IT

Exam.Code:0906
Sub. Code: 6220

2054

B.E., Second Semester

EEC-X01: Basic Electrical and Electronics Engineering

Time allowed: 3 Hours Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) State and explain Kirchhoff's voltage law.

b) Differentiate between a PN junction and a Zener diode.

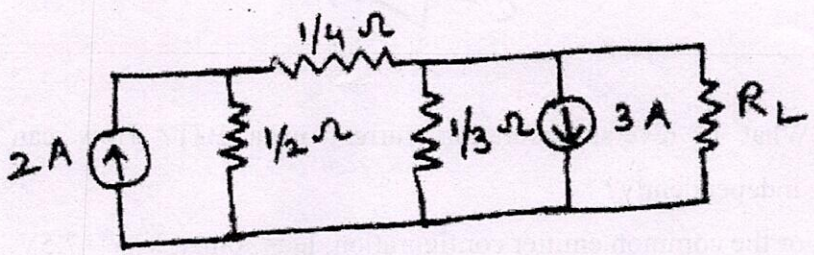
c) Differentiate between root mean square and average value of an alternating quantity.

d) Why truth table is required? Write down the truth table of NOR gate.

e) Define the term efficiency and voltage regulation with respect to transformers. (5x2)

UNIT - I

II. State and explain Norton's theorem. Obtain Norton's equivalent network as seen by R_L.



(10)

III. a) Draw and explain the phaser diagram of RLC series circuits and give the condition for resonance in this circuit.

b) Three coils, each of 6Ω resistances and 5Ω inductive reactances and connected in delta and supplied from 440V, 3-ϕ system. Calculate line and phase currents of the system. (2x5)

P.T.O.

IV. Give the classification of transformers on the bases of voltage ratio, construction and application. Derive the emf equation of a single-phase transformer from basic rules. (10)

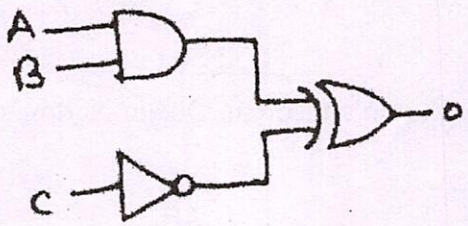
UNIT - II

V. a) Explain the operation of a zener diode and draw its circuit equivalent.

b) What type of semiconductor results when doped with (i) donor and (ii) acceptor impurities. (2x5)

VI. a) What are the types of digital logic circuits? Explain briefly any one logic circuit.

b) Derive the logic expression of the circuit as given below and also write the truth table.



(2x5)

VII. a) What is reverse saturation current in a BJT? How can this be observed independently?

b) For the common emitter configuration, $I_B = 30mA$, $V_{CE} = 7.5V$.

i) Calculate β_{dc} and β_{ac}.

ii) Find the values of I_E. (2x5)

x-x-x