

Code No: A10402

MLR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

I B.Tech II Semester advanced supplementary/improvement Examinations- July-2016

ELECTRICAL & ELECTRONICS ENGINEERING**(AERO)**

Time: 3 hours

Max. Marks: 75

Note: 1. This question paper contains two parts A and B

2. Part A is compulsory which carries 25 marks .Answer all Questions in part A.

3. Part B consists of 5 units. Answer any one full question from each unit. Each question carriers 10 Marks and may have a, b,c sub questions.

PART –A(25 marks)

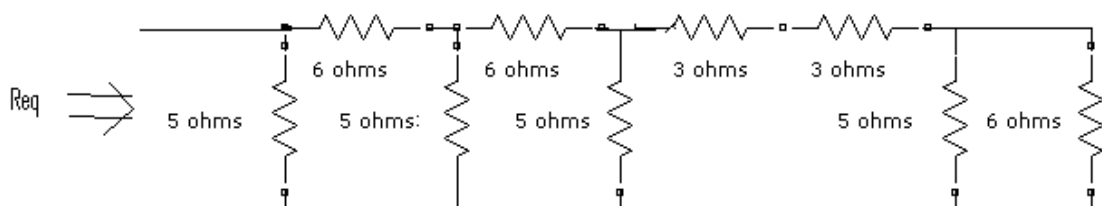
- 1.a) State Kirchhoff's current law and Kirchhoff's voltage law. 2M
 b) Write the torque equation of DC motor and explain each term. 2M
 c) Write the applications of 3-phase induction motor. 2M
 d) What is voltage regulator? 2M
 e) Draw the NPN and PNP transistor symbols. 2M
- 2.a) Derive the expression for equivalent inductance when two inductances are connected in Series and in parallel. 3M
 b) Derive the E.M.F equation of a single phase transformer. 3M
 c) Write down the merits and Demerits of PMMC. 3M
 d) What is meant by Zener effect, Breakdown voltage. 3M
 e) What is an amplifier classify them? 3M

PART-B(50marks)

3. a) Derive the expression for equivalent resistance when two resistances are connected in series and in parallel. 5M
 b) A combination of 2 resistors of 8 ohms and 16 ohms in parallel is connected to a resistance of 5Ω in series. The network is supplied current from a 16 volts battery. Determine (i) current in each branch (ii) the power dissipated in the circuit (iii) the power dissipated in the each branch. 5M

OR

4. a) Derive the expressions for star-delta transformations of resistances. 5M
 b) Find the value of R_{eq} of the following network . 5M



5. a) Explain the Principle of Operation of DC Generator 5M
- b) Explain the types of DC motors with relevant circuits. 5M
- OR**
6. a) Explain the Construction of transformer with relevant diagram. 5M
- b) An ideal 25kVA transformer has 500 turns on the primary windings and 40 turns on the secondary windings .The primary is connected to 3000 V, 50 Hz supply . 5M
Calculate
- i) Primary and secondary currents on full-load
- ii) Secondary e.m.f and
- iii) the maximum core flux.
7. a) Explain the principle of operation of three-phase Induction motor. 5M
- b) A three –phase induction motor is wound for four poles and is supplied from a 50Hz supply. 5M
Calculate
- i) the synchronous speed
- ii) the speed of the motor when slip is 4% and c) the rotor current frequency when the motor runs at 600 r.p.m
- OR**
8. Describe working principle of moving iron attraction type instrument. 10M
9. a) Explain different biasing conditions of the PN junction crystal diode. 5M
- b) Draw the V-I Characteristics of Zener diode and mark the important points on it and explain. 5M
- OR**
10. a) What is rectifier? Explain the half wave rectifier showing the input and output waveforms. 5M
- b) In a half wave rectifier, the transformer is connected to 230V line. 5M
Calculate i) turn ratio
- ii) Diode PIV rating if the circuit provides an output of 12V D.C
11. What is transistor? Explain the working operation of NPN and PNP transistors. 10M
- OR**
12. Explain about CE configuration of BJT and draw its Characteristics. 10M