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B.Tech. I - Sem.(Reback) Exam - Jan-Feb. 2012

105(O) - Electrical & Electronics Engg.

(Common to all Branches of Engg.)

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt overall **five questions** selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

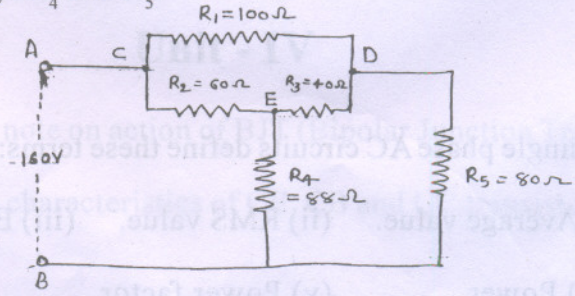
1. Nil 2. Nil

Unit - I

1. (a) What are the Kirchoff's laws. Explain how does the application of Kirchoff's Laws help in getting the solution of D.C. Circuits. 6

1. (b) Three resistances R_1=100Ω, R_2=60Ω , R_3 = 40 are connected in delta between the terminal points CDE, as shown in figure 1 to the source of 160 Volts supply AB through two resistances R_4 = 88 and R_5= 80. Determine the currents flowing through ckt between A and B and also through R_4 and R_5. 10

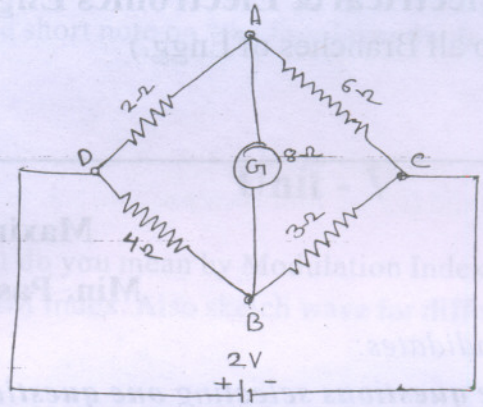
FIGURE 1



OR

1 (a) State and Explain Thevenin's theorem. Using it find current through the galvanometer of Wheat Stone bridge given in figure 2. 10

FIGURE 2

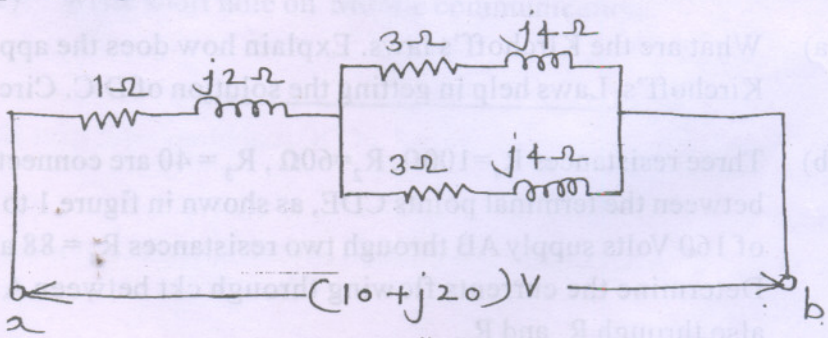


(b) State and Explain Superposition theorem. 6

Unit - II

2. (a) For the series parallel circuit shown in figure 3 determine (a) the total impedance between the terminals a, b and state if it is inductive or capacitive (b) the voltage across in the parallel branch, and (c) the phase angle. 6

FIGURE 3



(b) In single phase AC circuits define these terms:

(i) Average value. (ii) RMS value. (iii) Effective value.

(iv) Power. (v) Power factor. 5

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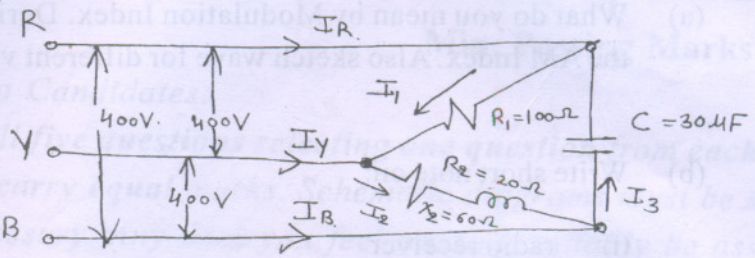
(c) Find the total current to the parallel circuit with L=0.05H and C=0.66μF with an applied. Voltage of V=200 Sin 5000t V. 5

OR

2. (a) Explain the process of measurement of power in $h^{3-\phi}$ Balanced circuit? 8

(b) A delta connected load is arranged as in figure 4. Calculate (a) the phase currents and (b) the line currents. The supply Voltage is 400V at 50HZ. 8

FIGURE 4



Unit - III

3. (a) Explain the Construction and Operation of single phase Transformer. 10

(b) Obtain the E.M.F. equation of a transformer and draw the phases diagram under no load condition. 6

OR

3. (a) Describe the working principle of DC machines with neat sketch. 6

(b) Describe in detail the construction of different parts of a DC generator. 10

Unit - IV

4. (a) Write short note on action of BJT (Bipolar Junction Transistor). 8

(b) Discuss the characteristics of CE, CB and CC transistor Amplifiers. 8

OR

4. (a) What do you understand by negative resistance, explain the occurance of negative resistance regions in UJT and triode. 10

(b) Write short note on "the four layer diode"? 6

Unit - V

5. (a) What do you mean by Modulation Index. Derive an expression for the AM Index. Also sketch wave for different valve of index. 8

(b) Write short note on:

(i) radio receiver

(ii) television 8

OR

5. (a) Explain elementary concepts of Optical Communication? 5

(b) Define the terms modulation, demodulation in brief. 5

(c) Write short note on Mobile communication. 6
