

## I B.Tech-II Semester-Regular Examinations - July 2014

**BASIC ELECTRICAL ENGINEERING**  
(Common for CSE & IT)

Duration: 3 hours

Marks:  $5 \times 14 = 70$ 

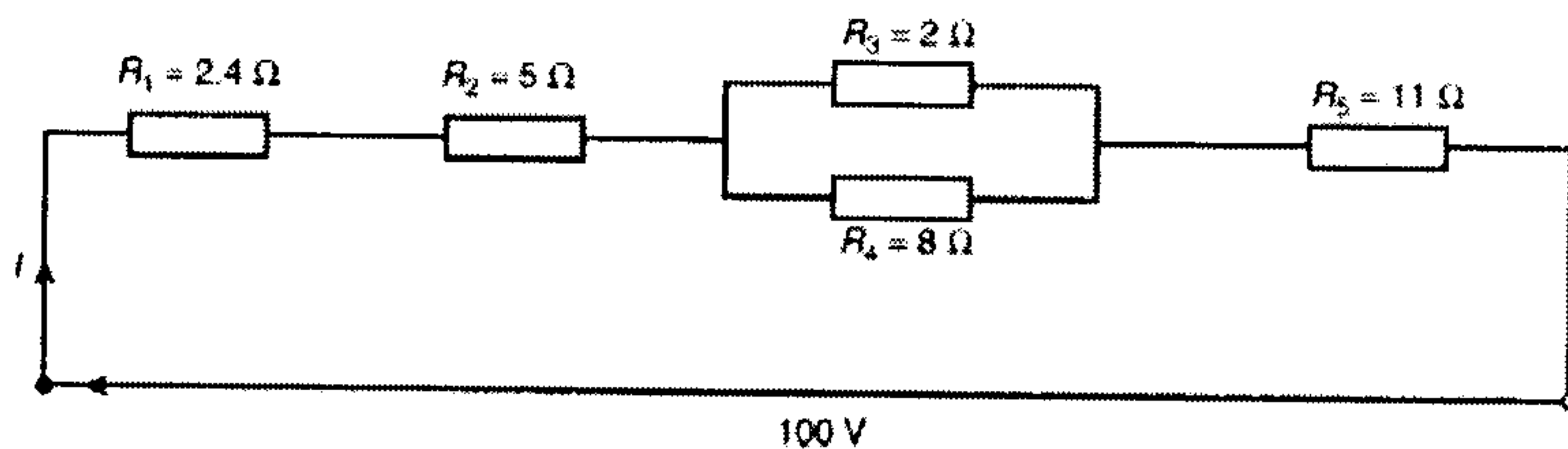
Answer any FIVE questions. All questions carry equal marks

1. a) Explain the essence of electric current and concept of electric power derived from fundamental electric fields.

7 M

- b) For the series-parallel network shown in Figure, find the supply current, the current flowing through each resistor, the p.d. across each resistor, the total power dissipated in the circuit.

7 M



2. a) Explain the method of solving electrical circuits using Kirchhoff's laws by means of a numerical illustration. 7 M

- b) Derive an expression for the force on a current carrying conductor placed in the magnetic field.

7 M

3. a) Explain the basic terminology of electric circuits. 7 M
- b) Two coils of self inductances  $2H$  and  $3H$  respectively are connected in series. If the coefficient of coupling between the coils is  $0.5$ , find the inductance of the circuit when the coils are connected in series aiding and in series opposition. 7 M
4. a) Obtain the expressions that relates the  $T$ ,  $f$ ,  $\omega$  and  $N$ . 7 M
- b) An iron cored choke coil has a resistance of  $4\Omega$  when measured by a dc supply. On a  $240V$ ,  $50Hz$  supply mains, it dissipated  $500W$ , the current taken being  $10A$ . Calculate the impedance, the power factor, the iron loss and inductance of the coil. 7 M
5. a) What is a chemical cell? Explain the types of cells. 7 M
- b) Explain the construction of Nickel – iron cell. 7 M
6. a) Explain the principle of operation of three phase induction motor. 7 M
- b) Derive an expression for the torque in dc machines. 7 M
7. a) Explain the constructional details of single phase core type transformers. 7 M

- b) Discuss various losses in transformers. 7 M
8. a) Explain the construction of permanent magnet moving coil type instrument. 7 M
- b) What are the essential torque requirements to ensure proper operation of indicating instruments? Explain. 7 M