DIPLOMA BOARD EXAMINATION–APRIL2024

ANSWERKEY FOR THE QUESTION CODE –184

SUBJECT NAME: ELECTRICAL DRIVES AND CONTROL

BRANCH: MECH & AGRI SEMESTER: 4 MAXIMUM MARKS: 100

PART-A

1. Define voltage. Mention the unit of voltage. (3 MARKS)

- Voltage is defined as the force (or) electrical stress required for the movement of electrons from one atom to another. Unit of voltage is "volts" (v).

(Or)

- Voltage may also be defined as the work done in moving a coulomb of charge between two points. Unit of voltage is "volts" (v).

2. Compare series circuit and parallel circuit. (3 MARKS)

SERIES CIRCUIT	PARALLEL CIRCUIT
• When resistances are connected together end to end in a circuit, than that circuit is said to be series circuit.	• When resistances are connected across two common junctions in a circuit, then that circuit is called as Parallel circuit.
• Same amount of current is flowing through the entire series connected resistor.	• Current flowing through each resistor is different.
• Total Voltage applied to the series circuit is dropped across all the series connected resistances.	• Same voltages are dropped across all the resistances.

3. Define power and power factor in AC circuit. (3 MARKS)

Power:

- In AC circuit, the power is the product of voltage and current and cosine angle between Voltage & current. P=VI Cos ω.

Power Factor:

- Power factor is defined as the ratio of resistance to impedance in an AC circuit.
- Power factor = R/Z

(Or)

- It is the cosine of the angle between voltage vector and current vector.
- Power factor = cos ω

4. Write the working principle of Alternator. (3 MARKS)

- Alternating current generators are usually called alternators.
- They operate on the principle of Faraday's laws of Electromagnetic induction.
- This law states that, whenever a conductor cuts the magnetic flux an emf is induced in it. This emf causes a current to flow if the circuit is closed.

5. Define servo motor. Mention the applications of servo motor.

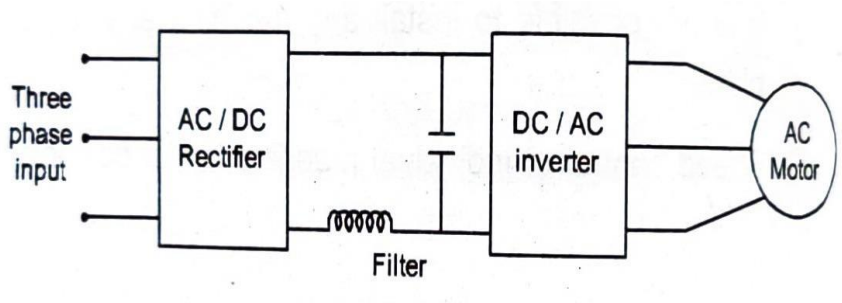
(3 MARKS)

- A specialized motor which respond to the error signal and accelerates the load quickly are called servomotor.

Applications

- AC servo motors are used where the power, speed requirements are low.
- F.H.P servo motors are widely used in automatic control system, measuring and monitoring equipment in program control system and computers.

6. Draw a block diagram of Variable Frequency Drive. (3 MARKS)



7. Define Rectifier. Mention the types of Rectifiers. (3 MARKS)

- Rectifier is an electronic device. It converts an AC signal into DC signal.

There are three different types of rectifiers, namely

- Half wave rectifier
- Full wave rectifier, and
- Bridge rectifier

8. Write the need of Earthing. (3 MARKS)

- To save human life from danger or shock or death.
- To protect large buildings from lightning.
- To protect all machines fed from overhead lines from lightning.
- To maintain the line voltage constant.

9. Define LCD. Mention the applications of LCD. (3 MARKS)

- Liquid crystal display will not emit light or generate light, but it will alter the externally available illumination. An organic compound (carbon, nitrogen, oxygen) material is used in LCD. It is a low power display. Its life time depends upon the degradation of chemicals used.

Applications:

- Used in solid state video games, sensing circuits, Lap-top computers, Packet calculators, instrument displays.

10. Mention the features of PLC. (3 MARKS)

[Any 3 Features]

- High Reliability
- Good flexibility
- Quality of strong easy operating
- Easy to install and troubleshooting
- Cost effective
- Simulation feature
- Simple programming methods
- Ease of maintenance
- Documentation.

PART - B

11.(a) Explain the working principle of DC motor with a neat sketch.

(14Marks = Diagram-7+Explanation-7)

D.C motor converts Electrical energy into mechanical energy. Whenever a current carrying conductor is placed in a magnetic field, a mechanical force is produced on the conductor. D.C motor works on the above principle.

The magnitude of the force is given by,

F = BLI Newton

Where,

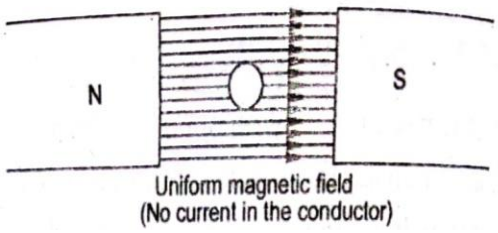
F = Force produced on the conductor in Newton

B = Magnetic flux density in Web/m^2

L = The length of conductor in the magnetic field

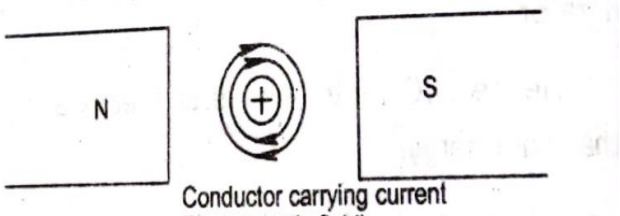
I = The current flowing through the conductor in ampere

- To understand the principle of operations of D.C motor. Let us consider a two-pole motor. Fig. shows a uniform magnetic field in which a straight conductor carrying no current is placed. The direction of magnetic flux line is from North to South Pole.



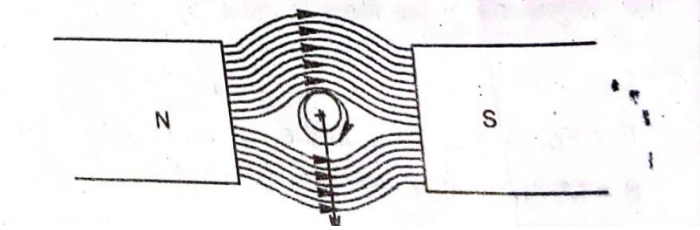
Uniform magnetic field
(No current in the conductor)

- Now assume there is no exciting current flow through the field winding and D.C current is sent through the conductor. Let the conductor carry the current away from the observer (+). It produces a magnetic flux lines around that in clockwise direction.

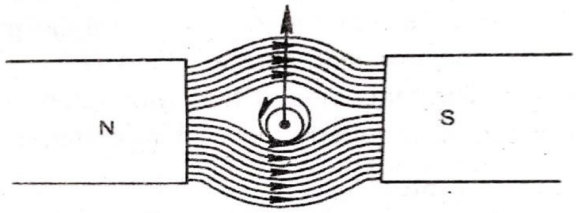


Conductor carrying current
(No magnetic field)

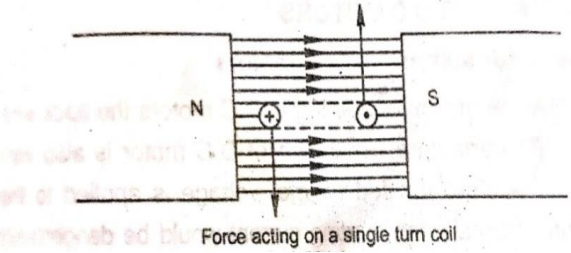
- There is no movement of the conductor during the above two conditions. The current carrying conductor is placed in the magnetic field. The field due to the current in the conductor aids the main field above the conductor, but opposes the main field below the conductor.



- Hence the flux strengthens above the conductor and weakens below the conductor. It is found that a force acts on the conductor, trying to push the conductor downwards as shown by the arrow. The conductor is pushed from high flux density to low flux density.



- If the current in the conductor is reversed (current towards the observer (o), the strengthening of flux line occurs below the conductor and the conductor will be pushed upward as shown in above fig.
- Now consider a single turn coil carrying current as shown in fig below, the coil side 'A' will be forced to move downwards, whereas the coil side 'B' will be forced to move upwards. The forces acting on the coil sides 'A' and 'B' will be of same magnitude, but their direction is opposite to one another. As the coil is wound on the armature core, which is supported by the bearings, the armature will now rotate. The direction of rotation is found out by Fleming's left-hand rule.



Force acting on a single turn coil

11.(b) (i) State and explain Kirchhoff's Laws. (7 MARKS)

- Kirchoff's Laws are used to solve the complicated electrical circuit.

There are two Kirchoff's Laws.

1. Kirchoff's Current Law (KCL) (or) First Law (or) Point law
2. Kirchoff's Voltage Law (KVL) (or) Mesh Law (or) Second law

1. Kirchoff's Current Law (KCL):

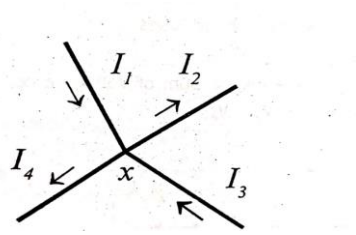
- Kirchoff's Current Law states that "In a Node, the sum of incoming currents is equal to the sum of outgoing currents".

(Or)

- "The algebraic sum of currents meeting at a node (or) junction is zero.

Explanation:

- Kirchoff's current law relates to the current associated with any Junction in a network where two or more circuit elements are connected together, such a junction is called as Node. Consider four conductors carrying currents of I_1,I_2, I_3 and I_4 meeting at a node "X"



- In the above circuits, currents I_1 & I_3 are the incoming currents. i.e, flowing towards the node 'X'. Currents I_2 & I_4 are the outgoing currents. i.e, flowing away from the junction.

According to Kirchoff's Current Law,

Sum of Incoming currents = Sum of Outgoing currents $I_1+I_3=I_2+I_4$ (or) $I_1-I_2+I_3-I_4 = 0$

2. Kirchoff's Voltage Law (KVL) (or) Second Law:

- Kirchoff's Voltage Law states that" In a closed circuit (or) mesh, the sum of voltage rises is equal to the sum of voltage drops".

(or)

- "The algebraic sum of voltages in the closed circuit (or) mesh is zero".

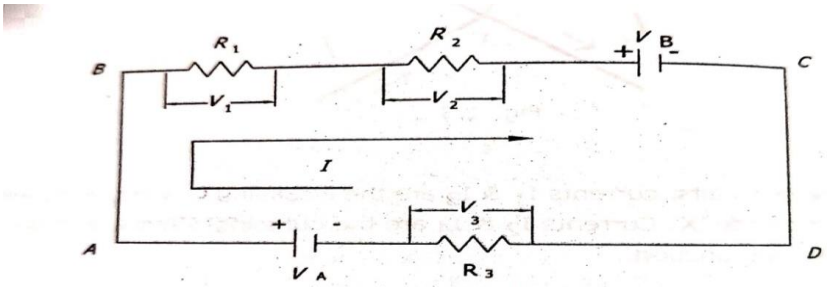
Explanation:

- Consider a Closed circuit ABCDA Which have two voltage sources and three resistors.

Let V1 be the voltage drop across the Resistor "R1".

V2 be the voltage drop across the Resistor "R2".

V3 be the voltage drop across the Resistor "R3". VA & VB be the voltage Rises



According to KVL, Sum of Voltage Rise = Sum of Voltage drop

VA-VB = V1+V2+V3

VA-VB-V1-V2-V3 = 0

11.(b)(ii) State and explain Faraday's Law of Electromagnetic Induction.

(7 MARKS)

Faradays states two different laws to describe induction principle.

First Law:

- Faraday's first law states that "Whenever a conductor cuts the magnetic flux lines, an emf is induced in the conductor".

Second Law:

- Faraday's second Law states that "The value of induced emf in the conductor is directly proportional to the rate of change of flux linkages".

Explanation:

- Consider a coil having "N" turns and flux linking with the coil increases from Φ1, to Φ2, weber in "t" Seconds.

Flux linkages = Number of turns x flux

= NΦ; weber - turns

Initial flux linkages = NΦ1; weber - turns

Final flux linkages = NΦ2; weber - turns

Emf Induced = Rate of Change of flux linkages

= Final flux linkages - Initial flux linkages/Time taken to the change of flux linkage

i.e, $e = N\Phi 2 - N\Phi 1 / t$

$e = N(\Phi 2 - \Phi 1)/t$

$e = N\, d\Phi / dt$

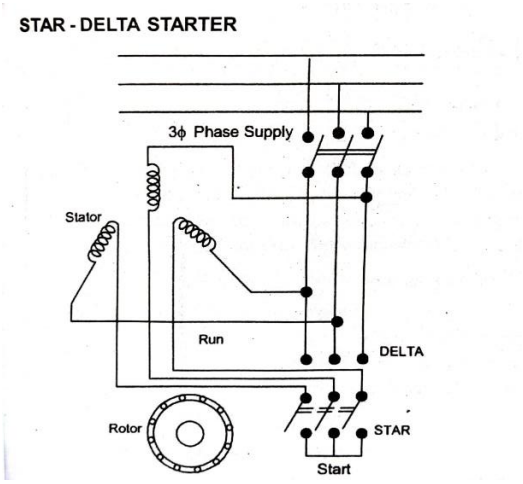
In differential form,

Emf Induced = $N\, d\Phi / dt$ volts

12. (a)Explain with neat diagram working principle of star delta starter.

(14 MARKS= Diagram7+Explanation7)

- At starting, the star delta starter connects the three stator windings in star across the supply voltage. After the motor reaches about 75% of rated speed, the same windings are connected in delta across the supply through a changeover switch. The connection diagram for star-delta starter is, the starter is provided with mechanical interlocking device to prevent the handle in "run" position, first.



- Since at starting, the stator windings are connected in star, the voltage across each phase winding is reduced to 1/3 of line voltage (since in star $V = V_1$). Therefore, the starting current is reduced to $1/\sqrt{3}$ times that of current taken with direct starting. The starting torque is also reduced to 1/3rd of starting torque obtained with direct switching.

No volt release

- If the supply fails (or) voltage drops in the line below a certain level, the iron piece inside the relay is demagnetized and hence relay contactor returns to their original position. So, the motor is disconnected from the supply.

Overload release

- Due to overload, the motor may get heated up. Due to this heat, the overload relay contactor melts, thereby disconnecting the motor from the supply. Thus, overload relay protects the motor from overload.

12(b) (i) Why single-phase motors are not self-starting? (7 MARKS)

- Single phase induction motor is a type of AC motor used to convert the single phase ac electrical energy into mechanical energy. This motor has two main parts.

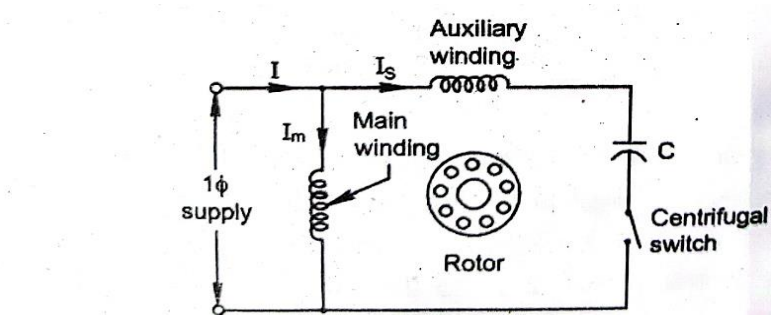
  They are

  (i) Stator (or) Stationary part

  (ii) Rotor (or) Rotating part

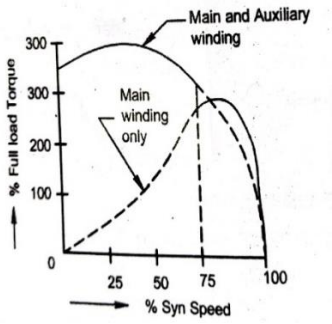
- Stator has only one winding and rotor used is squirrel cage rotor. The winding used in the stator is normally called as main winding (or) Running winding. Whenever motor is fed from single phase supply, its stator winding (or) Main winding produces alternating flux. It is not a rotating flux. Hence the alternating flux cannot produce rotation of the rotor. This is why a single phase induction motor is not self starting.

12.(b) (ii) With neat sketches explain the principle of capacitor start induction motor. (7 MARKS)



- In capacitor start motor, two windings are provided in the stator. They are main winding and auxiliary winding. The main winding has low resistance and high reactance. The auxiliary winding has high resistance and low reactance.
- A capacitor is connected in series with the auxiliary winding through centrifugal switch and connected across the single-phase supply as shown in fig.
- The current in the auxiliary winding (Is) at standstill can be made to lead the current in the main winding (Im) by about 90°, by properly selecting the capacitance value. The capacitor used is generally of electrolytic type, which is usually mounted on the outside of motor. The rotor is of squirrel cage type. (Short circuited copper bar)

- When single phase supply is given to the stator, a rotating magnetic field is produced. This rotating magnetic field cut the rotor conductors and a magnetic field is produced in this rotor. Due to the interaction of the stator and rotor magnetic fields, a torque is developed and hence the motor continues to rotate. When the motor attains about 75% of its rated speed, the centrifugal switch disconnects the auxiliary winding and capacitor from the supply.



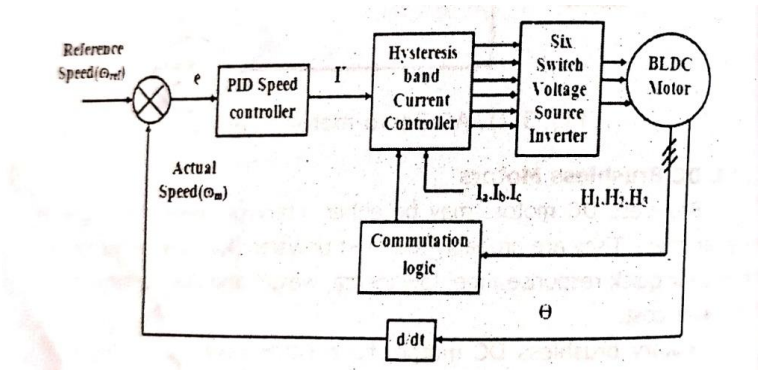
- The speed torque characteristics of capacitor start motor are shown in fig. The direction of rotation of motor is reversed by reversing the terminal connection of anyone winding.

13. (a)With suitable sketches explain the working principle of BLDC motor.

(14 MARKS= Diagram-7 + Explanation-7)

- Brushless DC motors may be either rotary or linear and come in many varieties. They are probably the most prevalent kinds of servo motors due to their quick response time, low inertia, weight and size-to-torque and reasonable cost.
- Rotary brushless DC motors have either ceramic or rate earth magnets banded onto the rotor (see Figure) Ceramic magnets (typically ferrite) cost less but have higher inertia and size per torque than high-performance earth magnets (typically samarium cobalt or neodymium-iron-boron)
- The stators of these motors are would with basically standard but low-inductance windings. Some may be epoxy encapsulated for protection from elements (e.g. machine tool coolant) and to provide mechanical rigidity to reduce wire-to-wire abrasion from high current, shock and machine vibration. Rotary brushless DC motors exhibit low inductance and small electrical and mechanical time constants.

- There are two main types of linear brushless DC motors-iron core and cog-free. Both types support the moving short with one or more linear bearings, which provide an air gap and reduce friction.



- The iron core motor has one or more columns of magnets with alternating poles (north-to-south). Higher force motors may have several rows of magnets (see figures) The coils in the moving short are energized, which attracts them to the magnets and moves them along the column. The payload usually is attached to this piece.
- The laminated iron core magnetises the flux density. Since the core is also attracted to the magnets, a velocity ripple will occur during movement. If this is an issue for the application, a cog-free linear motor may be better option.
- For applications that only require point-to-point moves, cog-free linear motors also provide the most force in the smallest package and at the lowest cost.
- A cog-free linear motor consists of a column of two magnets of like polarity attached to either side of a machined channel. As with the iron-core style, polarities along the magnet track assembly of cog-free linear motors alternate north-south-north-south. A coil of epoxy magnet wire supported by a linear bearing rides between the magnets. Energizing the coil creates the attraction to move it along the magnetic track. Since there is no iron core to fight the smooth attraction of the coil, the velocity ripple minimized.

13. (b) (i) Write short notes on Industrial drives and their applications.

(7 MARKS)

INDUSTRIAL DRIVES

- For obtaining electric drives, both A.C and D.C motors are used. However, A.C system is preferred. The utilization of electric energy is always advantageous as it is cheaper. It can be easily transmitted at comparatively low line losses. It is easy to maintain the voltage at consumer premises within the prescribed limits and it is possible to increase or decrease the voltage without appreciable loss of power. In spite of the advantages of A.C system sometimes it becomes essential to use D.C energy as industrial drive.

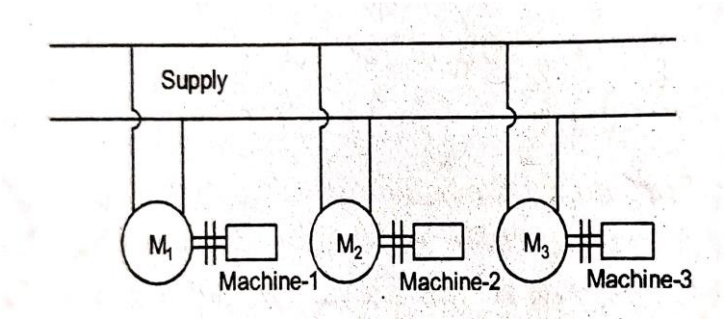
ELECTRIC DRIVE

- An electric drive is defined as a form of machine equipment designed to convert electrical energy into mechanical energy and provide electrical control of this process.

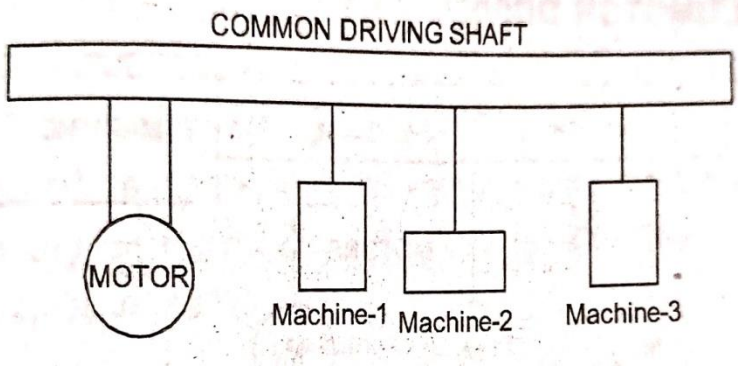
TYPES OF ELECTRIC DRIVES

1. **INDIVIDUAL DRIVE**

    - In individual drive single electric motor is used to drive one individual machine. Most of the industries use this type of drive. Figure shows the individual drive.
    - **Applications:** lifts, cranes, shapers, lathe machines.



2. GROUP DRIVE

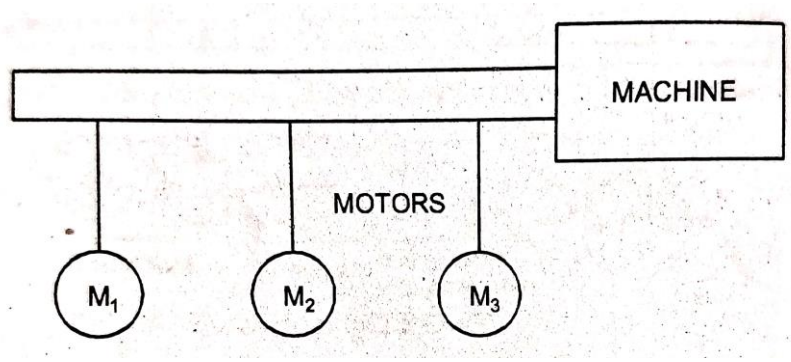


- In group drive, a single motor drives a number of machines. The motor is mechanically connected to a long shaft. It is also called line shaft drive. The line shaft is fitted with multistep pulleys and belts. The driven machines are connected to these pulleys and belts for their required speed fig. shows a group drive.

Applications:

Grain processing industries, Food grinding mills, Paper mills, Textile mills.

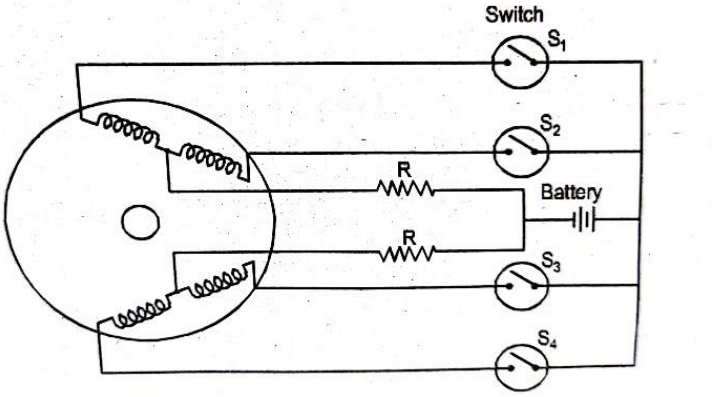
3. MULTIMOTOR DRIVE



- In multimotor drives separate motors are used for operating different parts of the same mechanism.
- **Applications:** complicated metal-cutting machine tools, paper making machines, rolling mills.

13.(b) (ii) Write short notes on single stepping servo drives. (7 MARKS)

- Fig. shows the switching diagram of single stepping stepper motor drive. In fig. the stator consists of same four phase windings. Each of these windings is tapped at one end and they are connected through a resistor to the negative terminal of the power supply. The table shows the sequence for energizing the windings.



- During the first step of the sequence, the switches S1 and S3 are ON and the other two are OFF. During the second step of sequence, switches S1 and S4 are ON and the other two are OFF.
- During the third step of sequence S2 and S4 are ON and the other two are OFF. During the fourth step of sequence S2 and S3 are ON and the other two are OFF. These sequences continuous through four steps and then the same four steps are repeated again. When a pulse (battery supply) is applied by closing two of the switches the rotor tooth will move a single step.

TABLE

Step	S_1	S_2	S_3	S_4
1	ON	OFF	ON	OFF
2	ON	OFF	OFF	ON
3	OFF	ON	OFF	ON
4	OFF	ON	ON	OFF
5	ON	OFF	ON	OFF

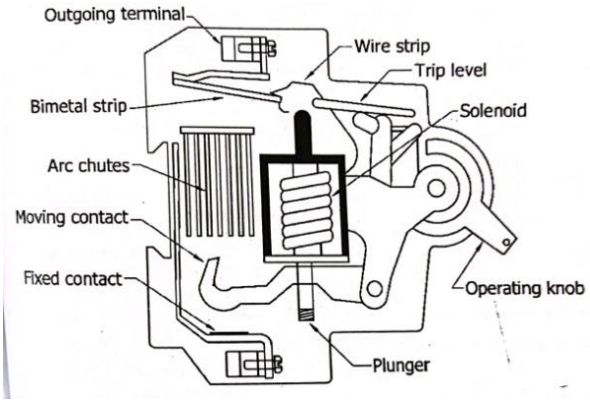
- For example, a stepper motor has 200 steps per revolution, then its step angle is (360 deg)/200 = 1.8 deg single step the rotor moves at an angle of 1.8°.

14. (a) Explain the construction and working principle of MCB.

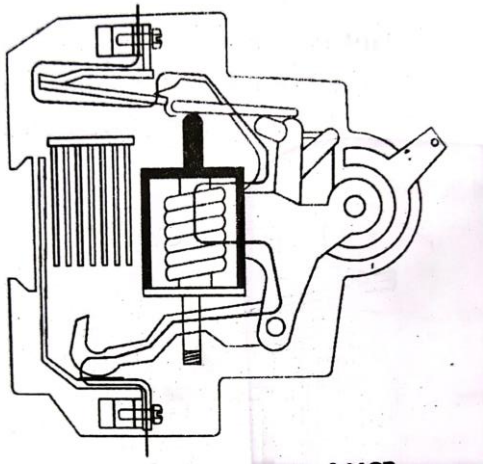
(14 MARKS= Diagram-7+Explanation-7)

Construction:

- Miniature circuit breakers are compact devices used in distribution boards for protection against overload and short circuit.



- The overload protection is achieved by a thermal trip mechanism using bimetallic strip. An electromagnetic trip mechanism is also Incorporated for instantaneous tripping in the event of a short circuit. When there is a sudden increase in current due to a short circuit, the circuit should open immediately, but the bimetallic strip does not respond quickly. In this case, the solenoid attracts the plunger and thus bigger the trip mechanism. After clearing the fault, the MCB can be Switched on manually.



- Fig. below shows the current path in a typical miniature circuit breaker when it is in the 'on' position. The current passes through solenoid coil and a bimetallic strip.

Working of MCB:

- When an overload condition persists for a few seconds, the bimetallic strip bends and triggers the trip mechanism. The principle of operation of an MCBis based on the following two principles.
    a. Thermal operation
    b. Magnetic operation

a. Thermal operation

- In thermal operation, the extra heat produced by the high current warms the bimetal strip. This results in bending the bimetallic strip and trips the operating contacts. The thermal operation is slow. Hence, it is not suitable for speedy disconnection required to clear fault currents. However, it is ideal for operation i the event of small but prolonged the overload currents. Thus, in general the thermal operation is suitable for opening the circuit in the event of excessive current due to the overloaded machines.

b. Magnetic operation

- The magnetic operation, on the other hand is suitable for protection against high short circuit currents. This magnetic operation is due to the magnetic field set up by a coil carrying the current, which attracts an iron part to trip the breaker when the current becomes large enough. The magnetic operation is very fast and is used for braking fault currents.
- In most cases of MCB's, both types are provided so that overloadcurrents and short circuit currents are handled with the same degree. It should however be remembered that the mechanical operation of opening the contacts takes a definite minimum time, typically 20ms, so that there can never be the possibility of truly instantaneous operation.
- In many installations, MCBs are preferred over fuses mainly because there is no need of rewiring the fuse wire or replacing the cartridge. MCBs are available in a range of 0.5A to 63 A normal operating current and for the entire range, the physical dimensions are almost identical.

14(b) (i) Write short notes on Fixed IC voltage regulators. (7 MARKS)

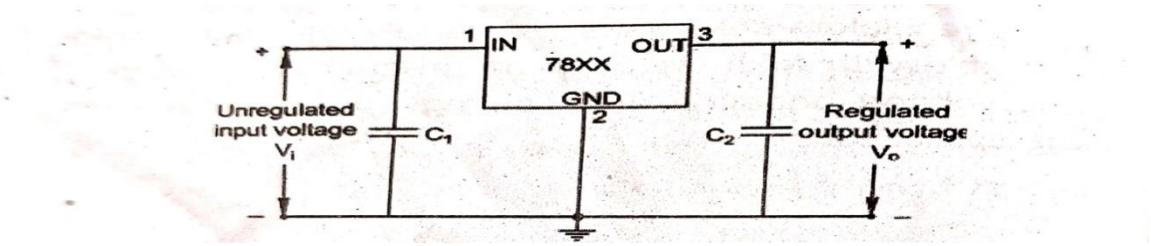
[Any one from: IC78XX Voltage Regulator (Or) IC79XX Voltage Regulator]

- An IC voltage regulator provides very precise regulation of output voltage for both line and load variations. This unit contains the circuitry for reference source, error amplifier, control device and overload protection all in a single IC chip. The internal construction is somewhat different from discrete voltage regulator circuits, but the external operation is quite same
- Generally the three terminal fixed voltage regulators that provide a fixed output voltage with no external component, is schematically shown in the fig. It can provide fairly high load current upto 1.5A, without an external pass transistor. The fixed voltage regulator has an unregulated voltage V, applied to the input terminal, which delivers a constant output voltage Vo to the output terminal. The third terminal (ground) is connected common to both input and output signal voltages.
- For proper operations, the output-input voltage difference must be maintained as per the specifications.

(i) IC 78XX (Positive voltage) Regulators

(ii) IC 79XX (Negative voltage) Regulators

IC 78XX (Positive voltage) Regulators



- Positive voltage regulator IC's are available in 78XX series as shown in the fig. These IC's are examples of three terminal positive voltage regulators, which provide fixed voltages from +5V to + 24V. It has three terminals, namely (i) Input terminal (pin no-1), (ii) Output terminal (pin no-3), and (iii) Ground terminal (pin no-2).
- Normally capacitors (C1 and C_2) are connected from input and output terminals, to ground. These capacitors are used to maintain a constant DC voltage and additionally to filter any high speed voltage variations. When selecting the desired fixed regulated output voltage, the two digits mentioned after the 78 (prefix XX) indicate the regulator output voltage.

14.(b) (ii) Write short notes on trouble shooting in batteries. (7 MARKS)

- The following are the defects normally occurring in batteries.
    1. Sulphation
    2. Buckling
    3. Internal short circuit
    4. Sedimentation

1. Sulphation

- When the battery is discharged, both plates become lead sulphate (PbSO4). If the discharged battery is not charged immediately or over discharged, the sulphate deposited on the plates will become crystal.
- To prevent the formation of sulphation, Carbonate of Soda is added to the electrolyte or charging the battery by the method of trickle charge, i.e.; charging the battery at a low rate for a long time.

2. Buckling

- Buckling means bending of battery plates. This defect is due to overcharge and over discharge of the battery.
- For rectifying the defect, replace the buckling plates.

3. Internal short circuit

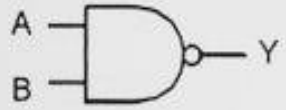
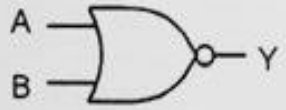
- Short circuit may occur within the cell as a result of damage of one or several separators between the positive and negative plates.
- The symptom of short circuit inside the battery is continuous decrease in electrolyte density, rapid loss of capacity.
- For rectifying the defect, dismantle the battery, wash out the container and replace the damaged and old separators.

4. Sedimentation

- Due to the charging and discharging and due to continuous use, small amount of active materials break and may be deposited at the bottom. This deposited material may cause short circuiting. This deposited material is called sedimentation.
- For rectifying the defect, replace the electrolyte and clean the bottom surface to remove the sediments.

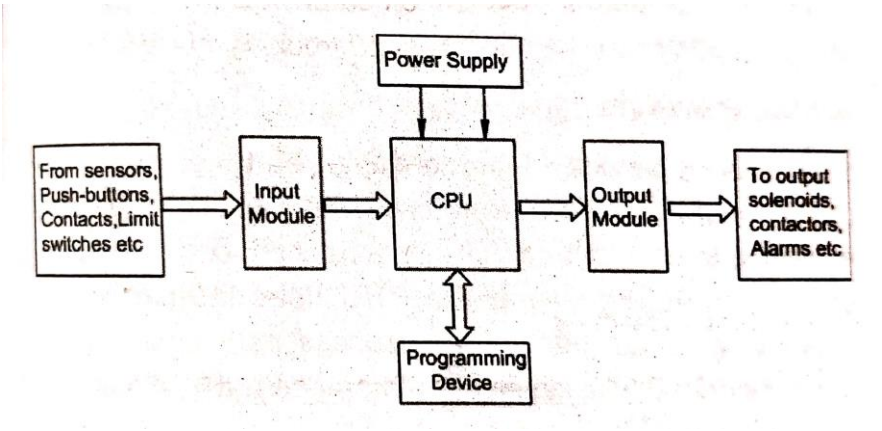
15. (a) Draw a symbol, Boolean equation, truth table for the following gates AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR.

(14 MARKS) [2 Marks for each gates]

Inverter (NOT gate)		A Y 0 1 1 0	$Y = \overline{A}$
2-input AND gate		A B Y 0 0 0 0 1 0 1 0 0 1 1 1	$Y = A \bullet B$
2-input NAND gate		A B Y 0 0 1 0 1 1 1 0 1 1 1 0	$Y = \overline{A \bullet B}$
2-input OR gate		A B Y 0 0 0 0 1 1 1 0 1 1 1 1	$Y = A + B$
2-input NOR gate		A B Y 0 0 1 0 1 0 1 0 0 1 1 0	$Y = \overline{A + B}$
2-input EX-OR gate		A B Y 0 0 0 0 1 1 1 0 1 1 1 0	$Y = A \oplus B$
2-input EX-NOR gate		A B Y 0 0 1 0 1 0 1 0 0 1 1 1	$Y = \overline{A \oplus B}$

15.(b) Draw the block diagram of PLC and explain its each block. (14 MARKS)

PLC Block diagram



The block diagram of PLC is shown in the fig. It consists of the Central Processing Unit (CPU). Input and output module, Power supply, Memory section and Programming device.

a) CPU

- The central processing unit is the heart of the PLC system. The CPU is a Microprocessor/Microcontroller based control system. It processes all operations within the PLC. The CPU can perform various arithmetic and data manipulation function with the local and remotely located input/output sections. Further, the processor can perform many communication functions. It needs to interface with a personal computer, remote Input/Output, other PLCs and peripheral devices.

Functions of CPU

i) It receives input from various sensing devices and switches

ii) It executes the user program

iii) It makes various decisions to control the operation of the equipment or process.

iv) It can perform various arithmetic and data manipulation functions.

v) It delivers corresponding output signals to various load control devices such as relay coils and solenoids.

(b) Input Module

- Input devices includes push-buttons, sensors, potentiometers, pressure switches. The function of input module is to convert high voltages from input devices to low level logic voltages that the CPU uses internally for processing. Input module can process both analog and digital inputs. Digital inputs are more preferred in industry.

(c) Output Module

- Output devices includes contractor coils, solenoid valves, lamps etc. Output modules amplify the low-level logic signals generated by the CPU and pass these modified signals to the final control elements to operate the output devices.

(d) Power Supply Module

- Usually input-output modules require 24VDC and Intercessor requires 5VDC. Usually power supply is the integral part of PLC. Power supply unit converts 120V/230V AC line voltage to standard supply of 24VDC or 5VDC using standard rectifier circuits.

(e) Programming device.

- The 5 most popular types of PLC programming languages are Ladder Diagram (LD), Sequential Function Charts (SFC), Function Block Diagram (FBD), Structured Text (ST) and Instruction List (IL)
- Programming devices are dedicated devices used for loading the user program into the program memory or edit it and to monitor the execution of the program of the PLC. It is also used to troubleshoot the PLC ladder logic program. Handhold terminal (HHT) or personal computer are commonly used programming devices in most of the PLCs.
- Key board and monitor are used for programming a PLC. The data is entered in the PLC processor with the help of keyboard in the form of ladder diagram. The ladder diagram can be seen on the monitor screen. The programmer can communicate to the PLC processor with the help of programming devices. The programming unit communicates with the processor via serial or parallel communication link.

(f) Memory system

- The memory system is responsible for storing and retrieving data and information. It consists of different types of memory such as RAM, ROM, EEPROM and Flash Memory. The overall memory is classified into four sections based on the types of data it stores. They are Input/output Image memory, Data memory, User memory and Executive memory.

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