

Code: ME4T6

II B.Tech - II Semester – Regular Examinations - JUNE 2014

**BASIC ELECTRICAL AND ELECTRONICS
ENGINEERING
(MECHANICAL ENGINEERING)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Find the voltage value between f and b (V_{fb}) for the circuit shown in Fig.1. below 5 M

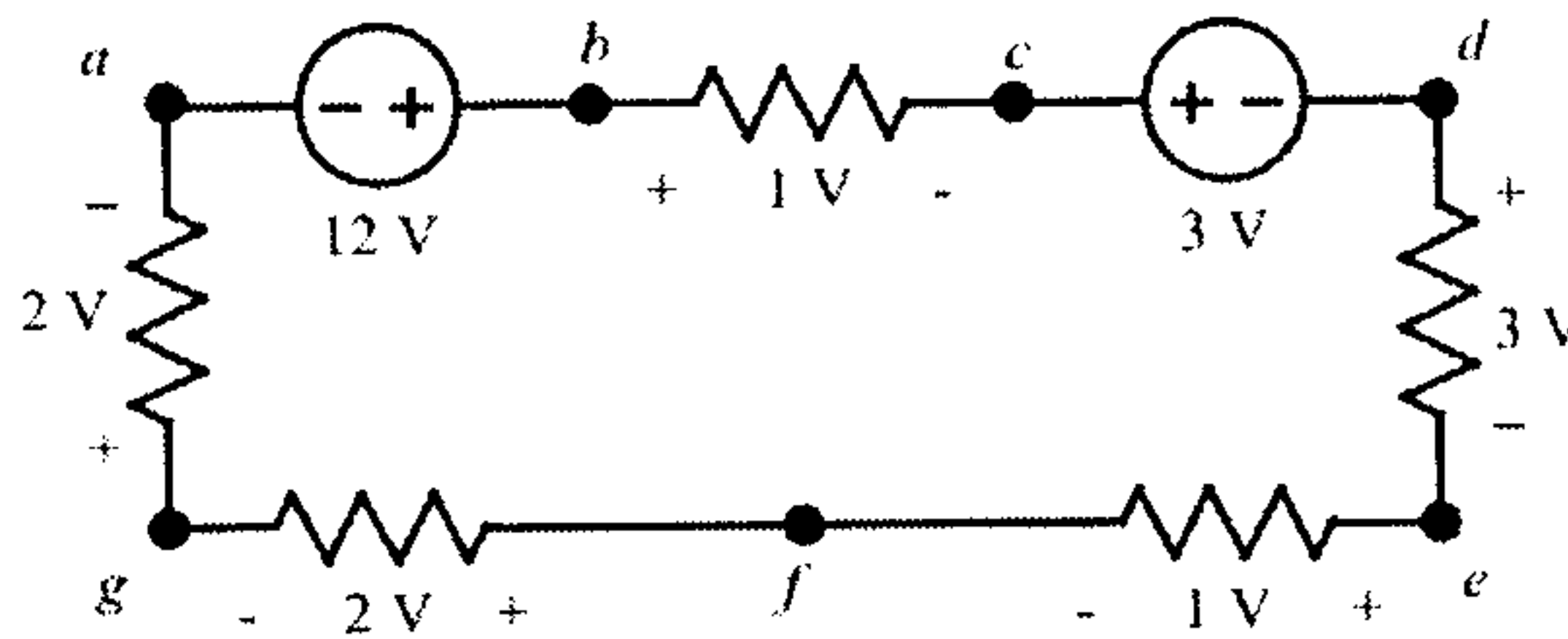


Fig.1

- b) State the KCL and explain with an example. 4 M
- c) Find the equivalent Resistance seen by the voltage source using star-Delta (delta-star) conversions for the circuit shown in Fig.2. below. 5 M

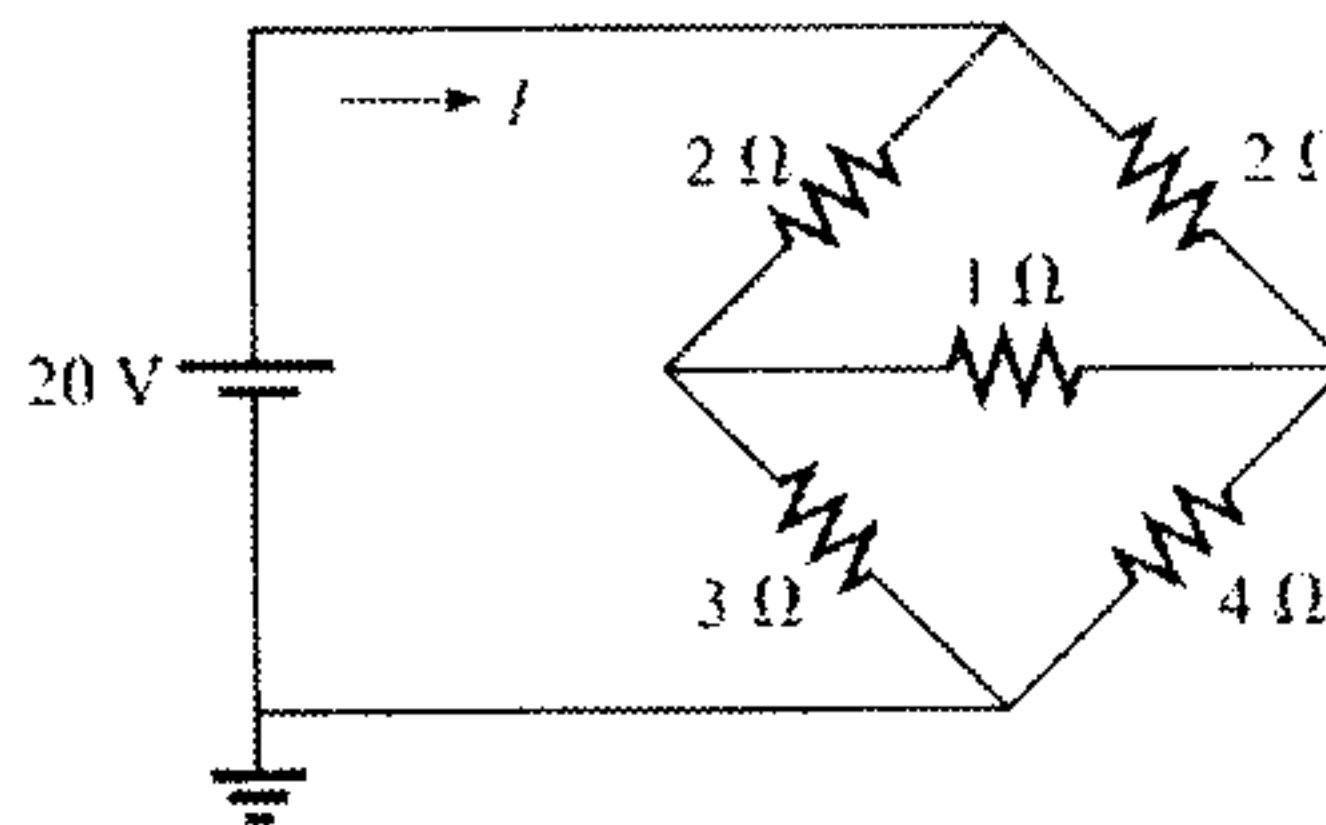


Fig. 2

2. a) Define the RMS value of an AC quantity. 4 M

b) The RMS values of voltages are shown in Fig.3 below, if the value of R is 5Ω , what is the RMS value of the current in the ac circuit? 5 M

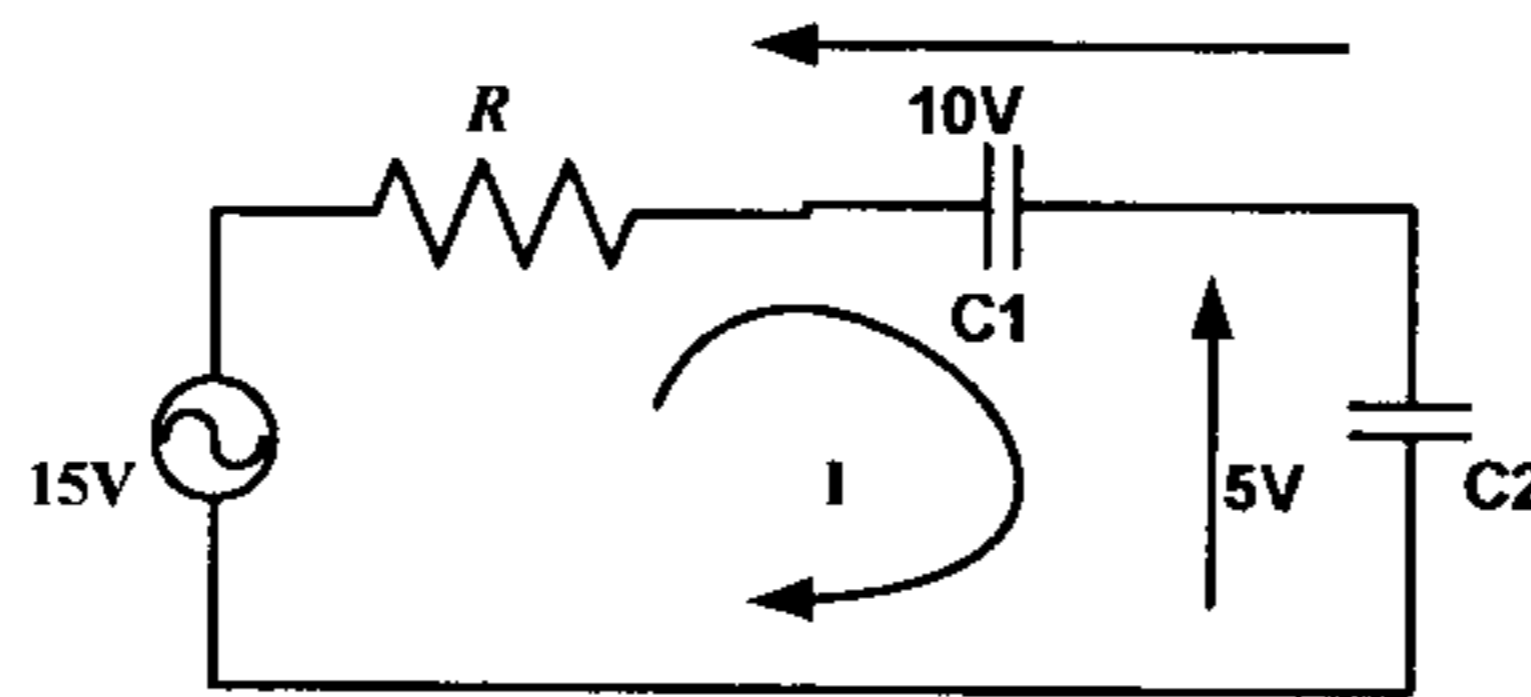


Fig.3

c) If $Z_1=2+5j\ \Omega$ and $Y_1=0.1-0.3j\ S$ then what is the average power dissipated in 3Ω resistor? The circuit is shown in Fig.4 below. 5 M

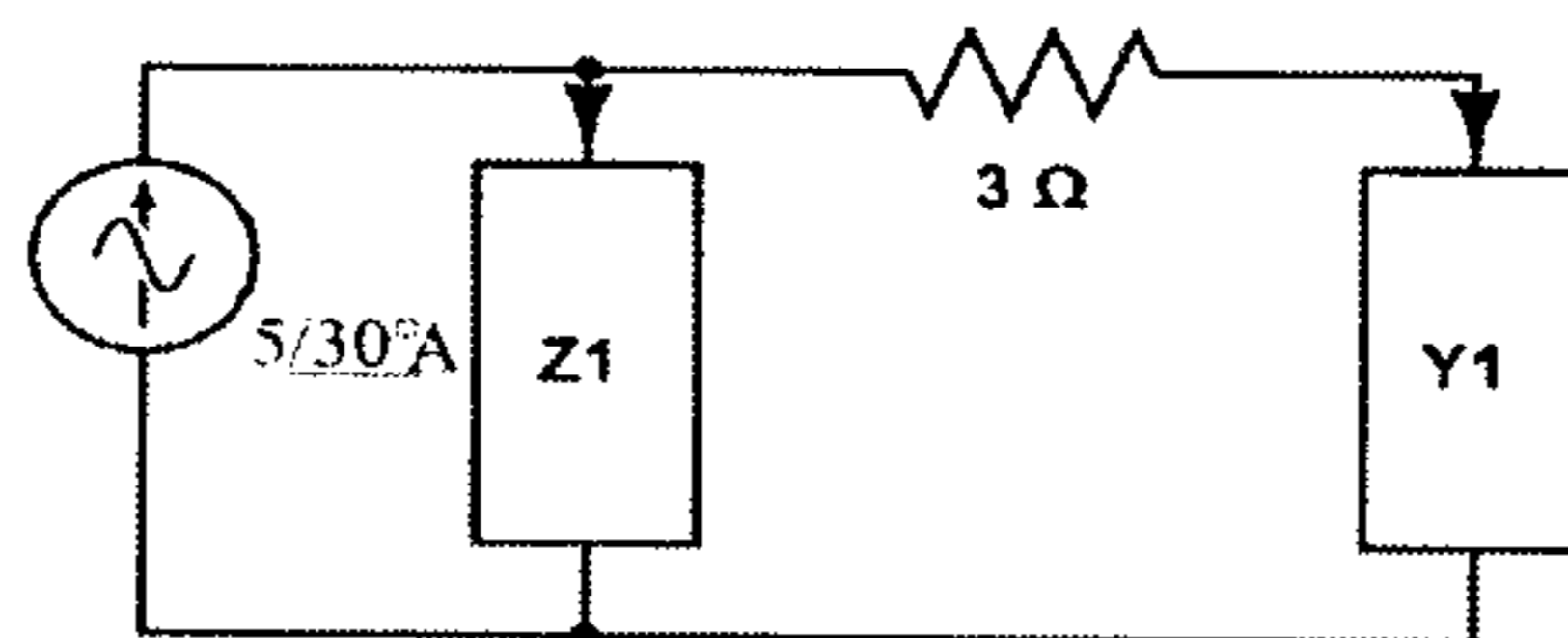


Fig.4

3. a) Explain the constructional features of DC machine. 7 M

b) Explain the principle of operation of DC machine. 7 M

4. a) Derive the expression of EMF in a transformer. 7 M

- b) A 440/230V, 50Hz transformer operates at a flux density of 1.2T. When energized from its H.V side. For this transformer, linear dimensions of core are double while the numbers of turns are halved on both its H.V and L.V. sides. If this transformer is now connected to 500V, 50Hz on its H.V. side, then what will be flux density? 7 M
5. a) Explain about V-I characteristics of a PN Junction diode. 7 M
- b) What are the applications of diodes? 7 M
6. a) Explain the Single stage CE amplifier. 7 M
- b) Explain the turning ON/OFF process of SCR. 7 M
7. a) What are the applications of Dielectric Heating? 7 M
- b) Explain about different types of resistance welding. 7 M
8. a) What does the acronym LVDT stand for? 2 M
- b) Explain with suitable waveforms, working of LVDT. 6 M
- c) Explain how LVDT can be used with DC supply to measure displacement. 6 M