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

**B.TECH II Year II Semester Supplementary Examinations DEC 2019  
BASIC ELECTRICAL & ELECTRONICS ENGINEERING  
(MECHANICAL ENGINEERING)**

Time: 3 hours

Max. Marks: 60

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

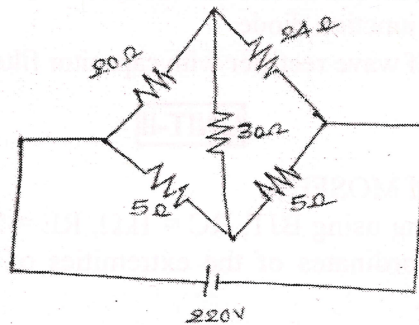
**PART A**

**UNIT-I**

- 1 a. Explain about basic circuit components in detail 5M  
 b. Show the form factor of the sine current is 1.11./ Find form factor of the sine current. 5M

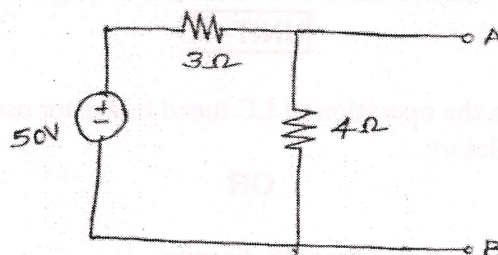
OR

- 2 Find the current delivered by the source for the circuit shown in figure 10M



**UNIT-II**

- 3 a Find Nortons equivalent circuit across AB for the circuit shown in below. 5M



- b Define and explain about Impedance parameters. 5M

OR

- 4 State and prove Reciprocity theorem with an example. 10M

**UNIT-III**

- 5 A 230V shunt motor takes a total current of 70A and runs at 900 r.p.m. Shunt field RESISTANCE AND ARMATURE RESISTANCE ARE  $40\Omega$  AND  $0.2\Omega$  RESPECTIVELY. If iron and friction losses amount to 1700W. find (i) Copper losses (ii) Armature torque (iii) Shaft torque (iv) Efficiency. **10M**

OR

- 6 a Explain OC and SC test of a single phase transformer. **5M**  
 b An ideal transformer has 1000 turns on its primary and 500 turns on its secondary the driving voltage of primary side is 100V and the load resistance is  $5\Omega$ , CALCULATE  $V_2$ ,  $I_1$  and  $I_2$ . **5M**

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

- 7 Describe the working of a PN junction diode when it is connected in forward bias and reverse bias. Draw VI Characteristics of PN Junction Diode. **10M**

OR

- 8 a Explain the behavior of PN junction diode. **5M**  
 b Discuss the operation of half wave rectifier with capacitor filter. **5M**

**UNIT-II**

- 9 a Mention the applications of MOSFET. **3M**  
 b For a voltage divider biasing using BJT,  $R_C = 1k\Omega$ ,  $R_E = 2k\Omega$ ,  $R_1 = 10k\Omega$ ,  $R_2 = 5k\Omega$ , and  $V_{CE} = 10V$ . Find the coordinates of the extremities of the load line and the Q-point. Assume Silicon Transistor. **7M**

OR

- 10 a Explain the functioning of Common Collector Configuration of BJT. State why this arrangement is also called an emitter follower circuit. **5M**  
 b With a neat sketch Explain the operation of Fixed Bias Configuration? **5M**

**UNIT-III**

- 11 a With neat diagram, explain the operation of LC tuned transistor oscillator. **5M**  
 b Compare RC and LC oscillators. **5M**

OR

- 12 a Describe Integrator amplifier of op amp with diagram. **5M**  
 b In the summing amplifier circuit of op amp, the applied input voltage signals and their resistors are (i) 1mV with  $0.5k\Omega$  (ii) 3mV with  $1.5k\Omega$  and (iii) 6mV with  $3k\Omega$ . If  $R_f = 12k\Omega$ , calculate (i) individual closed loop gains and (ii) output voltage. What is the output voltage if the closed loop gain is unity? **5M**

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