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

B.Tech I Year I Semester Supplementary Examinations November-2021

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

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

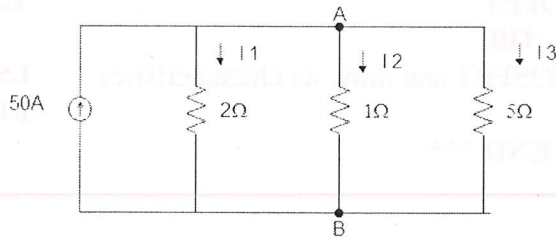
PART-A

UNIT-I

- 1 a State and explain Ohm's law. L1 5M
 b Explain Basic circuit components in detail. L2 5M

OR

- 2 a Derivation for equivalent resistance in parallel circuit. L2 5M
 b Determine the current in all resistors in the circuit as shown in fig. L2 5M



UNIT-II

- 3 State and verify Super position theorem with example L3 10M

OR

- 4 a Derive the EMF equation of a DC Generator L4 5M
 b A 4 pole lap wound dc generator has a useful flux of 0.07wb per pole L4 5M
 Calculate the generated emf when it is rotated at speed of 900rpm with the help of prime mover. Armature consists of 440 number of conductors calculate the generated emf.if lap wound is replaced by wave wound?

UNIT-III

- 5 a Derive Torque equation of dc motor. L3 5M
 b A 6 pole lap wound shunt motor has 500 conductors, the armature and shunt field resistances are 0.05 Ω and 25 Ω, respectively. Find the speed of the motor if it takes 120 A from dc supply of 100 V. Flux per pole is 20 mWb. L5 5M

OR

- 6 Explain in detail about various transformer losses. L2 10M

PART-B

UNIT-IV

- 7 a What is Doping? Describe P-and N-type semiconductors? L1 5M
 b Explain the behavior of PN junction diode L2 5M

OR

- 8 a Explain the working principle of Half Wave Rectifier. Draw its input and Output waveforms with neat circuit diagram. L2 5M
 b Determine the expression for Ripple factor and Efficiency of Half Wave Rectifier. L5 5M

UNIT-V

- 9 a List the applications of a transistor and explain the transistor acts a switch. L1 5M
 b Explain in detail the transistor working as a amplifier. L2 5M

OR

- 10 a Explain the early effect of a BJT? L2 5M
 b Explain the operating region of BJT when its working L2 5M

UNIT-VI

- 11 a Explain the Drain characteristics of JFET. L2 5M
 b Explain the transfer characteristics of JFET L2 5M

OR

- 12 a Explain the static characteristics of MOSFET and draw its characteristics L5 5M
 b List the applications of MOSFET L1 5M

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