Course Code :22EE11D3

R-2022

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING

(Autonomous)

Madhurawada, Visakhapatnam

Affiliated to Andhra University, Visakhapatnam.

B.Tech I-Semester Regular & Supplementary Examinations February 2024

Basic Electrical and Electronics Engineering

[Common to Chemical, CSE, IT, CSE (Data Science) & CSE (AI&ML)]

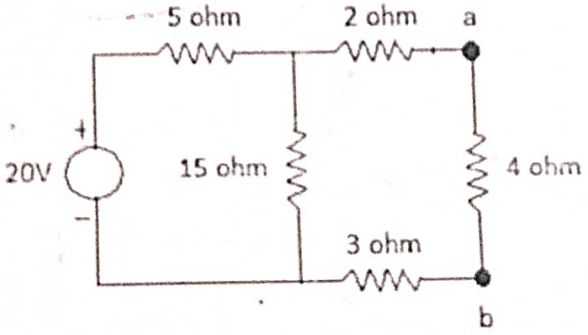
Date: 13-02-2024 **Time: 3 Hours** **Max. Marks: 70**

1. Answer ONE Question from each UNIT
2. All parts of a Question must be answered in one place to get valued.
3. All questions carry equal marks.

UNIT-I

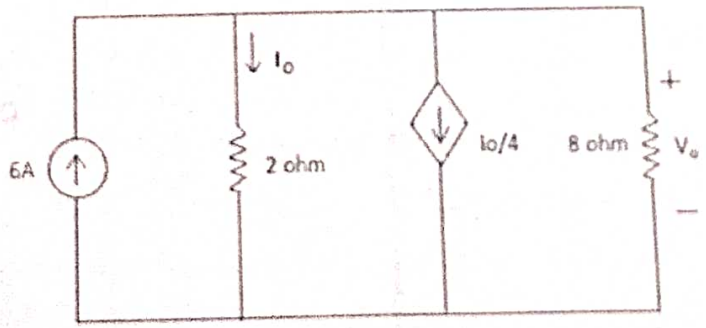
1.a State the Kirchhoff's Laws and explain. 7 Marks

b Find the current passing through 4 ohms resistance using Thevenin's Theorem. 7 Marks



2.a State and explain the Norton's Theorem. 7 Marks

b Find V_0 and I_0 in the given circuit. 7 Marks



UNIT-II

3.a What is the need of a starter in DC motors? Briefly explain the working of 3-Point Starter. 7 Marks

b A 6 pole DC generator is having 1200 lap connected armature conductors is producing an emf of 400 V in its armature winding. Find the speed of the generator if it is maintaining a flux of 10 mwb under each pole 7 Marks

4.a	List the different types of DC generators and write down their voltage and current equations.	7 Marks
b	A DC Shunt motor absorbs a current of 19A from 220 V DC source. The armature and shunt field resistances are 1.5 and 225 ohms respectively. The total Iron and friction losses are 450 W. Find the efficiency of the motor.	7 Marks

UNIT-III

5.a	Briefly discuss on the construction of Synchronous Generator.	7 Marks
b	In a 220/3000 Volt, 50 Hz Single Phase transformer, the maximum flux density is 2 wb/m^2. The emf per turn is 10 V. Determine a) Number of primary and secondary turns b) cross sectional area of the core.	7 Marks
6.a	Explain the Torque-Slip characteristics of a three-phase induction motor.	7 Marks
b	How do you conduct OC and SC tests on single phase transformer? Explain.	7 Marks

UNIT-IV

7.a	Explain the Forward bias and Reverse bias characteristics of a PN junction diode.	7 Marks
b	What is MOSFET? Explain its operation.	7 Marks
8.a	Explain the working of Full-Wave Rectifier with filter capacitor. Draw the input and output waveforms.	7 Marks
b	Explain, how the Zener diode acts as a voltage regulator.	7 Marks

UNIT-V

9.a	Briefly, explain the characteristics and applications of an Op Amp.	7 Mark
b	Explain the Op Amp characteristics in Non-inverting configuration.	7 Mark
10.a	Discuss on closed loop operation of an Inverting Op Amp.	7 Mark
b	Can an Op Amp be operated as a Voltage Follower? Explain.	7 Mark