

Code: 20ES1101

I B.Tech - I Semester – Regular Examinations – JULY 2021

**BASIC ELECTRICAL & ELECTRONICS
ENGINEERING
(Common to CIVIL, CSE, IT)**

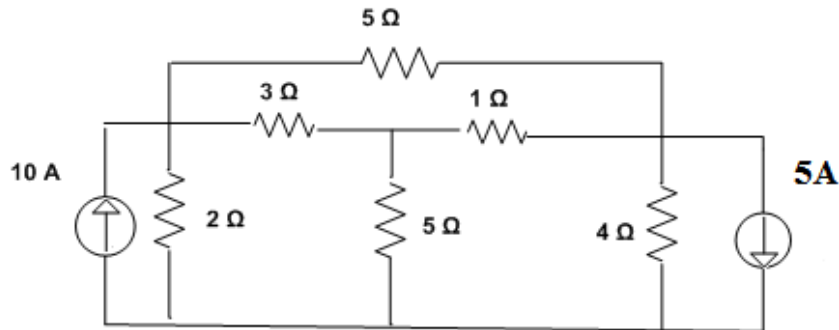
Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

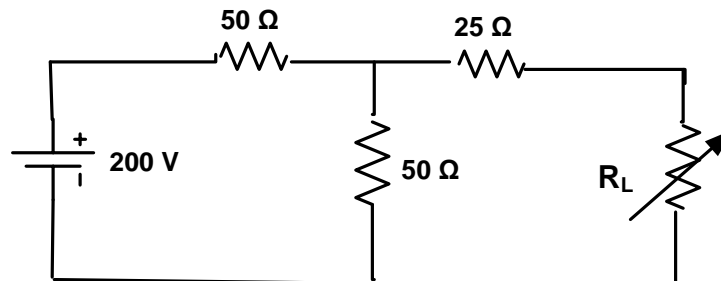
UNIT – I

1. a) Use Nodal Analysis to find the currents in various resistors of the circuit shown in Fig.



7 M

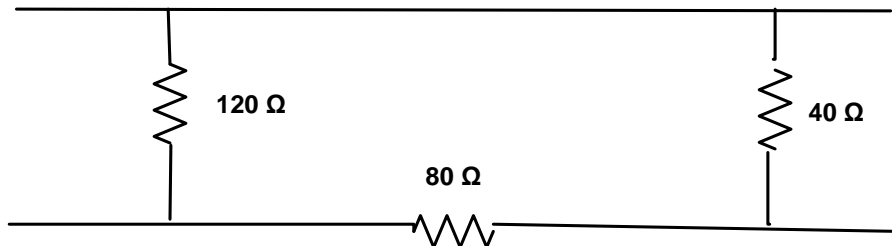
- b) Determine the maximum power that can be delivered to the load by the circuit shown in Fig. Also find the value of load resistance required to achieve this maximum power.



7 M

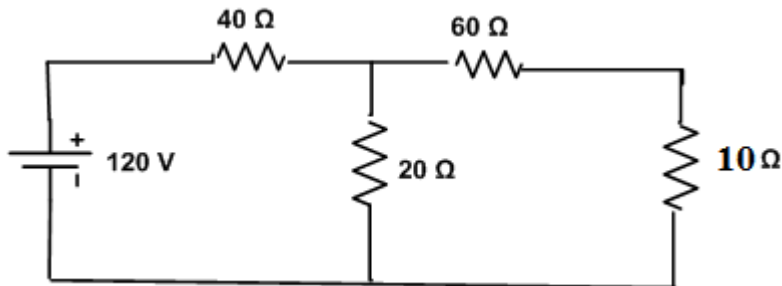
OR

2. a) Convert the delta network shown in Fig. into equivalent star network



7 M

- b) Using Thevenin's theorem, find the current in $10\ \Omega$ resistor in the circuit shown in Fig.



7 M

UNIT – II

3. a) Explain different losses in a D.C. motor. 7 M
b) Explain the construction details of DC Generator with neat sketch 7 M

OR

4. a) State the types of DC motors. What is the basis of the classification? And mention their applications. 7 M
b) Explain the necessity of starter in DC motor. 7 M

UNIT-III

5. a) Derive the condition for maximum efficiency of a Transformer. 7 M
- b) Give the construction details of a Single Phase Transformer. 7 M

OR

6. a) Compare slip ring versus squirrel cage Induction motors. 7 M
- b) Explain how an induction motor can self start but cannot run at synchronous speed. 7 M

UNIT – IV

7. a) Explain forward biasing and reverse biasing of a pn junction with neat characteristics. 7 M
- b) Write the operation of half wave rectifier with filter circuit, along with neat circuit diagram and draw the waveforms. 7 M

OR

8. a) Explain the limitations in the operating conditions of pn junction. 7 M
- b) Write the advantages and disadvantages of half wave and full wave rectifier. 7 M

UNIT – V

9. a) What is operational amplifier? Mention the ideal characteristics of op-amp. 7 M
- b) Show Application of an op-amp as non inverting amplifier. 7 M

OR

10. a) What is an operational amplifier? Mention few applications of op-amps. 7 M
- b) Show Application of an op-amp as an inverting amplifier. 7 M