[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2066)

16026(J) J-16

B. Tech 2nd Semester Examination

Basic Electrical & Electronics Engineering (NS)

BE-101

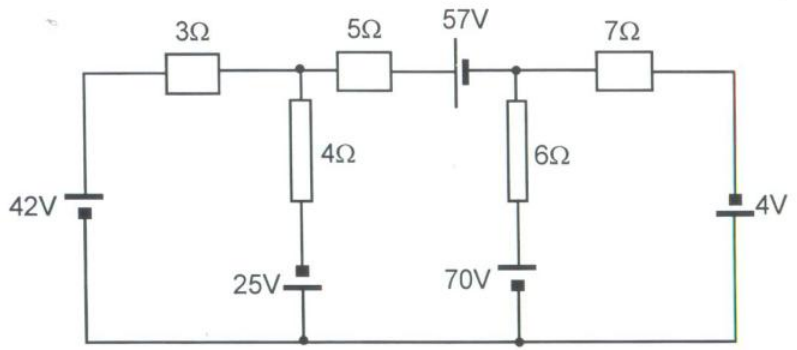
Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting one question each from section A, B, C & D. Section-E is compulsory.

SECTION - A

1. (a) What is mesh analysis? Apply Mesh analysis to determine the mesh-currents. (12)



(b) Explain how the Resistance of conductor is affected by change in temperature. (8)

2. (a) With the help of neat & clean diagram explain the generation of single phase Alternation current. (10)

(b) With the help of neat & clean diagram explain the principle and operation of Single phase energy meter. (10)

[P.T.O.]

SECTION - B

3. (a) Explain the principle, working and construction of transformer. (12)

(b) A voltage of $250\angle 0°$ V is applied to an inductive circuit of impedance $(5+j10)\Omega$. Calculate the circuit current, the power factor, the power consumption, the apparent power, and the reactive power. (8)

4. (a) A 3-phase 20kW delta connected induction motor operates at a rated load in parallel with a star-connected load having impedance of $(10+j15)\Omega$ per phase. The motor power factor is 0.82 lagging. If the supply is 3-phase, 400V, 50Hz determine line and phase currents in motor, the line and phase currents in star connected load, total line current and total power consumed. (12)

(b) Explain the principle, working and construction of A.C. machine. (8)

SECTION - C

5. (a) Discuss the conduction properties of semiconductor and explain the process of electron-hole pair generation and recombination. (10)

(b) Distinguish between normal diodes and light emitting diodes. Explain how an LED emits coloured light. (10)

6. (a) Explain the basic formations of two types of junction transistors. Draw the schematic arrangement of each transistor and describe how their symbolic representation can be utilized to identify the type of transistor. (10)

(b) Explain with the help of diagrams various types of circuit configurations, which can be obtained from bipolar junction transistor. (10)

SECTION - D

7. (a) What is an integrated circuit? (5)

   (b) Describe the constructional features of a junction field transistor. What is difference between a p-type and n-type JFET? Draw the cross-sectional view and show the symbolic representation of each type of the transistor. (15)

8. (a) Explain the measurement of frequency and amplitude using CRO. (10)

   (b) Explain the fundamental OPAmp and its applications. (10)

SECTION - E

9. (a) Give concept of power and energy.

   (b) State similarities between electric and magnetic circuit.

   (c) Define slip and slip frequency in case of induction motor.

   (d) Convert the fractional decimal $(0.625)_{10}$ into a binary number.

   (e) A capacitor of 25 μF is connected to a supply of 200V, 50 Hz. What will be current flowing through the capacitor?

   (f) What is parallel resonance and why it is also known as current resonance?

   (g) What is FET? List its applications.

   (h) What is race-around in JK flip flop?

   (i) What are uses of LVDT for measurements?

   (j) Which losses occur in a DC machines? (2×10=20)