Form A: Paper-setting Blank

Ref. No. Ex / CE/ET/T/116/2019 (Old)

B civil Engg 1st year 1st sem. EXAMINATION, 20 19

(1st/2nd-Semester/~~Repeat/Supplementary/Spl. Supplementary/Old/Annual/Bi-Annual~~)

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Name in full)

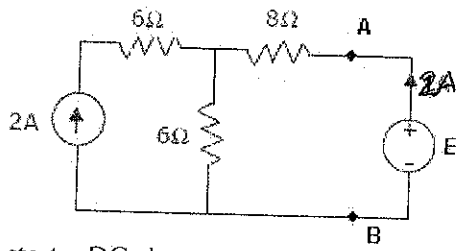
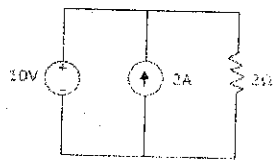
PAPER .....

Time : ~~Two hours~~/Three hours/~~Four hours/Six hours~~

Full Marks ~~30~~/ 100

(~~15~~/50 marks for each part)

Use a separate Answer-Script for each part

No. of questions	Part I / ~~Part II~~ Answer any three questions (3 × 16+2) 2 marks for neatness	Marks
Q1	State and prove "Maximum Power transfer theorem". Also drive Kirchhoff's Current Law and Voltage Law	12+4
Q2	Explain with neat diagram how "Megger" works. What are the other methods of measuring insulation resistance?	10+6=16
Q3	Write in brief about any two from the following a) Eddy current and Hysteresis loss b) Star Delta conversion	8X2=16
Q4	State the Thevenin's theorem. Determine the Thevenin's Voltage V_{Th} and Thevenin's resistance R_{Th} between A and B, If E is connected to AB then 2A current will flow through the voltage source, E. What is the value of E?  Why starters are used to start a DC shunt motor?	12+4=16
Q5	Explain superposition theorem with suitable example in case of a linear circuit? Find the current through 2Ω resistor. 	10+6

B.CIVIL ENGG. 1ST YEAR 1ST SEM. EXAM. 2019

Time: Three Hours **Full Marks: 50**

Part II

Use Separate Answer Scripts for each Group

*Answer **Question Number One (01)&any two (02)** of Question (2-7)&any one (01) of Question (8-11) of the following questions.*

1) Answer any five (any 05) briefly: **[5X5=25]**

i) What is Fermi level and its importance? What is Hall effect and its importance?

ii) Differentiate between intrinsic and extrinsic semiconductor? What are their importance?

iii) What is mobility of carriers? Give its expression? How is 'hole' a carrier?

iv) Define P-type and N-type semiconductor? How do you convert a semiconductor in to a P-type &a N-type? How do you convert a P-type in to a N-type and vice-versa?

v) Differentiate between BJT and FET? Which one of them is the most preferred for electronic circuits and why?

vi) What is a diode? What are its characteristics? What is its importance?

vii) What are the various types of diodes? Differentiate between them?

viii) How many diodes are there in a half wave rectifier, full wave rectifier and a bridge rectifier? Differentiate between them?

ix) What is a logic gate? Name & draw the various logic gates and write their expressions? What is a BIT?

2) Draw the half adder, give its equation and its truth table? Draw the full adder, give its equation and its truth table? **[5+5=10]**

3) Compare between the Avalanch breakdown and the Zener breakdown? How does a Zener diode help in voltage regulation? **[6+4=10]**

4) What is a rectifier? State a single important difference between the various rectifiers? What is ripple factor, Rectifier efficiency and transformer utilization factor? **[2+2+6=10]**

5) Describe the mechanism of a P-N junction operation? How does the P-N junction show the rectifying property? **[7+3=10]**

6) Convert 225, 256, 64, 32, 16 from the decimal to binary? **[5X2=10]**

7) Implement OR, AND, NOT using NOR & NAND GATE? **[10]**

8) What is a BJT? Why is it so called? Why is it called a current controlled device? **[5]**

9) Define β and α of a BJT state their relation? Why is FET called a unipolar device? **[5]**

10) Draw the schematic of the two types of BJT? Draw and explain the operation mechanism of a BJT? **[5]**

11) Explain the BJT output characteristics and its three regions? **[5]**