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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April-2021

BASIC ELECTRICAL ENGINEERING
(Common to EEE, ME, ECE Branches)

Time: 3 Hours   **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1 a) State and explain Kirchoff's laws.   **[8M]**
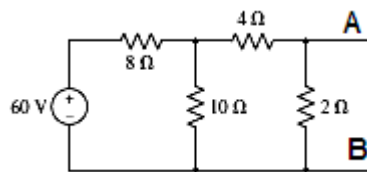   b) Determine voltage across A and B for the circuit shown in figure.1   **[4M]**

Figure.1

OR

2.a) Using Δ-Y or Y-Δ conversion, find the current I in the circuit shown in figure 2? **[6M]**
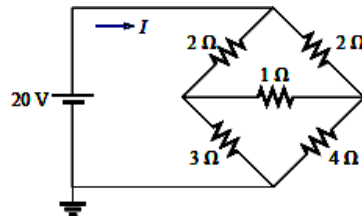

Figure.2

b) Find the equivalent resistance R_{ab} in the circuit shown in figure.3   **[6M]**

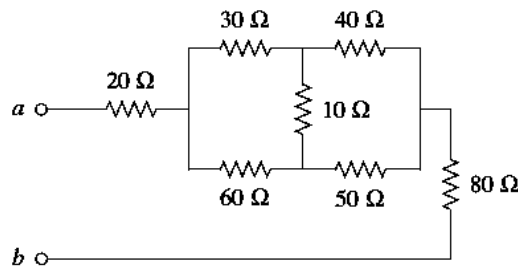Figure.3

UNIT-II

3.a) Define the following with respect to sinusoidal quantity: **[4M]**
   i) RMS Value   ii) Average Value   iii) Form factor   iv) Peak factor.

 b) A coil has a resistance of 4 Ω and an inductance of 9.55 mH. Calculate (i) the reactance
   ,(ii)   the impedance, and (iii) the current taken from a 240V, 50 Hz supply. Determine also the
   phase angle between the supply voltage and current.   **[8M]**

OR

4. Determine the average value, rms value and form factor of the current waveform in figure.4
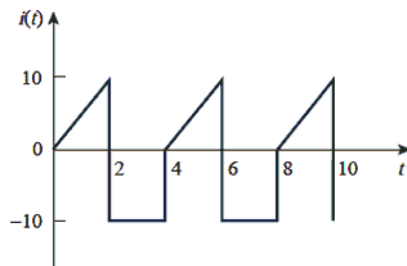   **[12M]**

Figure.4

UNIT-III

5. Explain the OCC, Internal and External characteristics of of Dc shunt Generator?   **[12M]**

OR

6. Explain the working of 3- point starter with neat diagram.   **[12M]**

UNIT-IV

7. a) Explain about various losses of Single phase transformer? How to minimize them?   **[6M]**
   b) Explain the working principle of a single phase transformer   **[6M]**

OR

8 a) Briefly explain OC and SC tests performed on transformer with suitable circuit diagrams.?
                                                                            [8M]

   b) A single-phase transformer is rated at 40 kVA. The transformer has full-load copper losses
      of 800W and iron losses of 500W. Determine the transformer efficiency at full load, 75 % of
      load and 0.8 power factor.   **[4M]**

UNIT-V

9 a) Explain the operating principle of Three phase Induction motor.?   **[8M]**
  b) The stator of a 3-phase, 4-pole induction motor is connected to a 50 Hz supply. The rotor
     runs at 1455 rev/min at full load. Determine (i) the synchronous speed and (ii) the slip at
     full load.   **[4M]**

OR

10 a) Derive the torque equation of induction motor.   **[6M]**
   b) A three-phase induction motor runs at 1440 rpm at full load when supplied power from 50
      Hz,3-phase line. Calculate i) slip at full load ii) frequency of rotor voltage iii) speed of rotor
      at a slip of 10%.   **[6M]**