



UPPSC AE

Electrical Engineering

Paper - 2 Mega Mock 1

(May 24th - May 25th 2022)

Questions &
Solutions

1. High level factors which influence line protection will include:
 - A. Criticality in load transfer
 - B. Criticality in system stability
 - C. Fault clearing time requirements for system stability
 - D. All of above

Ans. D

Sol. In transmission line protection system will provide redundancy to restrict the impact of device failure and backup protection in order to make sure the dependability.

2. Which among following options are correct in case of operating an isolator circuit breakers and earthing switch in a circuit while we opening the circuit?
 - A. Initially close earthing switch and open circuit breakers open isolator
 - B. Initially open isolator and close Circuit Breakers| |Circuit Breakers
 - C. Initially close circuit breakers and open earthing switch
 - D. Initially open circuit breakers and isolator then close earthing switch

Ans. D

Sol.

3. While we are opening a circuit, we should follow the below sequence:

Open CB - Open Isolator-Close Earthing Switch

2. While we are closing a circuit, we should follow the below sequence:

Open Earthing Switch-Close Isolator- Close CB

What happened if we open the isolator before the circuit breaker?

We know that the Isolator is designed to operate under no load condition, so if we open the isolator before the circuit breaker, that means we open the isolator under live condition. So, there will be huge sparking between the contacts of the Isolator which is very dangerous for us

3. A three-phase, three-stack, variable reluctance step motor has 20 poles on each rotor and stator stack. The step angle of this step motor is
 - A. 3°
 - B. 6 °
 - C. 9 °
 - D. 18 °

Ans. B

Sol. Step Angle $\alpha = \frac{360^\circ}{3 \times 20} = 6$

4. Phase focusing, which leads to bunching of electrons takes place in which one of the following?
 - A. Double resonator klystron
 - B. Reflex klystron
 - C. TWT
 - D. Magnetron

Ans. D

Sol. Phase focusing, which leads to bunching of electrons takes place in Magnetron

5. In parametric amplifiers used in microwave communication systems, the 'pump energy' is the deciding factor for which one of the following?
 - A. Frequency stability
 - B. Maximum output
 - C. Amplification factor
 - D. Thermal noise level

Ans. C

Sol. In parametric amplifiers, the pump energy is the deciding factor for amplification factor.

6. The following quantity is not required in the calculation of Q of a cavity resonator.
- A. Energy stored
 - B. Power dissipated
 - C. Loss in radiation
 - D. Dimensions of the cavity

Ans. D

Sol. Dimensions of the cavity is not required in the calculation of Q of a cavity resonator.

FWHM = Full Width Half Max of Resonance Intensity

Q= Quality Factor

$\omega_r = \text{Resonance Frequency}$

$$Q = \frac{\omega_r}{FWHM}$$

7. In microprocessor based systems DMA facility is required to increase the speed of data transfer between the
- A. Microprocessor and the I/O devices
 - B. Microprocessor and the memory
 - C. Memory and the I/O devices
 - D. Memory and the reliability system

Ans. C

Sol. In microprocessor environment the DMA concept arised only to increase speed of access between memory and I/O devices. There is lot difference between the speed of CPU, memory and I/O devices the output.

8. Which of the following circuit breakers has the lowest voltage range?
- A. SF₆ circuit breaker
 - B. Air-blast circuit breaker
 - C. Tank type oil circuit breaker
 - D. Air-break circuit breaker

Ans. D

Sol. AC air break circuit breakers are available in the voltage range of 400 V to 12 kV. They are widely used in low and medium voltage system.

9. The rate of rise of re-striking voltage (RRRV) is dependent upon
- A. Resistance of the system
 - B. Inductance of the system
 - C. Capacitance of the system
 - D. Inductance and Capacitance of system

Ans. D

Sol.

$$RRRV = \frac{dV}{dt} = \frac{V_m}{\sqrt{LC}} \sin \frac{t}{\sqrt{LC}}$$

i.e. RRRV depends on inductance and capacitance of the system.

10. Match List-I with List-II and select the correct answer using the code given below the lists:

List-I

- A) Thyrite arrester
- B) Sag template
- C) Cable sheaths
- D) Circuit breaker

List-II

- 1) Tower location
- 2) Cross bonding
- 3) Restriking voltage
- 4) Non-linear resistor

- A. A-3; B-1; C-2; D-4
- C. A-3; B-2; C-1; D-4

- B. A-4; B-1; C-2; D-3
- D. A-4; B-2; C-1; D-3

Ans. B

Sol. Sag template is used for locating the position of towers so that the minimum ground clearance is maintained.

Hence, option B is correct.

11. Under-voltage relays are mainly used for

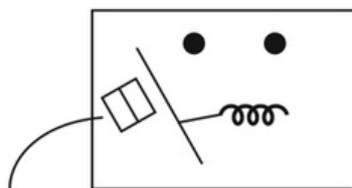
- A. Motor protection
- C. Transmission line protection
- B. Transformer protection
- D. All of the above

Ans. A

Sol.

Undervoltage relays used in motor protection.

E.g.: Agriculture sector



→ Magnets are magnetized by voltage

If there is under voltage, it gets demagnetize and comes to initial position and rotor will not rotate.

12. Match List-I (Type of fault) with List-II (Type of protection) and select the correct answer using the code given below the lists:

List-I

- A) External phase fault
- B) Faults between phases
- C) Phase to earth fault
- D) Overheating

List-II

- 1) Differential protection

Sol. Turning on or turning off an SCR may induce trigger pulses in a nearby SCR. Sometimes transients in a power circuit may also cause unwanted signal to appear across the gate of a neighbouring SCR. These undesirable trigger pulses may turn on the SCR leading to false operation of the main SCR. Gate protection against such spurious firing is obtained by using shielded cables or twisted gate leads. A capacitor and a resistor are also connected across gate to cathode to bypass the noise signals.

15. A single winding single-phase induction motor has:
- A. Zero starting torque
 - B. Low starting torque
 - C. High starting torque
 - D. Maximum starting torque

Ans. A

Sol. For a single winding single-phase induction motor, a pulsating single-phase field is considered as a superposition of the two rotating fields in opposite directions as,

$$F = \frac{1}{2} F_{\max} \cos(\theta - \omega t) + \frac{1}{2} F_{\max} \cos(\theta + \omega t)$$

where F_{\max} is the maximum value of the pulsating mmf along the axis of the winding. The two rotating fields, thus, have the same strength and produce equal and opposite torques resulting in net starting torque of zero value. Hence, it is a non-self-starting motor.

16. Operating System:
- A. Is a System software
 - B. Stores information on storage device
 - C. Controls the operations of computer system
 - D. None of above

Ans. A

Sol. Operating system is a system software having programs that controls the computer system.

17. Serial communications interface involves exchange of data serially among:
- 1) microprocessor
 - 2) peripherals
 - 3) memory
 - 4) microcontroller
- A. Both 1 and 2
 - B. Both 2 and 3
 - C. Both 1 and 3
 - D. Both 1 and 4

Ans. A

Sol. It exhibits serial exchange between microprocessor and peripherals such as printers, external drives, scanners or mice.

18. Memory in 8086 microprocessor gets stored in:
- A. RAM
 - B. ROM
 - C. Internal Registers
 - D. EPROM

Ans. C

Sol. 8086 does not have RAM or ROM inside it. However, it has internal registers for storing intermediate and final results.

19. Compact Gas Insulated Switchgear System comprises of:

- A. three phase circuit breaker
- B. current transformer
- C. earth switches
- D. all of these

Ans. D

Sol. In the designing of compact gas insulated switchgear system, functional elements are encapsulate in a metal enclosure which carry three phase circuit breaker, current transformer, earth switches and certain feeder elements.

20. Call instruction when executed by 8085 microprocessor needs

- A. 16 T-states
- B. 14 T-states
- C. 18 T-states
- D. 12 T-states

Ans. C

Sol. CALL instruction has 5 machine cycles and 18 T-states

One opcode fetch cycle → 6 T-states

Two memory read cycles → 6 T-states

Two memory write cycles → 6 T-states

21. The decreasing order of wavelength of infrared microwave, ultraviolet and gamma rays is

- A. gamma rays, ultraviolet, infrared, microwaves
- B. microwaves, gamma rays, infrared, ultraviolet
- C. infrared, microwave, ultraviolet, gamma rays
- D. microwave infrared, ultraviolet, gamma rays

Ans. D

Sol. Generally, decreasing order of wavelength of spectrum is

Radio waves > micro waves > infrared > visible > ultra violet > X-rays > gamma rays

So,

Decreasing order of wavelength of various rays Microwave >Infrared>Ultraviolet>Gamma rays

22. Reclosing relays are used to?

- A. Connect various components and devices within the system network
- B. Protect transformer
- C. Protect alternator
- D. All the above

Ans. A

Sol. Reclosing relays are used to connect various components and devices within the system network.

23. When the backup relay is operated?

- A. When secondary relay fails to operate
- B. When primary relay fails to operate

- C. Both A and B
- D. None of these

Ans. B

Sol. Backup relay is operated only when primary relay fails to operate.

24. A material best suited for manufacturing of fuse wire is?

- A. Aluminium
- B. Copper
- C. Silver
- D. Lead

Ans. C

Sol. The best suited material for manufacturing of a fuse wire is silver due to its properties.

25. What is the shape of the disc of an induction disc relay?

- A. circular
- B. Elliptical
- C. Spiral
- D. None of these

Ans. C

Sol. The shape of the disc of an induction relay is spiral.

26. Systems for Protection from negative sequence current is provided normally for

- A. Transformers
- B. Generators
- C. Transmission lines
- D. None of the above

Ans. B

Sol. A relay which protects the electrical system from negative sequence component is called a negative sequence relay or unbalance phase relay. The negative sequence relay protects the generator and motor from the unbalanced load which mainly occurs because of the phase-to-phase faults.

27. Which of the following relays is used for the protection of a series compensated EHV lines?

- A. Static distance relay/ Microprocessor base relays
- B. Impedance relay
- C. Reactance relay
- D. Mho relay

Ans. B

Sol. Impedance relay is moderately affected by arc resistance and power surges. Reactance relay is affected by arc resistance so series compensation.

28. Which of the following is/are correctly matched with their torque equation?

- A) IMPEDANCE RELAY $\rightarrow T = K_1 I^2 - K_2 V^2$
- B) REACTANCE RELAY $\rightarrow T = K_1 I^2 - K_3 VI \cos(\theta - \alpha)$
- C) ADMITTANCE RELAY $\rightarrow T = K_3 VI \cos(\theta - \alpha) - K_2 V^2$
- A. A and B
- B. A and C
- C. B and C
- D. All of the above

Ans. D

Sol. Consider universal torque equation

$$T = K_1 I^2 + K_2 V^2 + K_3 VI \cos(\theta - \alpha) + K_4$$

31. The Central Processing Unit (CPU) consists of
- A. ALU and control unit only
 - B. ALU, control unit and Registers only
 - C. ALU, Control unit and System bus only
 - D. ALU, Control unit, Registers and Internal bus

Ans. D

Sol. CPU contains ALU, CU and registers and internal buses.

32. Read following
- i. sequential circuit uses flip flops
 - ii. sequential circuit uses clock
 - iii. sequential circuit has less hardware requirement compared to combinational circuit.
 - iv. sequential circuit output depends on input only.
- A. All are true
 - B. i and ii
 - C. i and iii
 - D. i, ii, iv

Ans. B

Sol. Sequential circuit has flip flops, uses clocks and has more hardware required as compared to combinational output . It depends on previous state and present input.
So, i and ii are correct and Option B is the correct answer.

33. A stepper motor is a _____ device
- A. pneumatic
 - B. hydraulic
 - C. electrochemical
 - D. electromechanical

Ans. D

Sol. A stepper motor is an electromechanical device which converts electrical power into mechanical power and also it is brushless, is divided into expansive number of steps in a full rotation.

34. Which of the following type of motor are not the commutator motor?
- A. AC series motor
 - B. Reluctance motor
 - C. universal motor
 - D. Repulsion motor

Ans. B

Sol. The following motors are considered to be the commutator motors:

- 1) AC series motor
- 2) Universal motor
- 3) Repulsion motor

35. Power inverter converts
- A. AC to AC
 - B. DC to DC
 - C. DC to AC
 - D. AC to DC

Ans. C

Sol. Power inverter provides AC output by converting the power supplied by DC source. So basically it is a DC to AC converter.

36. In a single phase induction motor, the condition for maximum torque at starting is

A. $\phi_m + \phi_{aux} = 90^\circ$

B. $\phi_m + \phi_{aux} = 45^\circ$

C. $\frac{\phi_m}{2} + \phi_{aux} = 90^\circ$

D. $\phi_m + \frac{\phi_{aux}}{2} = 90^\circ$

Ans. A

Sol. The condition for maximum torque at starting in single phase capacitor type induction motor is $\phi_m + \phi_{aux} = 90^\circ$.

37. Which of following diode contains metal semiconductor junction?

A. Tunnel diode

B. Zener diode

C. Schottky diode

D. gun diode

Ans. C

Sol. Metal semiconductor junction is present in Schottky diode and point contact diode.

38. 8255 is used to connect_____ to microprocessor .

A. Programmable peripherals

B. Timers

C. Clock

D. Memory

Ans. A

Sol. 8255 is programmable peripheral interface and is used to connect devices like keyboard, mouse etc with microprocessor.

39. A rectifier for welding has voltage/current characteristics as_____.

A. Drooping

B. Rising

C. Static

D. Variable

Ans. A

Sol. Drooping V-I characteristic is used on constant current type welding machine. When arc is struck in arc welding machine electrical is essentially in short circuit which would immediately require a sudden of current otherwise machine is designed to Prevent this. A constant current machine is designed to minimized these sudden surges.

40. A stepper motor is

A. a dc motor.

B. a single-phase ac motor.

C. a multi-phase motor.

D. a two phase motor.

Ans. D

Sol. A stepper motor is a two phase motor. It is a brushless DC electric motor that divides a full rotation into a number of equal steps.

Stepper motor works on 1-phase-ON or 2-phase –ON modes of operation

41. A resistance of 5Ω is used for earthing the neutral of a 5 MVA, 11 kV alternator. The earth fault relay is set to operate at 0.5 A. The CTs have a ratio of 1000:10. The percentage of alternator winding unprotected is

A. 1.51 %

B. 2.72 %

C. 5.26 %

D. 3.93 %

Ans. D

Sol.

$$\text{Pick up value of relay} = \frac{1000 \times 0.5}{10}$$

$$= 50\text{A}$$

Let the percentage of winding unprotected is x%

Voltage induced in this section,

$$= \left[\frac{11 \times 10^3}{\sqrt{3}} \times \frac{x}{100} \right]$$

$$50 = \frac{\frac{11 \times 10^3}{\sqrt{3}} \times \frac{x}{100}}{5}$$

$$X = 3.93\%$$

42. Which of the following design levels of a computer are widely used in computer design?

- 1) Gate level
- 2) Processor level
- 3) Register level
- 4) User level

A. 1 and 3 only

B. 2 and 4 only

C. 3 and 4 only

D. 1, 2 and 3 only

Ans. B

Sol. The following levels of a computer which are widely used in computer design are

- 1) Processor level
- 2) User level

43. If the induction motor drive is capable of bidirectional power flow where limited range of speed control is required for large power applications, then this arrangement is called

A. Static conductance drive

B. Static Scherbius drive

C. Static compressive drive

D. Static reluctance drive

Ans. B

Sol. Power can flow from source to load and vice-versa, when induction motor is operated static Scherbius drive.

44. For a three-phase induction motor braking mode is obtained at a slip of

A. $s < 0$

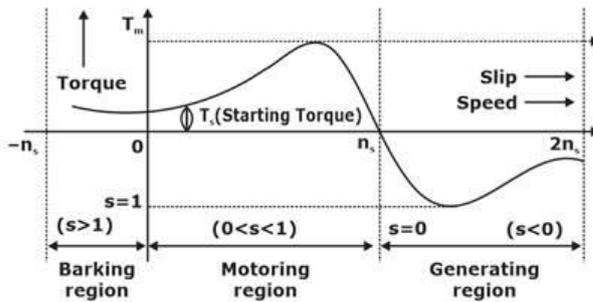
B. $s > 1$

C. $0 < s < 1$

D. $s = 1$

Ans. B

Sol.



For a three-phase induction motor, the braking mode obtained at a slip, $s > 1$, which is seen from the above characteristic.

45. Which single phase Induction motor is used in ceiling fans?

- A. Split phase
- B. Shaded pole
- C. Capacitor start
- D. Capacitor start and capacitor run

Ans. D

Sol. This motor has smooth performance without noise and operating power factor is good, so used for continuous operation.

46. Which of the following is correct regarding variable reluctance motor?

- A. It does not have permanent magnet.
- B. It has permanent magnet
- C. It has low speed.
- D. It has high torque

Ans. A

Sol. → A variable Reluctance motor

- does not have permanent magnet.
 - Low torque
- A permanent magnet stepper motor have
Low speed, high torque.

47. In realization of 64 : 1 MUX using 2 : 1 MUX, the required number of 2 : 1 MUX is:

- A. 62
- B. 63
- C. 64
- D. 65

Ans. B

Sol. In realization of $2^n : 1$ MUX using 2 : 1 MUX, the required number of 2 : 1 MUX is $2^n - 1$, since, we have to realize 64 : 1 MUX, so we have

$$n = 6$$

Hence, the required number of 2 : 1 MUX is

$$2^n - 1 = 2^6 - 1 = 63$$

48. How many types of sequential circuits are?

- A. 2
- B. 3
- C. 4
- D. 5

Ans. A

Sol. There are two type of sequential circuits viz., (i) synchronous or clocked and (ii) asynchronous or unclocked. Synchronous Sequential Circuits are triggered in the presence of a clock signal, whereas, Asynchronous Sequential Circuits function in the absence of a clock signal.

49. A stepper motor with stator and rotor teeth of 12 and 10 respectively. The value of single step of stepper motor will be:

- A. 3°
- B. 6°
- C. 12°
- D. 24°

Ans. B

Sol. Single step of stepper motor can be expressed as:

$$\alpha = \frac{N_s - N_r}{N_s N_r} \times 360^\circ$$

where,

N_s = Number of stator teeth

N_r = Number of rotor teeth

$$\alpha = \frac{12 - 10}{12 \times 10} \times 360^\circ$$

$$\alpha = 6^\circ$$

50. If the supply voltage of a 3-phase induction motor is increased three times, then torque is:

- A. Increased two times
- B. Increased three times
- C. Decreased nine times
- D. Increased nine times

Ans. D

Sol. As we known:

$$T_e \propto V^2$$

When voltage increased three times,

Then torque increased nine times.

51. Microwave tubes are grouped into two categories depending on the type of:

- A. Electron beam field interaction
- B. Amplification method
- C. Power gain achieved
- D. Construction methods
- E. None of the mentioned

Ans. A

Sol. Microwave tubes are grouped into two categories depending on the type of electron beam field interaction. They are linear or 'O' beam and crossed field or the m type tube . Microwave tubes can also be classified as oscillators and amplifiers.

52. The rate of rise of re-striking voltage (RRRV) is depend upon which of the following parameters?

- A. resistance of the system only
- B. inductance of the system only

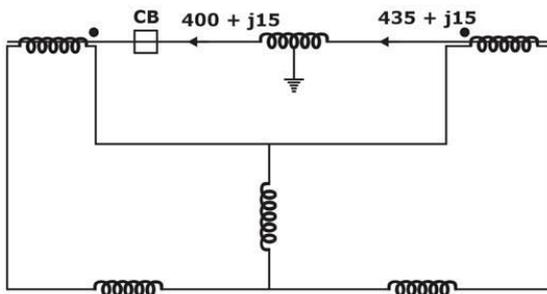
- C. capacitance of the system only
- D. inductance and capacitance of the system.

Ans. D

Sol.
$$RRRV = \frac{dV}{dt} = \frac{V_m}{\sqrt{LC}} \sin \frac{t}{\sqrt{LC}}$$

i.e. RRRV depends on inductance and capacitance of the system.

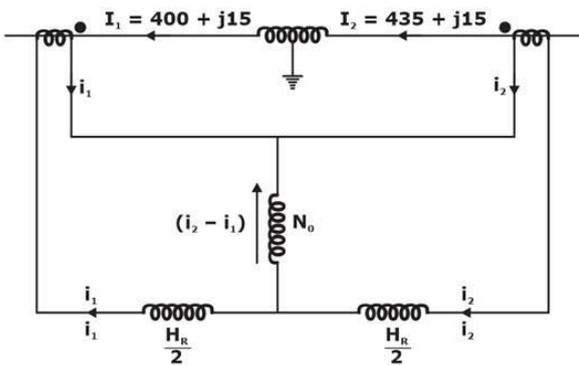
53. The figure shows, the connection of percentage differential relay to protect one phase of generator. A high resistance fault occurs near the neutral end with current distribution as shown in figure. The relay has slope of 10%. The CT Ratio is 500/5 . What should be minimum pick up setting for relay to operate?



- A. 0.4177 A
- B. 0.350
- C. 0.2587 A
- D. None of these

Ans. A

Sol.



The Relay will operate when,
Mmf of operating coil \geq mmf of restraining coil

$$N_o(i_2 - i_1) \geq \frac{N_R}{2} i_1 + \frac{N_R}{2} i_2$$

$$N_o(i_2 - i_1) \geq N_R \frac{(i_1 + i_2)}{2}$$

$$(i_2 - i_1) \geq \frac{N_R}{N_o} \frac{(i_1 + i_2)}{2}$$

$$\frac{N_R}{N_o} = \text{slope} = 0.1$$

$$i_1 = \frac{400 + j15}{(500 / 5)} = 4 + j0.15$$

$$i_2 = \frac{435 + j15}{(500 / 5)} = 4.35 + j0.15$$

$$i_1 - i_2 = 0.35$$

$$i_1 + i_2 = 8.35 + j0.3$$

$$(i_1 + i_2)/2 = \frac{N_R (i_1 + i_2)}{N_o \cdot 2}$$

$$= \frac{0.1 \times (8.35 + j0.3)}{2}$$

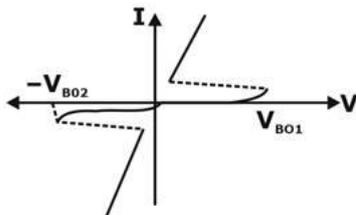
$$= 0.4177 \text{ A}$$

In our case, the inequality does not hold true for any positive pickup value. Hence the relay does not operate for any value of pick-up current in this case.

54. Working of a DIAC is similar to-
- A. Two antiparallel diodes
 - B. Two antiparallel SCR with no gate terminal
 - C. A reverse conducting thyristor (RCT)
 - D. A connector

Ans. B

Sol. The I-V characteristics of a DIAC are shown below:



To turn-on the DIAC in a particular direction, the voltage across DIAC should be exceeded above breakover voltage V_{B0} . It is similar to turning-on an SCR without gate. Therefore, DIAC can be represented as two antiparallel SCR without gate terminal.

55. In a single phase induction motor
- A. Both main and auxillary windings are placed on stator
 - B. Main winding is placed on stator and auxiliary winding on rotor
 - C. Both the main and auxillary windings are placed on rotor
 - D. Auxillary winding is placed on stator and main winding on rotor.

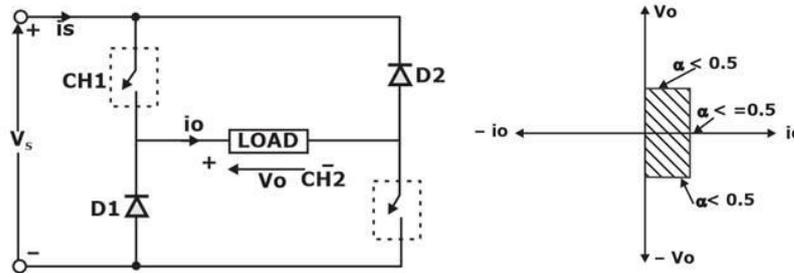
Ans. A

Sol. Both main and auxillary winding of single phase IM are placed on the stator.

56. A chopper, in which current remains positive but voltage may be positive or negative is known as:
- A. Chopper Type C
 - B. Chopper Type D
 - C. Chopper Type A
 - D. Chopper Type E

Ans. B

Sol. When the two choppers are on the output voltage V_o will be equal to V_s . When $V_o = -V_s$ the two choppers will be off but both the diodes $D1$ and $D2$ will start conducting. V_o the average output voltage will be positive when the choppers turn-on, the time T_{on} will be more than the turn off time T_{off} . As the diodes and choppers conduct current only in one direction the direction of load current will be always positive.



57. A 400 V, 50 Hz, 4-pole, three phase induction motor cannot run at 1500 rpm because:
- A. At 1500 rpm there will be no emf induced in the rotor circuit and hence no torque will be developed.
 - B. At 1500 rpm, the rotor will draw excessive current and may be harmful to the motor.
 - C. An induction motor can run only at a speed higher than its synchronous speed .
 - D. At 1500 rpm, torque developed by the rotor may not be sufficient to rotate the rotor.

Ans. A

Sol.

$$N_s = \frac{120f}{P} = (120 \times 50) / 4 = 1500$$

If the motor runs at $N_r=1500$ rpm then there will be no induced emf in the rotor circuit as the induced emf in rotor circuit is " sE_2 " where s is defined as

$$s = \frac{N_s - N_r}{N_s}$$

Therefore if N_r becomes equal to N_s then there will be no induced emf in the rotor circuit in turn no torque will be developed to rotate the motor.

58. Synchronous speed in rad/sec for 6-pole, 50 Hz three phase induction motor is

_____.

- A. 100 rad/sec
- B. 102.5 rad/sec
- C. 104.72 rad/sec
- D. None of the above

Ans. C

Sol.

$$\omega_s = \frac{2}{P} \times 2\pi f = \frac{2}{6} \times 2\pi \times 50$$

$$= 104.72 \text{ rad/sec}$$

59. A circuit breaker is rated at 1200A, 1500MVA, 33kV, 3-seconds. 3-phase oil circuit breaker.

The making current is

- A. 5700Amp
- B. 6700Amp
- C. 7700Amp
- D. 8700Amp

Ans. B

Sol.

$$\text{Rated symmetrical breaking current} = \frac{\text{MVA}}{\sqrt{3} \times \text{kV}} = \frac{1500}{\sqrt{3} \times 33} \text{ kA} = 26.24 \text{ kA}$$

Now, Rated making current = 2.55 × Braking current

$$= 2.55 \times 26.24$$

$$= 66.912 \text{ kA}$$

$$\approx 6700 \text{ Amp}$$

60. An n-bit microprocessor has

- A. n-bit program counter
- B. n-bit address register
- C. n-bit ALU
- D. n-bit instruction registers

Ans. D

Sol. In computer architecture, 32-bit integers, memory addresses, or other data units are those that are 32 bits (4 octets or 4 Bytes) wide. 32-bit microcomputers are computers in which 32-bit microprocessors are the norm. We know that n-bit microprocessor can handle n-bit instruction size/registers.

61. After execution microprocessor comes to

- A. Fetch state
- B. Halt state
- C. Execute state
- D. Interrupt state

Ans. B

Sol. Every program has its last instruction as "HLT" which means halt state.

62. In a microprocessor:

- A. One machine cycle is equal to one clock cycle
- B. One clock cycle consists of several machine cycles
- C. One machine cycle consists of several clock cycles
- D. One machine cycle is always less than one clock cycle

Ans. C

Sol. Machine cycle is also called as instruction cycle. Generally instruction cycle = Fetch cycle + Execution cycle. In fetch cycle opcode is fetched from memory, and in execution cycle, either read or write operation is performed. Machine cycle consists of several clock cycles.

63. In the 8085 microprocessor, this signal resets the microprocessor

- A. INTA
- B. RESET IN
- C. RESET OUT
- D. HLDA

Ans. B

Sol. RESET IN signal is used to reset the microprocessor by setting the program counter to zero.

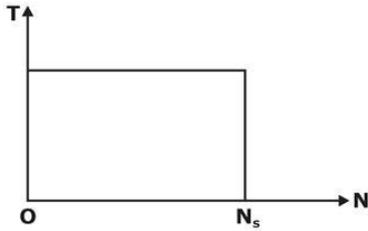
64. For a given three-phase induction motor, the slip at full load is

- A. equal to slip at no-load
- B. less than slip at no-load
- C. greater than slip at no-load
- D. equal to zero

Ans. C

Sol. For a three-phase induction motor, the slip at full load is greater than slip at no-load.

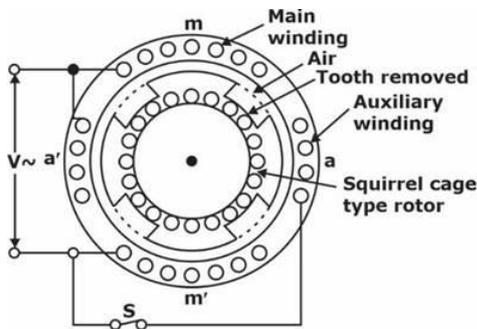
65. Which of the following motor has the given below torque-speed characteristics?



- A. Reluctance motor
- B. Hysteresis motor
- C. Universal motor
- D. Stepper motor

Ans. B

Sol. **Reluctance Motor:** Reluctance motors are single-phase motors where the stator construction is similar to that of an induction motor. That is, the stator has one main winding and one auxiliary winding. Both the windings are connected in parallel. The rotor construction is somewhat different than a single-phase induction motor. Some of the teeth of the rotor are removed so as to make the air gap between the stator and rotor non-uniform. This way the reluctance of the motor across the air gap becomes variable. The squirrel cage bars, and the end rings of the rotor remain the same. When single-phase supply is applied across the stator winding, the rotor starts rotating as an induction motor. At about 70% of the synchronous speed, the starting winding is cut off automatically. However, the rotor continues to speed up and attain synchronous speed due to reluctance torque developed. The rotor aligns itself with the synchronously rotating field and runs at synchronous speed. In figure (a) is shown the constructional details of a reluctance motor, where mm' is the main winding while aa' is the auxiliary winding or the starting winding. These two



$m m'$ is the main winding
 $a a'$ is the auxiliary winding
 S is the centrifugal switch

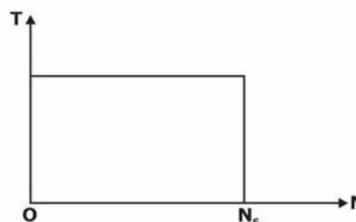
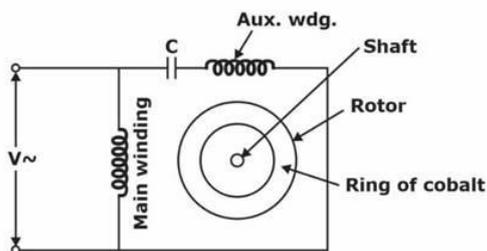
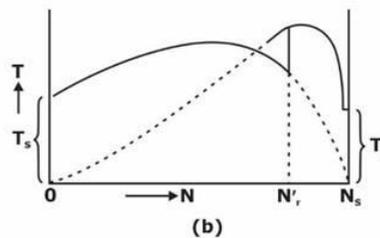


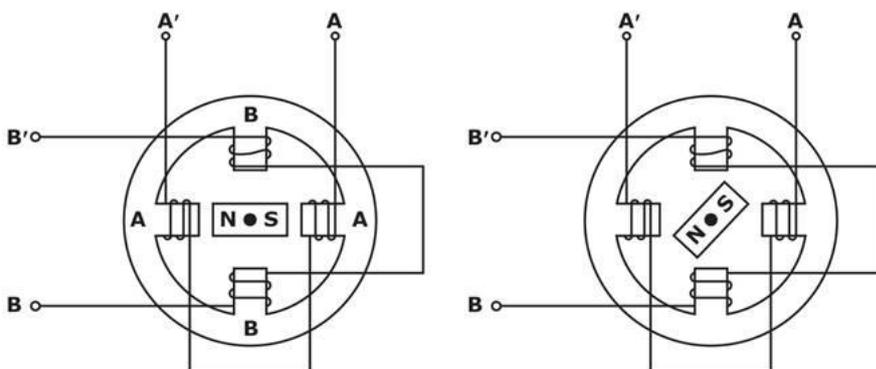
Figure (a) Hysteresis motors; (b) torque-speed characteristic

windings are wound at right angles to each other on the stator, exactly similar to a single-phase induction motor. In figure (b), T_0 is the operating torque of the motor at the synchronous speed. At a speed of N'_r , the centrifugal switch S is opened. The motor will continue to develop torque and run on its main winding. Large capacity reluctance motors are made for three-phase operation with a three-phase winding on the stator.

Hysteresis Motor: Hysteresis motors are single-phase small size synchronous motors. The stator windings are similar to the stator windings of single-phase induction motors. In the auxiliary winding a permanent value capacitor is connected. Like the main winding the auxiliary winding is always connected to the supply. When the stator windings are connected to a single-phase supply a rotating field is produced which is rotating at synchronous speed. There is no winding provided on the rotor. The rotor is simply made of aluminium or other non-magnetic material having a ring of a special magnetic material such as cobalt or chromium mounted on it.

The rotating field produced by the stator will induce eddy currents in the rotor. The rotor will get magnetized. But the magnetization of the rotor will lag the inducing revolving field by some angle due to the hysteresis effect. The rotating magnetic field will pull the rotor along with it and the rotor will rotate at synchronous speed. A constant torque will be developed up to the synchronous speed as shown in figure. The performance of a single-phase hysteresis motor is silent (no noise) because there is no slot on the rotor and the rotor surface is smooth.

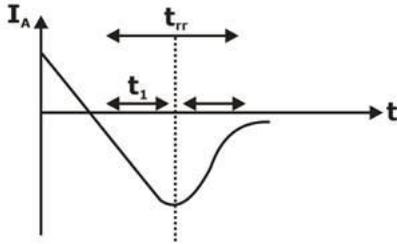
Stepper Motor: Stepper motors are also called the step motors. They rotate in steps by a certain angle depending upon the design. The rotor of such motors may be made of a set of permanent magnets or with a soft magnetic material with salient poles. The stator will have a set of poles with winding as shown in figure. The stator poles are excited by a sequence of dc pulses. The poles get magnetized one after the other in a clockwise or anticlockwise direction. Torque is developed on the rotor as the rotor magnets try to align with the stator poles.



66. A power diode has softness factor equal to unity, then diode is known as:
- A. Fast recovery diode.
 - B. Soft recovery diode.
 - C. General purpose diode.
 - D. Tunnel diode

Ans. B

Sol.



The figure depicts the reverse recovery characteristics of a power diode.

T_{rr} → Reverse recovery time

t_a → Time when charge from depletion region is removed.

t_b → Time when charge from semiconductor is removed.

$$\text{Softness factor} = \frac{t_b}{t_a}$$

S - factor < 1 → Fast recovery diode

S - factor = 1 → Soft recovery diode

67. 8086 microprocessor enters into debugging mode when?

- A. Direction flag is 0
- B. Trap flag is 1
- C. Interrupt flag is 1
- D. Direction flag is 1

Ans. B

Sol. If Trap flag is 1, then the microprocessor enters into debugging or single step executing mode.

68. Which of following logic gates provides output as 0 when both inputs are same (either 0 or 1)?

- A. XNOR
- B. XOR
- C. NOR
- D. NAND

Ans. B

Sol. When the input is 00 or 11 then the output is 0 for XOR gate only.

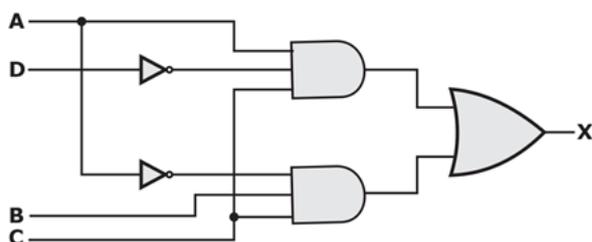
69. Triac are usually operated at -

- A. Power frequency
- B. High frequency
- C. All frequency
- D. Lower frequency

Ans. A

Sol. Triac is a Power semiconductor device which is used for Power frequency operation.

70. Output X in the circuit is:



A. $X = A\bar{C}D + \bar{A}BC$

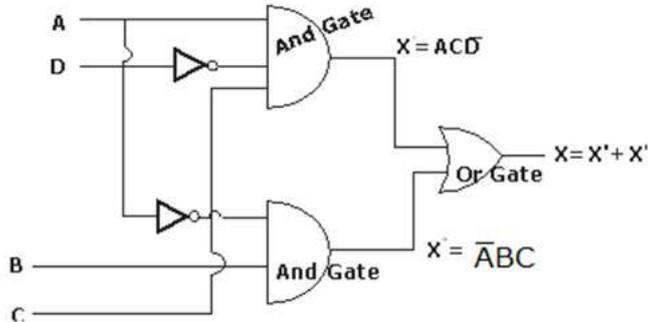
B. $X = AC\bar{D} + A\bar{B}C$

C. $X = AC\bar{D} + \bar{A}BC$

D. $X = AC\bar{D} + \bar{A}BC$

Ans. C

Sol.



So, $X = X' + X' = AC\bar{D} + \bar{A}BC$

Output X in the circuit is $X = AC\bar{D} + \bar{A}BC$.

71. In a synchronous machine, as the machine size decreases:

- A. p.u. armature resistance increases and p.u. synchronous reactance decreases.
- B. p.u. armature resistance decreases and p.u. synchronous reactance increases.
- C. p.u. armature resistance and p.u. synchronous reactance both decreases.
- D. p.u. armature resistance and p.u. synchronous reactance both increases.

Ans. A

Sol. Flux density is defined as the flux per unit area, i.e., it is given as:

$$B_m = \frac{\phi}{A}$$

Size of the machine is directly proportional to area i.e. size of machine is inversely proportional to flux density.

Hence, with the increase in magnetic flux density, the size of the machine decreases.

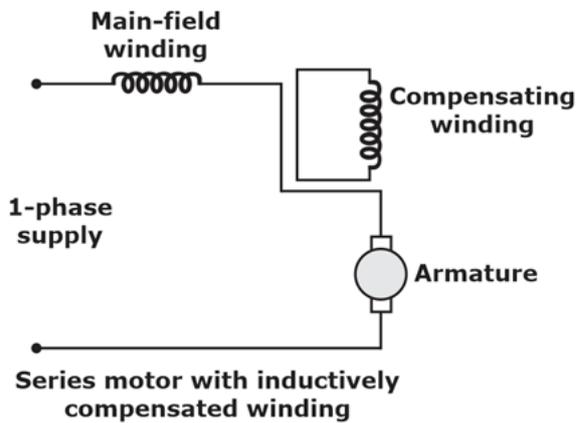
As the machine size decreases, p.u. armature resistance increases and p.u. synchronous reactance increases.

72. A universal motor is said to be inductively compensated when compensating winding:

- A. Is short circuited on itself.
- B. Is not used.
- C. Has large reactance.
- D. Is kept open.

Ans. A

Sol. A universal motor is said to be inductively compensated when its compensating winding is short-circuited on itself.



73. **Statement-I:** In High accuracy applications, hybrid type stepper motor is preferred over permanent magnet type.

Statement-II: Hybrid type stepper motor has greater step angle than permanent magnet type.

A. Both statement (I) and statement (II) are individually true, and statement (II) is the correct explanation of statement (I).

B. Both statement (I) and statement (II) are individually true, but statement (II) is not the correct explanation of statement (I).

C. Statement (I) is true, but statement (II) is false.

D. Statement (I) is false, but statement (II) is true.

Ans. C

Sol. • A hybrid stepper motor is a combination of the variable reluctance and permanent magnet type motors. The step angle for hybrid type of motor is 1.8° or less while for permanent magnet it is 7.5° or more.

• Hybrid stepper motor is suitable for motion control applications requiring high torque, accuracy, power, and repeatability for high speed to low-speed applications.

74. Which one of the following gate is different?

A. NOR gate

B. NAND gate

C. AND gate

D. NOT gate

Ans. D

Sol. Not gate has only one input.

75. In order to make a 2-bit adder following is required?

A. One full and one half adder

B. One full adder

C. Two half adders

D. One half adder

Ans. C

Sol. N bit full adder = (N - 1) full adder + (1 - Half adder)

76. The direction of rotation of field in a three-phase induction motor depends on the _____.

- A. Supply voltage
- B. Number of poles
- C. Supply frequency
- D. Phase sequence of supply voltage

Ans. D

Sol. The direction of rotation of field in a three-phase induction motor depends on the Phase sequence of supply voltage.

77. For an SCR, dV/dt protection is achieved using

- A. RL in series with SCR
- B. L in series with SCR
- C. RC in series with SCR
- D. RC across SCR

Ans. D

Sol. RC across SCR is used to achieve dV/dt protection for an SCR.

78. The electric motor used in toys is

- A. capacitors start motor
- B. split phase motor
- C. shaded pole motor
- D. None of these

Ans. C

Sol. Shaded pole motor as it is cheap and starts easily.

79. Direction of rotation of three phase induction motor can be reversed by

- A. interchanging connections of any two phases
- B. disconnecting any one phase
- C. (a) and (b) both
- D. None of the above

Ans. A

Sol. By interchanging any two phases the direction of rotation of rotating magnetic field reverses which in turn reverses the direction of rotor of induction motor.

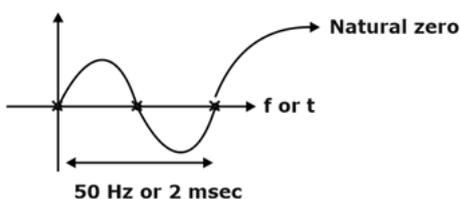
80. **Statement (I):** In order to extinguish the arc in circuit breakers, AC current is used.

Statement (II): An AC waveform crosses natural zero.

- A. Both Statement (I) and (II) are correct and (II) is correct explanation of (I).
- B. Both Statement (I) and (II) are correct but (II) is not correct explanation of (I).
- C. Statement (I) is true, but statement (II) is false.
- D. Statement (I) is false, but statement (II) is true.

Ans. A

Sol.



AC makes natural zero automatically several time that make easy AC arc extinguish in circuit breaker. So, both statements are correct and (II) is correct explanation of (I).

81. For a linear induction motor, synchronous speed is given by
- A. $2 \times (\text{width of one pole-pitch}) - (\text{supply frequency})$
 - B. $2 \times (\text{width of one pole-pitch}) + (\text{supply frequency})$
 - C. $2 \times (\text{width of one pole-pitch}) / (\text{supply frequency})$
 - D. $2 \times (\text{width of one pole-pitch}) \times (\text{supply frequency})$

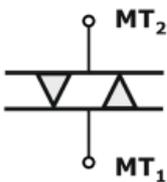
Ans. D

Sol. For a linear induction motor, synchronous speed is given by
 $2 \times \text{width of one pole pitch} \times \text{supply frequency}$

82. Which of the following is true about a DIAC ?
- A. It is antiparallel combination of two thyristors
 - B. It is antiparallel combination of two diodes
 - C. It is antiparallel combination of one diode and one thyristor
 - D. It is a parallel combination of one diode and one thyristor

Ans. B

Sol. DIAC is an antiparallel combination of two diodes that includes two terminals. It is a bidirectional switch



83. The type of circuit breakers preferred for Extra High Voltage application is
- A. Vacuum CB
 - B. Oil CB
 - C. SF₆ CB
 - D. Air blast CB

Ans. C

Sol. • The SF₆ circuit breaker is used for extra high voltage because of following reasons.

- Due to its electronegativity, and low arc-time constant the SF₆ gas regains its dielectric strength rapidly after the final current zero, the rate of rise of dielectric strength is very high.
- During the arcing period, SF₆ gas is blown axially along the arc the gas removes the heat from the arc by axial convection and radial dissipation.

84. Choose the correct option related to MUX
- A. MUX is combinational circuit
 - B. MUX has 1 output line only
 - C. Any logic gate can be made using MUX
 - D. All the above

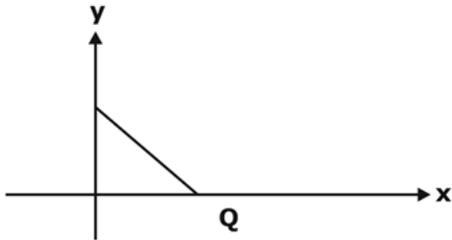
Ans. D

Sol. 1) MUX is a combinational circuit since it has no feedback element.
2) It has multiple input but one output.
3) Using MUX any logic gate can be made.

85. The operating point lies in case of class C amplifier
 A. exactly at the center of load line B. on X Axis
 C. Just above X-Axis D. Below X-Axis

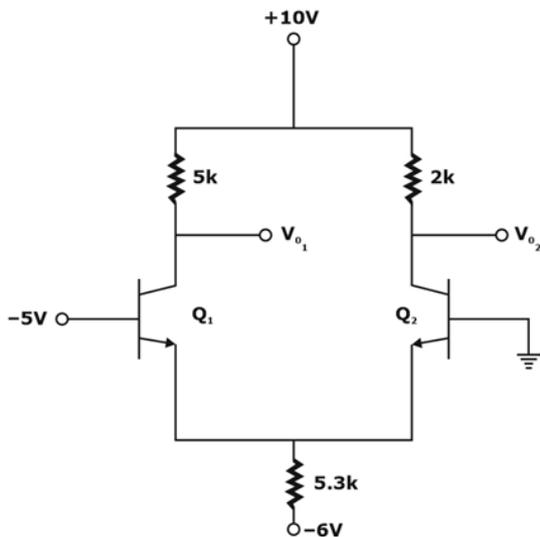
Ans. D

Sol. Position of operating point in case of class C amplifier lies below. X-Axis



⇒ it has maximum distortion & maximum efficiency (95%)

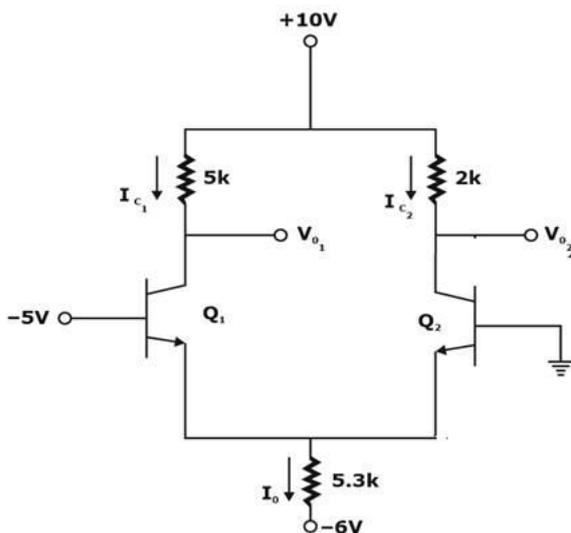
86. The differential DC output voltage $V_{01} - V_{02}$ in the circuit shown is _____ V



- A. 5V B. 10V
 C. 8V D. 2V

Ans. D

Sol.



⇒ the base of Q_L is biased with negative voltage hence

$Q_1 \rightarrow \text{OFF}$

$Q_2 \rightarrow \text{ON}$

$$\Rightarrow I_{C_1} = 0$$

$$\Rightarrow V_{O_1} = 10V$$

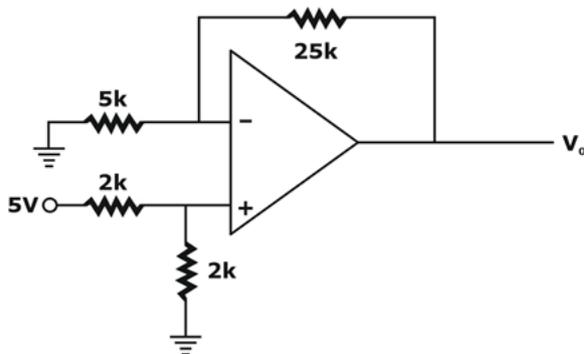
$$\Rightarrow V_{E_2} = -0.7V$$

$$\Rightarrow I_0 = \frac{-0.7V + 6V}{5.3k} = 1mA$$

$$\Rightarrow V_{O_2} = 10 - 2 \times 1 = 8V$$

$$\Rightarrow V_{O_1} - V_{O_2} = 10 - 8 = 2V$$

87. The output voltage of the op-amp circuit is



A. 20 V

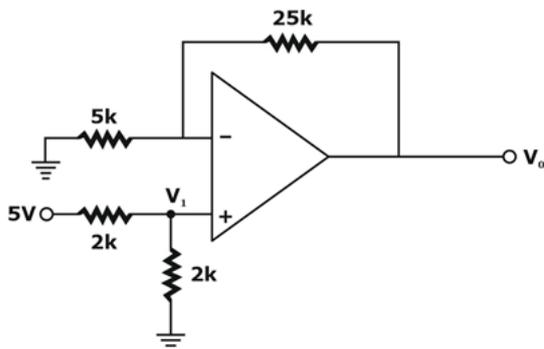
B. 15 V

C. 30 V

D. 12 V

Ans. B

Sol.



$$\Rightarrow V_1 = \left[\frac{5 \times 2}{2 + 2} \right] = \left(\frac{10}{4} \right) = 2.5V$$

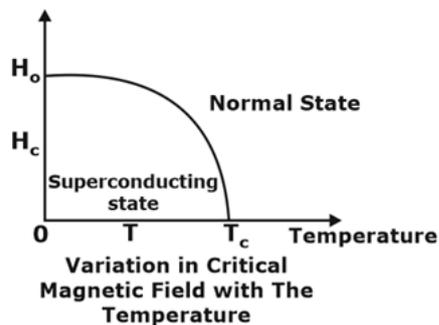
$$\Rightarrow V_0 = V_i \left(1 + \frac{25}{5} \right) = 6V_1$$

$$V_0 = 6V_1 = 6 \times 2.5 = 15.0V$$

- C. Decrease with increasing temperature
- D. Independent of temperature

Ans. C

Sol. Graph of H_c Vs T of superconductor is given below



92. Super conductors of Type (I) have magnetic field of an order of ____Tesla
- A. 100
 - B. 10
 - C. 1
 - D. 0.1

Ans. D

Sol. For Type (I) super conductors, H_c or critical magnetic field is 0.1 Tesla or less. So, option (d) is most suitable.

93. α -Iron or ferrite converts to _____Austenite at 912°C temperature.
- A. BCC
 - B. SC
 - C. FCC
 - D. HCP

Ans. C

Sol. Ferrite or α -Iron converts to FCC austenite (or γ -iron) at 912°C temperature. This conversion is an allotropic transformation that lasts upto 1394°C temperature.

94. Temperature at which antiferromagnetic material converts to paramagnetic material is known as _____ temperature.
- A. Curie
 - B. Curie-Weiss
 - C. Neel
 - D. Debye

Ans. C

Sol. Temperature at which antiferromagnetic material converts to paramagnetic material is known as Neel temperature.

95. Which of the following material used for making compass needle?
- A. Carbon steel
 - B. Silicon steel
 - C. Barium ferrite
 - D. Garnets

Ans. A

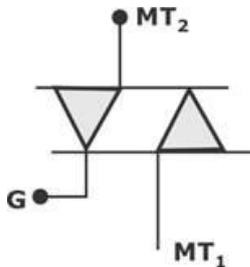
Sol. Carbon-steel is a hard magnetic material that's why it is use in making of needle.

96. Triac can conduct with
- A. positive voltage at gate only.
 - B. Negative voltage at gate only.

- C. Either positive or negative voltage at gate.
- D. Conduct without gate signal.

Ans. C

Sol. Triac



1.3 terminal bidirectional switch.

2.Can conduct with either positive or negative voltage at gate.

3.It is equivalent to two thyristors connected back-to-back with their gate terminals tied up.

97. In a three stack 12/8 pole variable reluctance motor, rotor pole pitch is

- A. 15°
- B. 30°
- C. 45°
- D. 60°

Ans. C

Sol. Given number of stater pole = 12

Number of rotor pole = 8

$$\text{Polepitch} = \frac{360}{\text{numberofrotorpole}}$$

$$= \frac{360}{8}$$

$$= 45^\circ$$

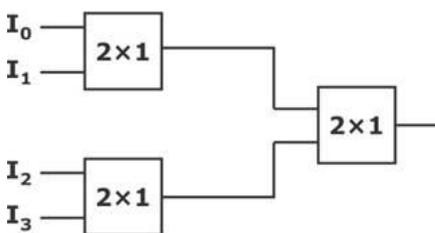
98. The minimum number of 2×1 MUX is required to implement $2^n \times 1$ MUX is

- A. 2^n
- B. 2^{n-1}
- C. $2^n - 1$
- D. 2^{n+1}

Ans. C

Sol. Take $4 \times 1 \Rightarrow 2^n \times 1$

$$n = 2$$



$$\Rightarrow 2 + 1 = 3 \text{ MUX required}$$

$$= 2^2 - 1$$

So, $2^n - 1$ is the answer.

99. In Three-phase induction motor rotating magnetic field rotates at?
- A. Slip speed
 - B. Blow synchronous speed
 - C. Synchronous speed
 - D. Shaft speed

Ans. C

Sol. • Rotating magnetic field always rotates at synchronous speed

$$N_s = \frac{120 \times f}{P}$$

- Three-phase induction motor rotates below the synchronous speed.

100. A Three-phase induction motor is?
- A. Essentially a constant-speed motor
 - B. Variable speed motor
 - C. Not self-starting
 - D. Rotates at synchronous speed

Ans. A

Sol. • Three-phase induction motor is self-excited motor.
• Three phase induction motor rotates below the synchronous speed.

$$\text{Slips} = \frac{N_s - N_r}{N_r} \times 100$$

- In induction motor change in slip from no-load to full load is 0.1% to 3% so it is essentially a constant-speed motor.
- Three phase induction motor works on principle of electromagnetic induction so it works like transformer with secondary shorted.

101. What is the maximum membership of a state Legislative Assembly?
- A. 400
 - B. 500
 - C. 450
 - D. 550

Ans. B

Sol. Members of a Vidhan Sabha are direct representatives of the people of the particular state as they are directly elected by an electorate consisting of all citizens above the age of 18 of that state. Its maximum size as outlined in the Constitution of India is not more than 500 members and not less than 60 members.

102. River carrying maximum sediment in the world is?
- A. Amazon
 - B. Nile
 - C. Brahmaputra
 - D. Ganga

Ans. C

Sol. Brahmaputra River is carrying maximum sediment in the world. The river suspended sediment load of about 1.84 billion tons per year is the world's highest.

103. Saffron is obtained from

- A. bud
- B. leaf
- C. flower stigma
- D. calyx

Ans. C

Sol. Saffron is obtained from flower's stigma. Saffron is a spice derived from the flower of *Crocus sativus*, commonly known as the "saffroncrocus". The vivid crimson stigmas and styles, called threads, are collected and dried to be used mainly as a seasoning and colouring agent in food.

104. Shakuntalam' was written by

- A. Kalidas
- B. Bhasa
- C. Kamban
- D. Asvaghosha

Ans. A

Sol. *Shakuntalam* is a well-known Sanskrit play by Kalidasa, dramatizing the story of Shakuntala told in the epic Mahabharata. It is considered to be the best of Kalidasa's works. Its date is uncertain, but Kalidasa is often placed in the period between the 1st century BCE and 4th century CE.

105. Who among the following rulers was also known as 'Lakh Baksh'?

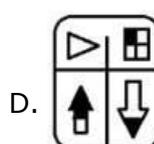
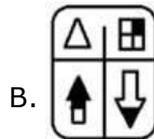
- A. Aram Shah
- B. Qutub-ud-din Aibak
- C. Ilthumish
- D. Sulthana Raziya

Ans. B

Sol. • Qutub-ud-din Aibak was also known as 'Lakh Baksh'. He used to donate large sums of money in charity, thus people used to call him by a new name 'LAKH BAKSH or giver of lakhs.

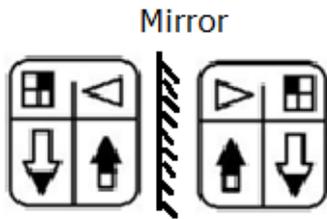
- He founded the Slave Dynasty in 1206 AD.

106. **Select the correct mirror image of the given figure when a mirror is placed on its right side.**



Ans. D

Sol. On close observation we find that the correct mirror image will be:



Hence, option D is the correct answer.

107. Dilwara temples are examples of

- | | |
|------------------------|----------------------------|
| A. Jain architecture | B. Buddhist architecture |
| C. Mughal architecture | D. Sultanate architecture. |

Ans. A

Sol. Dilwara Temples of Rajasthan are popular for their beautiful artistic work. Located near Mount Abu in Rajasthan. Dilwara Temples are considered to be an example of perfect architecture, in terms of Jain Temples. The intricately carved ceilings, entryways, pillars and panels highlight the aesthetic appeal of this temple. Dilwara Temple forms a famous pilgrimage of the followers of Jainism. It was built during the 11th and 13th century.

108. Which fertilizer is highly hygroscopic?

- | | |
|-----------------------------|-------------------|
| A. Calcium ammonium nitrate | B. Sodium nitrate |
| C. Ammonium sulphate | D. Urea |

Ans. D

Sol. Urea is a white, granular, solid and slightly hygroscopic fertilizer. It can also be applied in solution form as a spray.

Urea becomes a remarkably hygroscopic substance if the humidity of the air is at relatively high-level.

109. Freedom of speech and expression is not unlimited. It can be restricted on the basis of

- | |
|-------------------------------------------------------------|
| A. threat to national unity and integrity |
| B. disobeying of Parliament and Judiciary or their contempt |
| C. public order, decency and morality |
| D. All of the above |

Ans. D

Sol. Freedom of speech and expression is not unlimited. It can be restricted on the basis of threat to national unity and integrity, disobeying of Parliament and Judiciary or their contempt and public order, decency and morality.

110. In a certain code, "COMPREHENSION" is written as "GLQMVBLBRPMLR". How is "ADVENTURES" written in that code?

- | | |
|---------------|---------------|
| A. EAZBRQZOIP | B. EAZBRQYOPQ |
| C. AEBZQROYPI | D. EAZBRQYOIP |
| E. AEBZRQOYPI | |

Ans. D

Sol. "COMPREHENSION" is written as "GLQMVBLBRPMLR"

Odd places are increased by +4 while the Even places are decreased by -3

C is preceded by +4 i.e G , O is succeed by -3 i.e L

Similarly "ADVENTURES" is coded as "**EAZBRQYOIP**"

111. Unemployment and poverty estimates in India are based on

- A. NSSO household consumption expenditure survey
- B. CSO household consumption expenditure survey
- C. Planning Commission's household consumption expenditure survey
- D. NSSO family income survey
- E. None of the above/More than one of the above

Ans. A

Sol. The estimates of poverty and unemployment in India are based on the survey of consumption expenditure of families by NSSO.

National Sample Survey Office was established in the form of a permanent survey organization in the year 1950, so that, a national survey can be conducted to help in socio-economic planning and policy-making.

112. Which one of the following reservoirs is associated with Rihand Project?

- A. Gandhi Sagar
- B. Govind Ballabh Pant Sagar
- C. Jawahar Sagar
- D. Govind Sagar

Ans. B

Sol. Govind Ballabh Pant Sagar is a reservoirs associated with Rihand Project. Rihand project is the most important multi-purpose project in Uttar Pradesh. It is located in the borders of Uttar Pradesh and Madhya Pradesh. It consists of 934 m long and 92 m high straight gravity concrete dam across the Rihand River. It has the capacity to hold 11.4 lakh hectare metres of water. Another dam about 25 km north of the Rihand Dam has been constructed at Obra.

113. Which soil is found in the maximum area in Uttar Pradesh?

- A. Sandy Clay
- B. Red Clay
- C. Alluvial Clay
- D. Red and black mixed clay

Ans. C

Sol. Alluvial soil is found in the maximum area in Uttar Pradesh. This soil is deposited by rivers and best for agriculture. This soil is rich in Potash and humus. Alluvial soils are suitable for rice, wheat, sugarcane etc.

114. Firozabad is famous for which industry?

- A. Silk Industry
- B. Glass making Industry
- C. Leather Industry
- D. Steel Industry

Ans. B

Sol. The city of Firozabad is famous for Glass making industry. It is the center of India's glass blowing industry. Firozabad is known for the quality of the bangle. In Firozabad, Every other family is engaged in making bangles.

115. Which one among the following is called 'Roof of the World'?

- A. Satpura
- B. Pamir
- C. Aravali
- D. Myanmar

Ans. B

Sol. The Pamir Mountains are a mountain goes in Central Asia, at the intersection of the Himalayas with the TianShan, Karakoram, Kunlun, Hindu Kush, Suleman and Hindu Raj ranges. They are among the world's most astounding mountains. Since Victorian occasions, they have been known as the "Top of the World".

116. The sum of the interior angles of a regular polygon is 1260° . What is the difference between an exterior angle and an interior angle of the polygon?

- A. 120°
- B. 105°
- C. 100°
- D. 108°

Ans. C

Sol. The sum of the interior angles of a polygon = $(n - 2) \times 180^\circ$

$$= (n - 2) \times 180^\circ = 1260^\circ$$

$$= n - 2 = 7$$

$$n = 9$$

$$\text{Measure of each interior angle} = 1260^\circ / 9 = 140^\circ$$

$$\text{Measure of each exterior angle} = 360^\circ / n = 360/9 = 40^\circ$$

$$\text{Required difference} = 140^\circ - 40^\circ = 100^\circ$$

117. **Arrange the following words in a logical and meaningful order.**

- 1) Irrigation
- 2) Harvesting
- 3) Seed sowing
- 4) Crop growth
- 5) Fertilizing

- A. 3-1-4-5-2
- B. 1-3-4-5-2
- C. 4-3-1-2-5
- D. 1-4-5-2-3

Ans. A

Sol. The logical order is following steps of harvesting of crop:

3. Seed sowing
1. Irrigation
4. Crop growth
5. Fertilizing
2. Harvesting

Hence, option A is the correct answer.

118. The Ministry of Education (MoE) approved a new scheme "New India Literacy Programme" under which the term "Adult Education" will be replaced by _____.
- A. Literacy for All
B. Education for All
C. Common Education
D. Ageless Education
E. None of the above

Ans. B

- Sol. • The Union Govt. approved a new scheme "New India Literacy Programme" during the FYs 2022-2027 to cover all the aspects of adult education and also to align with national education policy 2020
- The scheme will cover non-literates of the age of 15 years and above in the country.
 - Now, Govt. has replaced the term "Adult Education (प्रौढ शिक्षा)" as 'Education for All' in the country.
 - It will be implemented through volunteerism through online mode.

119. Renowned personality Bappi Lahiri passed away recently, he was a veteran _____.
- A. Actor
B. Composer
C. Politician
D. Social Activist
E. Classical Dancer

Ans. B

- Sol. * Singer-composer Bappi Lahiri passed away at the age of 69 in Mumbai.
- * Best known for popularising disco music to the Indian mainstream, the singer was fondly known as Bappi da, and experienced huge success in the 1980s and 90s.
 - * He earned the title 'Disco King'.
 - * Bappi Lahiri ruled the music industry for several years and had given hits such as I am a Disco Dancer, Raat Baaki, Pag Ghoongroo, Bambai Se Aaya Mera Dost, Naino Main Sapna, TaakiTaaki, Humko Aaj Kal Hain Intezaar, Tamma Tamma, Yaad Aa Raha Hai, Yaar Bina Chain Kahan Re, among many others.

120. In February 2022, India signed a letter of intent (LoI) with which country for working towards bringing down the cost of renewable energy (RE) technologies?
- A. Germany
B. Australia
C. Japan
D. Denmark
E. Saudi Arabia

Ans. B

- Sol. * India and Australia on Tuesday signed a letter of intent (LoI) for working towards bringing down the cost of renewable energy (RE) technologies.
- * Both the countries will also focus on scaling up the manufacturing of low cost solar and clean hydrogen.
 - * This was signed during the fourth India–Australia energy dialogue.

* The dialogue was co-chaired by Power and New & Renewable Energy Minister RK Singh and Hon'ble Minister for Energy and Emissions Reduction, Mr. Angus Taylor from the Australian side.

121. With what financial outlay the central government has approved the continuation of a mega police modernisation scheme for five years up to 2025-26?

- A. Rs 16,275 crore
- B. Rs 18,275 crore
- C. Rs 20,275 crore
- D. Rs 26,275 crore
- E. Rs 28,275 crore

Ans. D

Sol. • The central government has approved the continuation of a mega police modernisation scheme for five years up to 2025-26.

- The total financial outlay of the scheme will be Rs 26,275 crore.
- The scheme is being implemented by the Ministry of Home Affairs (MHA) since 1969-70.
- This scheme comprises all relevant sub-schemes that contribute to the modernisation and improvement.

122. Which has become the world's first government to turn 100 per cent paperless?

- A. Dubai
- B. Singapore
- C. Tokyo
- D. Riyadh
- E. London

Ans. A

Sol. * Dubai became the world's first government to turn 100 percent paperless, the announcement was made by the United Arab Emirate (UAE) Crown Prince, Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum.

- * It will save around 3 billion Dirham (USD 350 million) and 14-million-man hours.
- * A comprehensive digital government services platform is managing all internal, external transactions and procedures of the Government of Dubai.
- * The Dubai Paperless Strategy was implemented in five consecutive phases, each entity consisting of a different group of the Dubai Government's entities.

123. Navrang Saini has been assigned the additional charge of the chairperson of which regulatory body?

- A. Insolvency and Bankruptcy Board of India
- B. Insurance Regulatory and Development Authority of India
- C. Telecom Regulatory Authority of India
- D. Pension Fund Regulatory and Development Authority
- E. Securities and Exchange Board of India

Ans. A

Sol. * The center has further assigned the additional charge of the chairperson of Insolvency and Bankruptcy Board of India (IBBI) to Navrang Saini.

- * The Centre had in Oct last year assigned additional charge of chairperson of IBBI Saini for a period of three months.

* The IBBI Chairperson is appointed by the center on the recommendations of the selection committee headed by the Cabinet Secretary.

* M S Sahoo, who was the first Chairperson of IBBI since October 1, 2016.

124. 83rd National Table Tennis Championships 2022 will be hosted by which state on April 18, 2022?

- A. Sikkim
B. Manipur
C. Meghalaya
D. Arunachal Pradesh
E. Mizoram

Ans. C

Sol. The 83rd National Table Tennis Championship 2022, which will begin on April 18, 2022, will be held at SAI Indoor Training Centre, NEHU in Shillong Meghalaya.

The Northeast has hosted the world's largest table tennis tournament for the second time. The event also marks the 50th statehood celebration of Meghalaya.

125. Recently, the Uttar Pradesh government has launched a campaign, 'School Chalo Abhiyan' to ensure 100% enrolment in primary and upper primary schools across the state. What is the female literacy rate in Uttar Pradesh according to the Census 2011?

- A. 69.72%
B. 79.24 %
C. 59.26 %
D. 84.56%
E. 74.53%

Ans. C

Sol. • Uttar Pradesh CM Yogi Adityanath has launched School Chalo Abhiyan to ensure 100% enrolment in primary schools across all districts in the state.

- The campaign has been launched from one of the state's lowest literacy districts, Shravasti.
- Governor of Uttar Pradesh: Anandiben Patel
- Uttar Pradesh literacy rate: 69.72%
- Male - 79.24 %
- Female - 59.26 %
