Total No. of Questions : 09]   [Total No.of Pages : 02

I/IV B. Tech. DEGREE EXAMINATIONS, DECEMBER - 2016
Second Semester
BT / CSE / ECE / EEE
BASIC ELECTRICAL AND ELECTRONIC SCIENCES

Time : **Three Hours**   Maximum Marks : **60**

Answer Question No. 1 Compulsory.   **12x1=12 M**

Answer ONE question from each Unit.   **4x12=48 M**

1. a)   Define active and passive elements ?

   b)   Define charge and current ?

   c)   What is power factor ?

   d)   Define alternative current and give an example ?

   e)   Define faraday's law ?

   f)   What are the applications of Zener diode ?

   g)   What are the advantages of DVMs ?

   h)   Define indicating type instrument.

   i)   Write expression for mutual inductance ?

   j)   What is break down voltage ?

   k)   Which configuration of transistor is used for current amplification ?

   l)   What are the applications of FET ?

UNIT - I

2. a)   Define (i) Peak value (ii) Average value (iii) Peak factor (iv) Form factor and write its values to sine wave.

   b)   Find the value of R and the current flowing through it in the circuit shown when the current in branch OA is zero. Workout the problem stating the reasons at different steps.
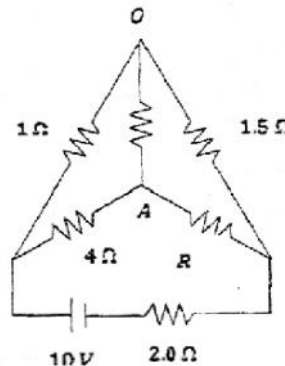
P.T.O.

(OR)

3. a) State and explain kirchoff's laws applied to electrical circuits ?

    b) Explain power triangles and impedance triangles with examples.

UNIT - II

4. a) Derive the expression for co-efficient of coupling a coupled inductor ?

    b) Classify different types of measuring instruments ?

(OR)

5. a) State the principles on induction and distinguish static and dynamically induced emfs ?

    b) Explain the principle of operation of DVM ?

UNIT - III

6. a) Draw and explain the characteristics of Zener diode ?

    b) Explain the working of full wave rectifier with L load ?

(OR)

7. a) Explain the working of SCR and write its applications ?

    b) Compare the characteristics of UJT and transistor ?

UNIT - IV

8. a) Explain the operation of BJT and discuss the current due to electrons and holes in PNP

        transistor ?

    b) Discuss the operation of MOSFET with a neat sketch ? Derive expression for R_{ON} ?

(OR)

9. a) Explain the operation SCR using two transistor model ?

    b) Write a note on common base configuration of transistor ?

Total No. of Questions : 09]   [Total No.of Pages : 02

I/IV B. Tech. DEGREE EXAMINATIONS, APRIL / MAY - 2016
SECOND SEMESTER
BT / CSE / ECE / EEE
BASIC ELECTRICAL AND ELECTRONIC SCIENCES

Time : **Three Hours**   Maximum Marks : **60**

Answer Question No. 1 Compulsory.   12x1=12 M

Answer ONE question from each Unit.   4x12=48 M

1. a) What is form factor ?

    b) What is reactive power ?

    c) Define rms value ?

    d) What is mutual inductance ?

    e) Define Faraday's law of electromagnetic induction ?

    f) Write different types of DVMs ?

    g) What are the dominant carriers in NPN transistor ?

    h) What is peak inverse voltage ?

    i) Write the applications of MOSFET ?

    j) Draw the output characteristics of CC configuration ?

    k) Write the applications of SCR ?

    l) What is the form factor of full wave rectifier ?

UNIT - I

2. a) State and explain kirchoff's laws and give an examples for each.

    b) When load is applied to 10Ω a unknown voltage source a current of 2.5A flows and when the load resistance is increased to 20Ω, the current drops to 2A. If a load of 15Ω is connected across the source, what is the voltage across is it ? Also calculate the power dissipated in the circuit.

(OR)

3. a) Draw and explain vector diagrams for series RL, RC circuits ?

P.T.O.

b) Calculate the power delivered to 16Ω in the circuit shown in Fig.
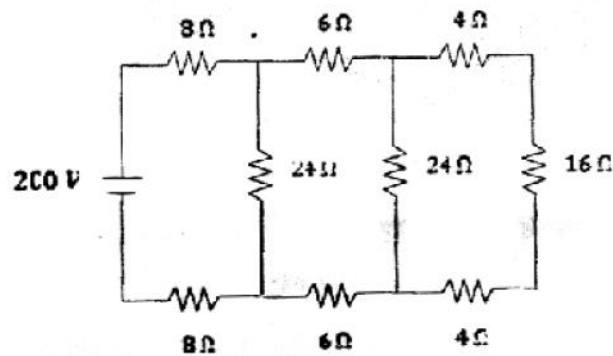
UNIT - II

4. a) Derive the expression for dynamically induced emf ?

   b) Write the principle and operation of CRO ?

(OR)

5. a) Derive the expression for energy stored in magnetic fields ?

   b) Two coupled coils have self inductances 0.001 H and 0.002 H respectively. The coefficient of coupling between two coils is 0.75. Find voltage in the second coil and the flux of first coil provided the second coil has 500 turns and the circuit current is given by

   $i_1 = 2 \sin 314t$ A.

UNIT - III

6. a) With the help of neat sketch explain the working of diode ?

   b) Explain the working of UJT and give its applications ?

(OR)

7. a) Explain turn-on characteristics of SCR with a neat sketch ?

   b) Draw and explain the working of Bridge rectifier with R load ?

UNIT - IV

8. a) Discuss the operation BJT and its characteristics ?

   b) Explain the characteristics of JFET ?

(OR)

9. a) Compare N-channel and P-channel MOSFET ?

   b) Draw the input and output characteristics of common emitter configuration ?