(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 9587 Roll No. | | | | | | | | | | |

B. Tech.

(Semester-I) Theory Examination, 2011-12

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

Time : 3 Hours] *[Total Marks : 100*

Note : Attempt questions from all Sections as indicated.

Section-A

1. Attempt *all* parts : 2×10=20

(a) Explain the following terms :

(i) Electric Potential

(ii) Electrical Energy.

(b) State Thevenin's theorem. Discuss its significance on the network theory.

(c) What is the significance of back emf ?

(d) What are the applications of Shadel pole motors ?

(e) Discuss the following w.r.t. semiconductor :

(i) Doping

(ii) Dopant.

(f) What is early effect on Base width modulation ?

(g) Convert the following numbers :

(i) $(1431)_8$ to base 10

(ii) $(53.1575)_{10}$ to base 2.

(h) Draw the logic symbol and construct the truth table for :

(i) AND gate

(ii) NOR gate.

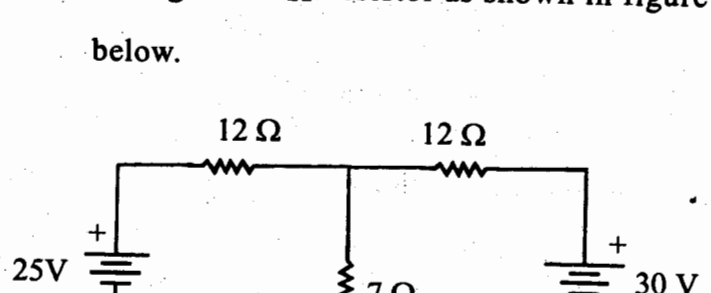
(i) Discuss the classification of electrical instruments.

(j) What are the various advantages of digital voltmeters?

Section-B

2. Attempt any *three* parts : 10×3=30

(a) Using Thevenin's theorem, find the current through the 7 Ω resistor as shown in figure below.



(b) Derive an EMF equation of DC generator.

(c) Explain the operation of N-channel JFET.

(d) Implement the Boolean expression for EX-OR gate using NAND gates.

(e) Explain the following :

(i) Deflecting Torque

(ii) Controlling Torque

(iii) Damping Torque

(iv) Scale and Pointer.

Section-C

Attempt *all* questions : 10×5=50

3. Write short notes on the folllowing :

(i) Active and Passive Elements

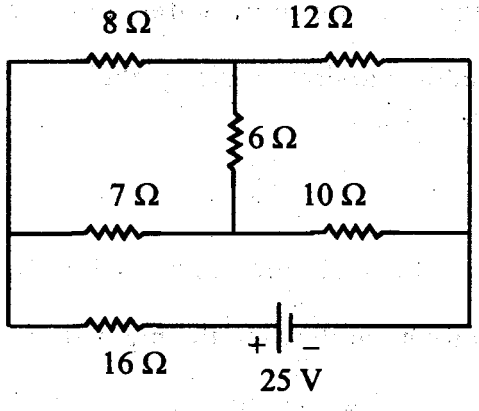
(ii) Lumped and Distributed Parameters

(iii) Linear and Non-linear Elements

(iv) Bilateral and Unilateral Elements.

Or

Find the current through and the voltage across all the elements in the circuit by using Kirchoff's laws as shown in figure below.



4. Draw and explain the various characteristics of DC motors. List the applications of DC motors.

Or

Explain about Double field revolving theory.

5. Explain CB and CC configurations of a transistor.

Or

What is meant by intrinsic semiconductor ? Explain the difference between intrinsic and extrinsic semiconductors.

6. List the various logic gates and construct the truth table and draw logic symbols.

Or

Design a logic circuit that has 4 inputs, the output will only be high when the majority of the inputs are high. Use K-map to simplify.

7. With a neat sketch explain, the principle of operation of Induction type energy meter.

Or

Draw the block diagram of a general purpose CRO and explain the functions of the following controls :

(i) Intensity

(ii) Focus

(iii) Horizontal and Vertical positioning

(iv) Synchronization.