F.Y.B.Sc. (CBCS)-Regular-Semester 2017 Sem I

USELT01 - Electronics Paper-I
(Network Analysis and Digital Fundamentals)

P. Pages : 2 **GUG/W/17/10085**

Time : Three Hours * 2 6 9 2 * Max. Marks : 50

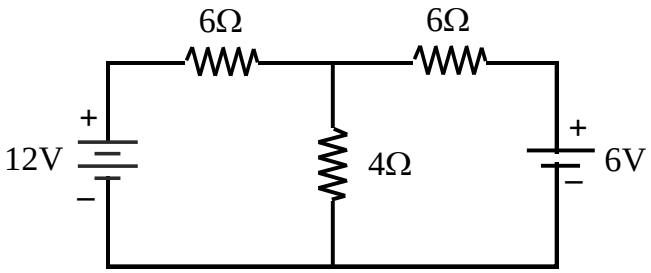
Notes : 1. All questions are compulsory and carry equal marks.
2. Draw neat diagram wherever necessary.
3. Use of log table/calculator is permissible.

Either

1. a) Explain the ideal voltage source and current source. How does it differ from practical sources ? **4+**
Explain the Kirchoff's current law and Kirchoff's voltage law with suitable examples. **6**

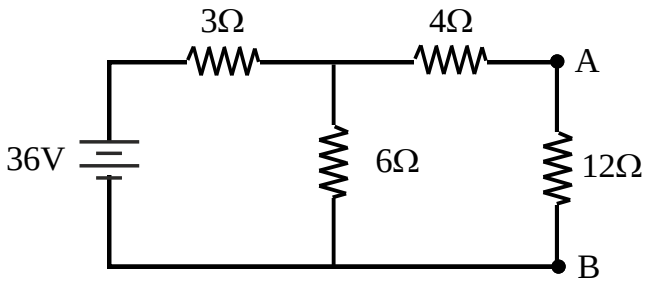
OR

b) State and explain superposition theorem. Using Superposition theorem, calculate the current through 4Ω resistor in following circuit. **6+ 4**



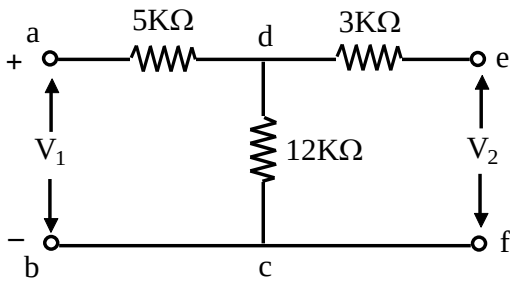
Either

2. a) State and prove Norton's theorem. Using Norton's theorem, calculate the current through the 12Ω resistor shown in following circuit. **6+ 4**



OR

b) Explain z-parameter of two port network. Draw basic Z parameter equivalent circuit find the z-parameter for the network shown in following circuit. **6+ 4**



Either

3. a) What is hexadecimal number system ? Explain the conversion method of Hexadecimal to decimal number and decimal number to hexadecimal number with suitable example. **10**

OR

b) What is code ? Explain 8421 and excess-3 code with suitable examples. **2+ 4+ 4**

Either

4. a) What is logic gate ? Explain all basic gates **4+**
Explain the construction of basic gates using NAND gate. **6**

OR

b) State and prove DeMorgan's theorem. **5+**
Explain the 4-bit controlled inverter using XOR gate. **5**

5. Attempt **any ten** of the followings. **10**

a) What is Mesh analysis ?

b) Draw diagram for star network.

c) What is duality of network ?

d) State Thevenins theorem.

e) What is two port network ?

f) State maximum power transfer theorem.

g) What is binary number system ?

h) What is parity code ?

i) What is 1's complement ?

j) Draw the symbol of NAND and NOR gate.

k) Draw the logic diagram of XOR gate using basic gates.

l) Draw the symbol of XNOR gate and give its truth table.

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