Elements of Electrical & Electronics Engineering
(102114)

P. Pages : 3

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :
1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** questions from each unit.
5. Assume suitable data wherever necessary.
6. Figures to right indicate full marks.
7. All questions carries equal marks.

UNIT - I

1. Solve **any two** questions.   16

    a) Determine the current in the 4Ω branch in the circuit diagram as shown in fig : 1.
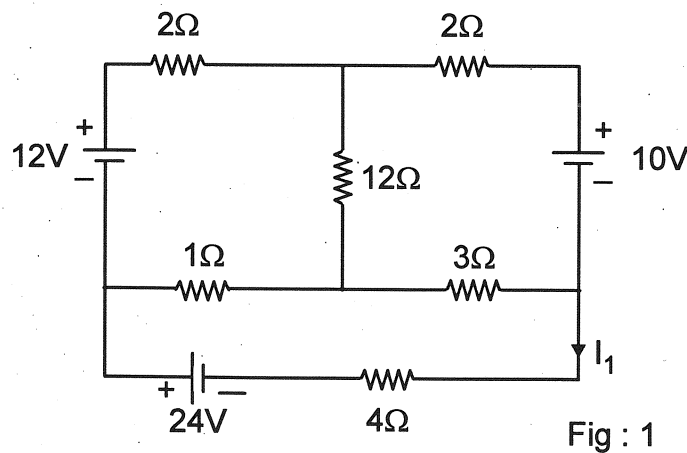

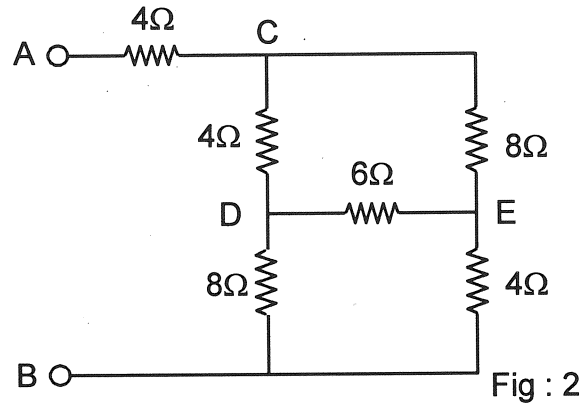Fig : 1

b) Find the input resistance of the circuit between the point A and B for the Fig. : 2.

Fig : 2

c) Write short note on Thevenins theorem.

UNIT - II

2. Solve **any two** questions.   **16**

a) A resistance of 20Ω, inductance of 0.2H and a capacitance of $100\mu F$ are connected in series across 220V, 50Hz mains. Determine the following.
a) impedance   b) Current
c) Voltage across 'R', 'L' and 'C'   d) Power in watts and VA.

b) Define the terms.

     i)   Impedance.   ii) Admittance.

     iii)   Conductance.   iv) Succeptance.

     v)   Reactance.   vi) RMS value

     vii)   Average value   viii) Form factor.

c) Write short note on '3ϕ' EMF generation.

UNIT - III

3. Solve **any two** questions.   **16**

a) Draw circuit diagram of Bridge rectifier and explain its operation with the help of waveforms.

b)   Explain input and output characteristics of common Emitter configuration in detail.

c)   Draw a voltage divider bias circuit and derive an expression for its stability factor.

UNIT - IV

4.   Solve **any two** questions.   16

a)   Draw circuit diagram of non inverting amplifier and derive equation of output voltage of it. Also calculate output voltage if $R_1 = 1k\Omega$, $R_F = 10k\Omega$..

b)   Define line and load regulation. Explain zener shunt regulator in detail.

c)   Write short note on LVDT.

UNIT - V

5.   Solve **any two** questions.   16

a)   Draw block diagram of 8085 microprocessor and explain it in detail.

b)   Simplify the following expressions using Boolean algebra.
   a) $A + AB + A\overline{B}C$
   b) $(\overline{A} + B)C + ABC$.

c)   Draw basic AND, OR and NOT gate using NAND and NOR gates.

****