BT–1/D–24   **41044**

BASIC ELECTRICAL ENGINEERING

Paper–ES–101A

Time Allowed : 3 Hours]   [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. (a) A 100W, 250V bulb is put in series with a 40W, 250V bulb across 500V supply. What will be the current drawn, what will be the power consumed by each bulb and will such a combination work?   10

   (b) Explain Star to Delta transformation is case of resistors with diagram.   5

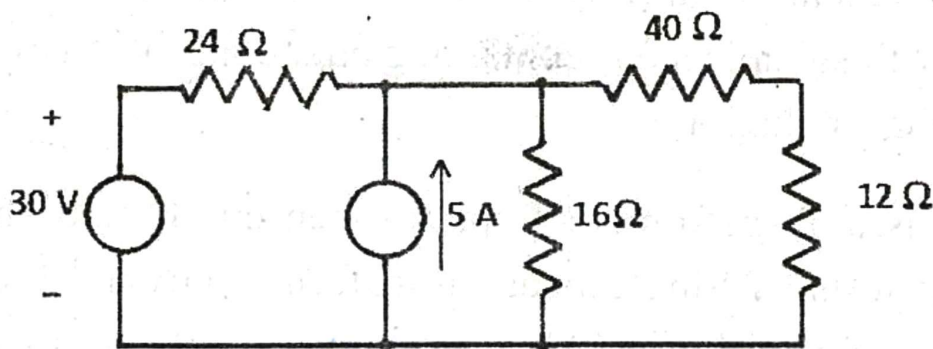2. Find Thevenin's equivalent of circuit shown as Fig. 1 (below), w.r.t. the load resistor of 12Ω.   15

Fig.-1

UNIT–II

3. Define the following terms : 15

   (a) Frequency.

   (b) Peak factor.

   (c) Form factor.

   (d) Average value of an Alternating quantity.

4. (a) A series RLC circuit consists of $R = 3$ ohm, $L = 2mH$ and $C = 0.4\mu F$. Determine the Resonant frequency. 10

   (b) A series RLC circuit with $R = 20\Omega$, $L = 800\,mH$ and $C = 12\mu F$ is connected to an AC voltage source which has a maximum amplitude $V_m = 200\,V$, Find (i) resonant frequency ω_0 (ii) the rms current at resonance (iii) Let the driving frequency be $\omega = 2000\,rad/s$. then find compute Z and P.F. 5

UNIT–III

5. Explain in detail the two Wattmeter method of power measurement for any type of (star or delta connected) load with suitable steps containing equations, neat circuit. and phasor diagram. 15

6. What is a Transformer? Explain open circuit and short circuit tests of Single phase transformer Giving circuit diagram for each test. Also mention uses of these tests. 15

41044/K/1006/360 2

UNIT-IV

7. •Explain the speed control of 3-phase induction motor using Rotor resistance control. Sketch the Torque-slip characteristics of Induction motor and explain. 15

8. (a) What is the difference between MCB and MCCB, describe their schematic diagrams?

   (b) Describe the operation of ELCB with its schematic diagram. 15