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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY: PUTTUR**  
(AUTONOMOUS)

**B. Tech I Year II Semester Supplementary Examinations February-2022**  
**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**  
(Common to CE & AGE)

Time: 3 hours

Max. Marks:60

(Answer all Six Units 6 X 10= 60Marks)

**PART- A****UNIT-I**

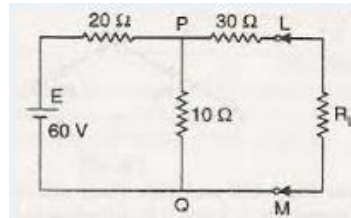
- 1 a Define and Explain about ohms law? 5M  
b Explain about passive elements in detail? 5M

OR

- 2 Define and Explain about Energy sources in detail/Explain active elements in detail. 10M

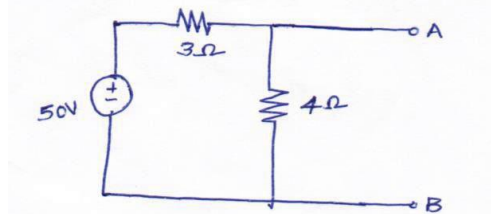
**UNIT-II**

- 3 Determine the maximum power delivered to the load in the circuit shown in fig 10M



OR

- 4 a State Thevenins theorem. 2M  
b Find Thevenins equivalent circuit across AB for the circuit shown in below 8M

**UNIT-III**

- 5 a Derive Torque equation of dc motor 5M  
b The counter EMF of Shunt motor is 227 volts the field resistance is 160 Ω & field current 1.5A if the line current is 36.5A find the armature resistance also find armature current when the motor is stationary. 5M

OR

- 6 a Explain OC and SC test of a single phase transformer 5M  
b A Single phase 2200/250V, 50Hz transformer has a net core area of 36 cm<sup>2</sup> and a maximum flux density of 6 wb/m<sup>2</sup>. Calculate the number of turns of primary and secondary. 5M

**PART - B****UNIT-I**

- 7 a What is Doping? Explain why it is used in semiconductor Industry? 5M  
b Explain Energy band gap in semiconductor with a neat sketch? 5M

**OR**

- 8** Design a Voltage rectifier with a load? Derive an expression for load current. **10M**

**UNIT-II**

- 9** What is a Transistor? With a neat sketch explain how current flows in a transistor? **10M**

**OR**

- 10 a** Explain Emitter follower with necessary expression. **5M**  
**b** Explain why self Bias is widely used in Amplifiers. **5M**

**UNIT-III**

- 11** Draw and Explain the construction of n-channel Depletion mode MOSFET? Explain how current flows through the MOSFET. **10M**

**OR**

- 12 a** Discuss how a MOSFET acts as a Switch. **5M**  
**b** Draw and Explain the importance of Depletion mode MOSFET. **5M**

**\*\*\* END \*\*\***