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MLR 15

Code No: A10403

MLR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

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

BASIC ELECTRICAL ENGINEERING

(CSE, IT)

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) Find the current through 72Ω resister if the voltage drop across it is 12V? (2M)

b) What is the statement of Superposition theorem? (2M)

c) Write the advantages of moving iron instrument? (2M)

d) Write the principle of DC motor? (2M)

e) What is the speed of a 4 pole 50Hz synchronous machine? (2M)

2. a) three capacitors 2F, 5F and 4.5F are connected in series. What is its Ceq? (3M)

b) Write the expression for star to delta and delta to star transformation technique? (3M)

c) What are the different losses occur in a transformer? (3M)

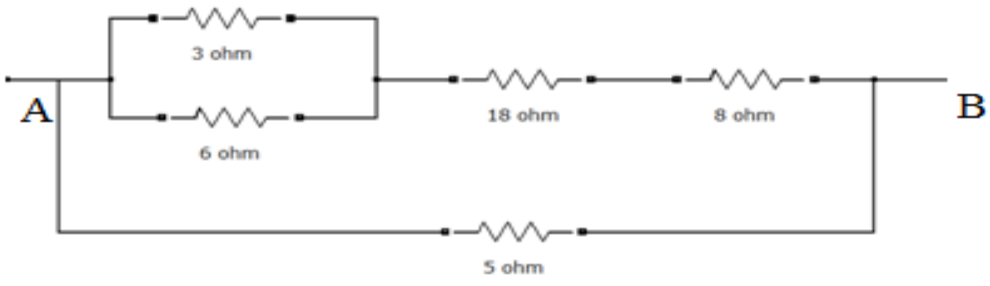
d) What is the purpose of commutator in DC machine? (3M)

e) Define slip and rotor frequency? (3M)

PART –B **(50Marks)**

3. a) State and explain kirchhoff's laws with an example? (5M)

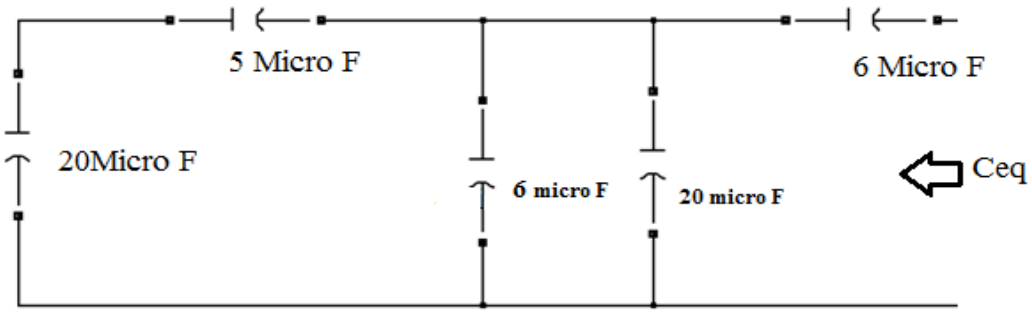
b) Calculate the effective resistance of the following combination of resistance and supply current when a potential difference of 60V is applied between point A and B (5M)



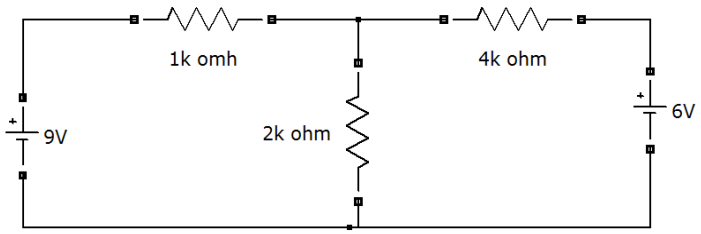
(OR)

4. a) Derive an expression for equivalent resistance of a resistor in a circuit when they are Connected in i) series ii) parallel? (5M)

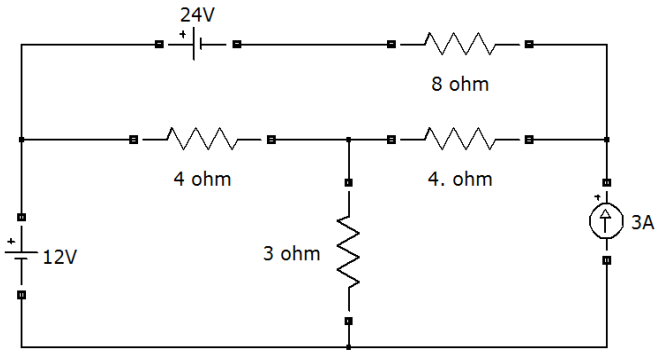
b) Find Ceq of a given circuit? (5M)



5. a) Determine the current in 2k ohm resistor using nodal analysis in the given circuit? (5M)

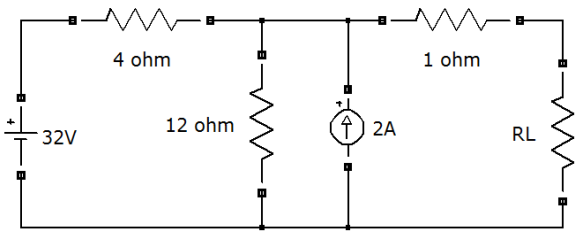


b) Find the current through 3ohm resistor using superposition theorem in the given circuit? (5M)

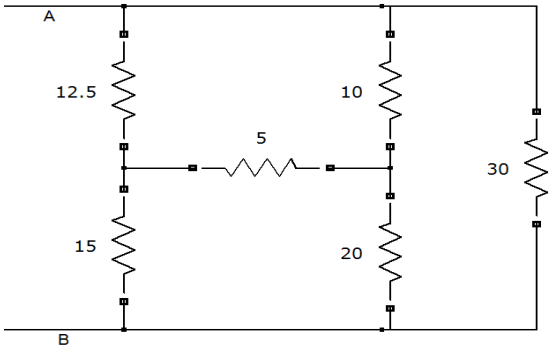


(OR)

6. a) Find current through load resistance of 6 ohm using thevenin theorem? (5M)



b) Determine Rab ? (5M)



7. a) With neat sketch explain the construction and working of PMMC instrument? (5M)

   b) What are the essential torques required for proper operation of indicating instruments? Explain. (5M)

(OR)

8. a) Derive the emf equation of transformer? (5M)

   b) In a 60kVA transformer the iron loss is 600W and full load copper loss is 900W. Find the efficiency at half load at 0.7 p.f lagging? (5M)

9. a) Explain in details the various losses in a DC machine? (5M)

   b) A 4 pole motor is fed at 400V takes an armature current of 40A, Armature resistance is 0.3 ohm of wave connected with 888 conductor and useful flux of 0.023wb.Calculate the speed of the motor? (5M)

(OR)

10. a) Derive the EMF equation of the DC generator? (5M)

    b) A Shunt generator supplies 97A at a terminal voltage of 200V.The armature and shunt resistances are 0.2 ohm and 60 ohm. The iron and friction losses are 2500W. Find (i) EMF generated (ii)Copper losses (5M)

11. a) Derive the torque equation of a three phase Induction motor? (5M)

    b) A 12 pole 3- phase alternator driven at a speed of 500r.p.m and supplies a power to an 8 pole, 3- Phase induction motor. If the slip of the motor is 3%. Find the actual speed of the motor? (5M)

(OR)

12. a) Explain the principle of operation of three phase alternator? (5M)

    b) Find the number of conductors in series per phase required for the armature of a three phase 50 Hz, 10 pole alternator. The winding is star connected to give a line voltage of 11000V. The Flux per pole is 0.2wb. Assume Kp=1=Kd (5M)