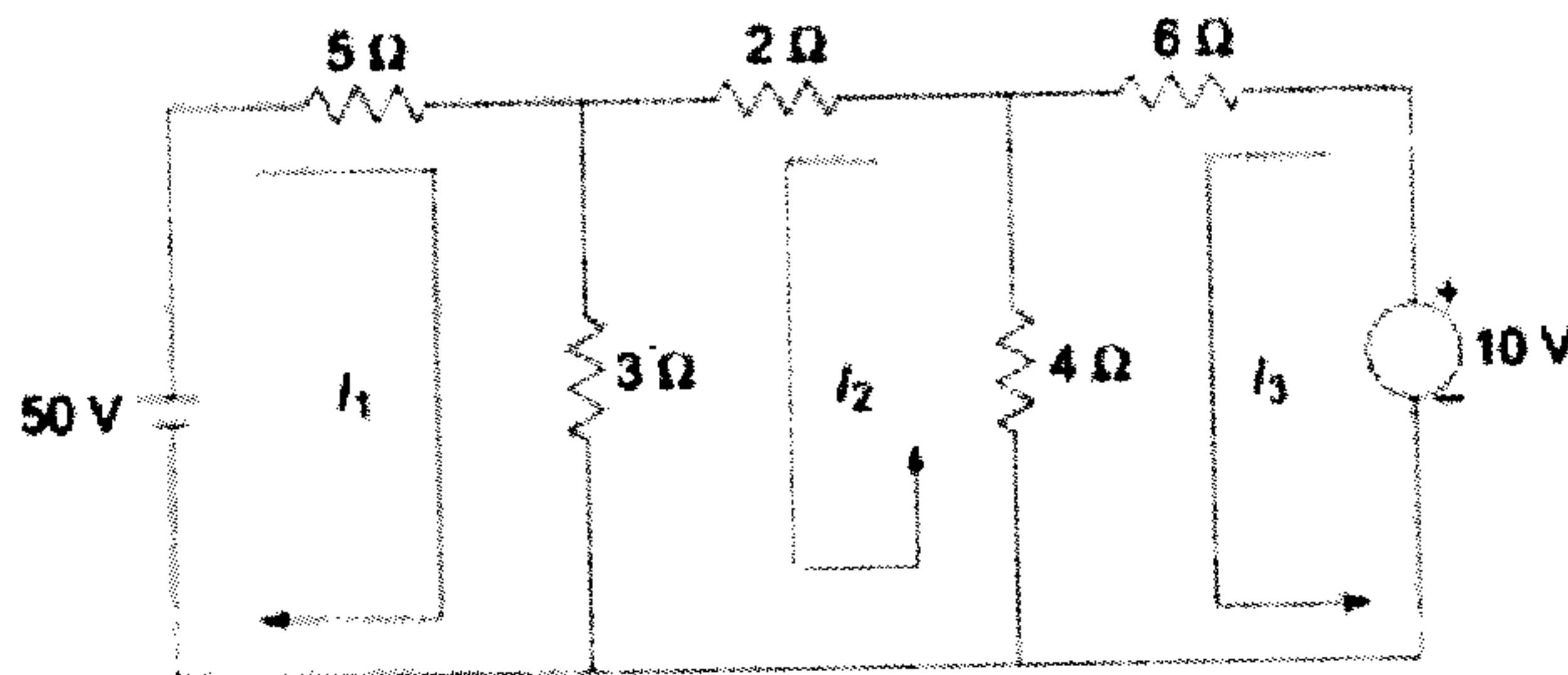
11x 2 = 22 M

1. a) Define Kirchoff 's Laws.
- b) State and Explain Ohm's Law.
- c) Explain Faraday's laws of Electro magnetic Induction.
- d) Write the analogy between electrical circuits and magnetic circuits.
- e) Derive the impedance of series RLC circuit.
- f) Define form factor and peak factor.
- g) Classify the DC Motors and explain.
- h) Explain the necessity of starters in a DC Machine.
- i) Derive the condition for Maximum efficiency in a transformer.
- j) Write the essential features of measuring instruments.
- k) Write the properties of Resistive Element.

PART – B

Answer any **THREE** questions. All questions carry equal marks. 3 x 16 = 48 M

2. a) Find the current flowing through $3\ \Omega$ resistance using mesh analysis. 8 M



- b) Explain Star to delta and delta to star transformation techniques with necessary derivations. 8 M
3. a) Define self and mutual inductance. Derive the expression for coefficient of coupling in terms of self & mutual inductances. 8 M
- b) Two identical coils connected in series have an Equivalent inductance of $0.4\ \text{H}$ when connected in aiding, and an equivalent inductance of $0.2\ \text{H}$ when the connection is opposing. The coefficient of coupling is 0.28 . Calculate mutual inductance and self inductance of the coils. 8 M

4. a) Explain 10 M
- i) Active Power
 - ii) Reactive Power
 - iii) Apparent Power
 - iv) Complex Power
 - v) Power factor
- b) Derive the RMS value of Triangular waveform with a peak voltage ' V_m '. 6 M
5. a) Explain the Principle of operation of DC Motor in detail. 8 M
- b) Explain the Constructional features of three phase induction motor with a neat sketch. 8 M
6. a) What is a Transformer and explain its operation with and without load? 8 M
- b) Explain the PMMC instrument with a neat sketch and explain its merits & demerits. 8 M