

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

[25 Marks]

- 1.a) Define Ohm's law. [2M]
- b) Define KVL with an example. [3M]
- c) What is armature reaction? [2M]
- d) What is the construction of DC shunt motor? [3M]
- e) What are the eddy current losses in transformers? [2M]
- f) What is slip in Induction motors? Explain. [3M]
- g) What is reverse bias? [2M]
- h) Explain the operation of full wave rectifier. [3M]
- i) What are the basic components of a CRT? [2M]
- j) Write short notes on magnetic deflection. [3M]

PART-B

[50 Marks]

- 2. a) What is the equivalent resistance of series connection of resistors? Explain.
- b) Determine 'i' in the circuit shown in figure 1.

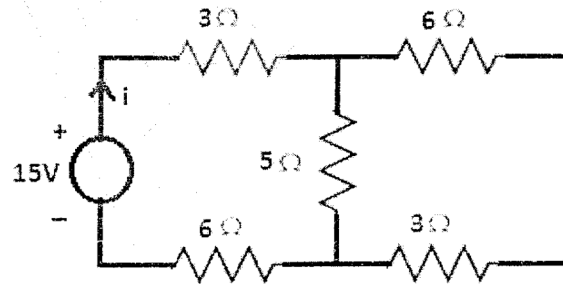


Figure: 1

- c) What are the differences between Moving coil and Moving iron instruments? [2+4+4]

OR

- 3.a) What is current division rule?
- b) In the circuit shown in figure 2, find the current 'i'.

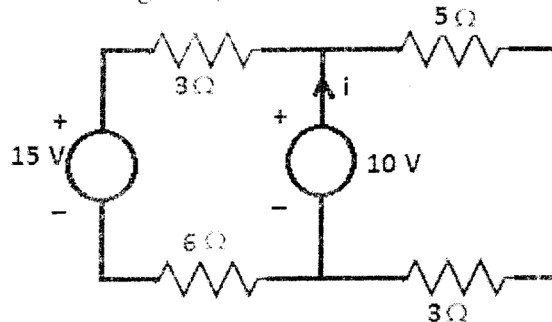


Figure: 2

- c) Explain the working principle of moving iron instruments. [2+4+4]

- 4.a) Explain the Principle of operation of DC motor in detail.
b) Derive the EMF equation of DC shunt generator. [5+5]
- OR**
- 5.a) Explain different types of DC generators.
b) What are the applications of DC series motors? Explain. [5+5]
- 6.a) Calculate the regulation of a transformer in which the percentage resistance drop is 2% and the percentage reactance drop is 6% when the power factor is 0.9 lagging, 0.9 leading and unity.
b) Draw the slip torque characteristics of induction motor and explain. [5+5]
- OR**
- 7.a) A 10 KVA, 1000/250 V single phase transformer has its maximum efficiency of 96% when delivering 90% of its rated output at unity power factor. Calculate its efficiency when delivering its full load output at 0.8 lagging power factor.
b) Explain the principle of operation of alternators. [5+5]
- 8.a) Explain different applications of a diode.
b) Explain different modes of operation of a transistor. [5+5]
- OR**
- 9.a) Derive the expression for the average output voltage of a diode half wave rectifier.
b) Explain the differences between PNP and NPN transistors. [5+5]
- 10.a) Explain the operation of CRT with neat sketch.
b) Explain about the phase angle measurement using CRO. [5+5]
- OR**
- 11.a) Explain the functions of Horizontal and vertical amplifiers in CRT.
b) What are the applications of CRO? Explain. [5+5]