

# 32044 – ELECTRICAL DRIVES & CONTROL

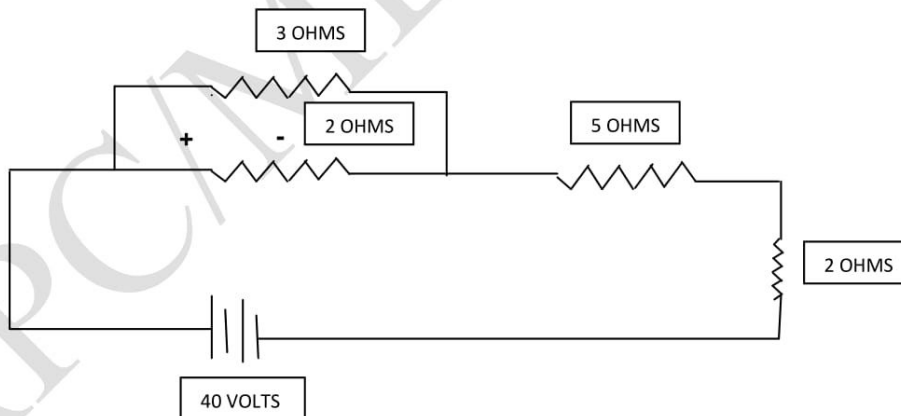
## 1. DC CIRCUITS AND DC MACHINES

### Part – A & Part - B

1. State ohm's law?
2. What is the work and Define mmf states its units?
3. What are the losses in transformer? Write expression for transformer efficiency?
4. Derive an expression for the equivalent resistance when two resistance are connected in parallel?
5. What is RMS value?
6. State Kirchoff's law?
7. Mention the application of DC motor?
8. Why starter is necessary in DC motor?
9. Write the relation between line voltage and phase voltage, line current and phase current in star and delta connected system?
10. State the methods of speed control of three phase induction motor?
11. What is the total resistance of two  $5\Omega$  resistors are connected in series and in parallel?
12. What is the total resistance of two  $5\Omega$  resistors connected in series and in parallel?
13. State the method of speed control of  $3\Phi$  induction motor?
14. Define magnetic flux density?
15. Define permeability?
16. Write the function of commutator?

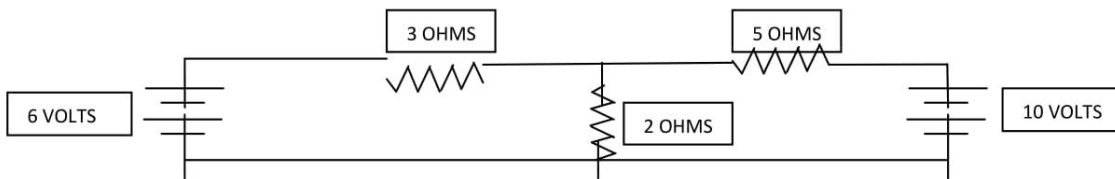
### Part –C

1. Four resistance of value  $4\Omega$ ,  $8\Omega$ ,  $10\Omega$ , and  $40\Omega$  respectively connected in parallel a total current of 12A is supplied to them. Determine the current through each resistance?
2. Explain the construction and working of 4 point starter with a neat sketch?
3. Draw and explain the operation of 3 point starter?
4. Explain the principle of operation of DC motor?
5. Find the effective resistance for the following circuit and power developed in each resistor?



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6. Find the value of current following through  $2\Omega$  in the following circuit?



7. Three resistors 2 ohms, 4 ohms and 12 ohms are connected in parallel. The parallel combination is connected in series with a resistor of 0.8 ohms. Find the current through the 4 ohms resistor when the applied voltage is 20v?
8. Briefly explain faradays laws of electromagnetic induction?
9. Write in brief about the principle of D.C generator?
10. Describe the construction of D.C generator?
11. Explain the construction and principle of operation of a D.C motor?

### 2. AC CIRCUITS AND AC MACHINES

#### Part – A & Part - B

1. What is time period and relationship between time period and frequency?
2. Mention the types of alternators?
3. Compare 3 phase squirrel cage and slip ring induction motor?
4. Draw the block diagram of variable frequency drive?
5. What is the frequency and power factor?
6. What is multi motor drive?
7. Write precautions to avoid electric shock?
8. State the method of speed control of three phase induction motor?
9. Write the emf equation of transformer?
10. What is group drive?
11. State any three applications of PMDC?
12. What is meant by earthing?
13. What is RMS value?
14. Define cycle, time period, AC, Average value, amplitude.
15. Define the efficiency of transformer.
16. What are the main parts of transformer?
17. What do you mean by damper winding?

#### Part –C

1. Explain the construction and working principle of operation of transformer?
2. Derive the relationship between line current and phase current in 3 phase delta system?
3. Draw the diagram of DOL starter?
4. Explain the construction of transformer?
5. Explain the construction and operation of star-delta starter?
6. Explain the working of squirrel cage phase induction motor?

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7. Draw and explain the constructional details of 3 phase squirrel cage induction motor?
8. Derive the relation between line and phase voltage in star connection?
9. Derive the emf equation of transformer?
10. Explain the constructional details of cylindrical alternator?
11. Write in brief about the construction and operation of star-delta starter?
12. What are the methods of speed control of 3 phase induction motor? Explain?

### **3. STEPPER MOTOR AND SERVO MOTORS & DERIVES**

#### **Part – A & Part – B**

1. What is servo motor?
2. Define energy conservation?
3. What is multi motor drive?
4. What is meant by industrial drives? List the types?
5. What is group drive?
6. What is electrical shock?
7. Write the precautions to be taken to prevent the electric shock?
8. What is stepper motor? Any two applications of stepper motor?
9. What is PMDC motor?
10. What are the advantages of individual & group drives?
11. What is the importance of earthing?
12. What is meant by energy conservation?
13. Write the applications of stepper & servo motor?
14. What is half stepping?

#### **Part – C**

1. Explain the construction and working of any one types of stepper motor with a neat sketch?
2. Explain the various causes of electrical accidents and their preventive measures?
3. Explain the construction and application of PMDC motor?
4. Explain the working of single stepper motor drive?
5. Explain the construction and applications of permanent magnet servo motor?
6. Explain the construction and working of PM servo motor?
7. Draw the block diagram of variable frequency drive and explain its working?
8. With neat sketch explain the construction and working of PMDC motor?
9. Briefly explain about energy conservation?
10. Briefly explain the method of first aid for electric shock?
11. State the importance and necessity of earthing?

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## **4. POWER SUPPLIES AND LOGIC GATES**

### **Part – A & Part – B**

1. State the necessity of filter in rectifier circuits?
2. Give the symbol, truth table and Boolean expression for NAND gate?
3. Draw the circuit of IC voltage regulator?
4. What are the positive and negative logic?
5. Write are universal gates? Why is it called so?
6. What is rectifier?
7. State the applications of SMPS?
8. What are inverters?
9. State the applications of LCD?
10. What is rectifier? What are the types of rectifiers?
11. Draw the symbol of PN junction diode?
12. Draw the symbol and write the truth table of AND gate?
13. What is diode and draw its symbol?
14. What is UPS?
15. What is SMPS? Write any two applications of SMPS?
16. What is an LED?
17. What is full wave and half wave rectifier?

### **Part – C**

1. Describe how NAND gate is used as universal logic gate to design NOT, OR, AND AND and NOR gates?
2. Explain the forward biasing and reverse biasing of a diode?
3. Write a shore note on LED?
4. Explain the working of full wave rectifier with input and output waveforms?
5. Draw the symbol and truth table of AND, OR, NAND, NOR and Ex-OR gates?
6. Explain the working of bridge rectifier with input and output waveforms?
7. With block diagram, explain SMPS?
8. With diagrams explain forward biasing and reverse biasing of PN junction diode?
9. Explain in brief about working of the inverter and regulators?
10. Explain the working of 7 segments LED with neat sketches?
11. Write in brief about LCD?



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### **5. CONTROL ELEMENTS AND PLC**

#### **Part – A & Part - B**

1. Explain the usage of float switch?
2. State the merits of bimetallic thermal overload relay?
3. Expand MCB and ELCB?
4. State the different types of sensors?
5. What is meant by relay?
6. What is sensor?
7. What is need of fuse?
8. What is meant by relay?
9. Draw symbol of NO and NC contact?
10. State the different types of sensors?
11. What is PLC?
12. What is meant by contactor?

#### **Part – C**

1. Draw the block diagram of PLC and explain?
2. Explain the construction and working of earth leakage breaker with a neat sketch?
3. Draw a neat diagram of solenoid type contactor and explain its working?
4. Draw the block diagram of PLC and explain each block?
5. Draw the neat diagram of oil circuit breaker and explain its working?
6. Explain the working of photo electric sensor, temperature sensor?
7. Explain the working of proximity and inductive proximity sensor?
8. Explain the working principle of earth leakage circuit breaker?
9. What is meant by contactor? And explain the working of solenoid type contactor?
10. Explain the operation of two types of switches?
11. Explain the operation of Bimetallic thermal over load relay?