

(CTTC, KOLKATA)

Subject name: Electrical hardware logic control

**1) The minimum number of states requires describing the two degree differential equation**

- (a) 1
- (b) 2
- (c) 3
- (d) 4

**ANS-b**

**2) PLC stands for**

- (a) Programmable Logic Controller
- (b) Programming Logical Controller
- (c) Programming Logic Controller
- (d) All of the above

**ANS-a**

**3) NO stands for**

- (a) Naturally open
- (b) Normally ON
- (c) Normally Open
- (d) None of the above

**ANS-c**

**4) Relay is an**

- (a) Mechanical device
- (b) Electrical switch
- (c) Manual switch
- (d) None of the above

**ANS-b**

**5) Which of the motions in actuators are preferred**

- (a) Translator
- (b) Rotary
- (c) Stationary
- (d) Non-Stationary

**ANS-b**

**6) Low power DC and AC motors are also known as \_\_\_\_\_**

- (a) Servomotors
- (b) Tachogenerators
- (c) A.C. generators
- (d) D.C. generators

**ANS-a**

**7) DC motors can be modeled as:**

- (a) Armature controlled
- (b) Field Controlled
- (c) Both a and b
- (d) None of the mentioned

**ANS-c**

**8) DC motors are constructed using:**

- (a) Permanent Magnet
- (b) Electromagnet.
- (c) Magnets are not used
- (d) Plastics

**ANS-a**

**9) The scientific principle that makes hydraulic systems possible is**

- (a) Pascal's principle
- (b) Boyle's law
- (c) Bernoulli's principle
- (d) The fluid flow principle

**ANS- a**

**10) OLD stands for**

- (a) On Load Diagram
- (b) On Line Diagram
- (c) One Load Diagram
- (d) One line Diagram

**ANS-d**

**11) Pneumatic systems usually do not exceed:**

- (a) 1 hp
- (b) 1 to 2 hp
- (c) 2 to 3 hp
- (d) 4 to 5 hp

**ANS-a**

**12) Hydraulic and pneumatic circuits:**

- (a) Perform the same way for all functions
- (b) Perform differently for all functions
- (c) Perform the same with some exceptions
- (d) Does not perform all the functions

**ANS-c**

**13) In an open loop control system**

- (a) Output is independent of control input
- (b) Output is dependent on control input
- (c) Only system parameters have effect on the control output
- (d) None of the above

**ANS-a**

**14) A control system in which the control action is somehow dependent on the output is known as**

- (a) Closed loop system
- (b) Semi closed loop system

- (c) Open system
- (d) None of the above

**ANS-a**

**15) The most common hydraulic fluid is:**

- (a) Mineral oil
- (b) Synthetic fluid
- (c) Water
- (d) Gel

**ANS-c**

**16) Which of the following is a defined quantity?**

- (a) Pressure
- (b) Polarity
- (c) Money
- (d) Length

**ANS-d**

**17) The basic unit for luminous intensity is**

- (a) Ampere
- (b) Candela
- (c) Coulomb
- (d) Radian

**ANS-b**

**18) Charge is**

- (a) Unipolar
- (b) Bipolar
- (c) Tripolar
- (d) Non – Polar in nature

**ANS-b**

**19) Separation of charge creates**

- (a) Current
- (b) Resistance
- (c) Voltage
- (d) Friction

**ANS-c**

**20) The energy per unit charge is**

- (a) Voltage
- (b) Power
- (c) Current
- (d) Work

**ANS-a**

**21) 'Positive Power' meaning \_\_\_\_\_**

- (a) Power is being delivered to circuit

- (b) Power is being extracted from circuit
- (c) No power supply
- (d) Input and output powers are equal

**ANS-a**

**22) The best definition of polarisation is**

- (a) Orientation of dipoles in random direction
- (b) Electric dipole moment per unit volume
- (c) Orientation of dipole moments
- (d) Change in polarity of every dipole

**ANS-b**

**23) The presence of parallel alignment of magnetic dipole moment is given by which materials?**

- (a) Diamagnetic
- (b) Paramagnetic
- (c) Ferromagnetic
- (d) None of the above

**ANS-c**

**24) The magnetic materials follow which law?**

- (a) Faraday's law
- (b) Ampere law
- (c) Lenz law
- (d) Curie Weiss law

**ANS-d**

**25) Piezoelectric effect is analogous to which phenomenon?**

- (a) Electrostriction
- (b) Magnetostriction
- (c) Anisotropy
- (d) Magnetization

**ANS-b**

**26) The symbol used for representing Independent sources**

- (a) Diamond
- (b) Square
- (c) Circle
- (d) Triangle

**ANS-c**

**27) Inductor is \_\_\_\_\_ element.**

- (a) Active
- (b) Polar
- (c) Linear
- (d) Passive

**ANS-d**

**28) The opposing capacity of materials against the current flow is**

- (a) Conductance
- (b) Inductance
- (c) Susceptance
- (d) Resistance

**ANS-d**

**29) A one-way valve that lets air into the reservoir of a compressor, but doesn't let it out, is a**

- (a) Check valve
- (b) Receiver valve
- (c) Control valve
- (d) Three way valve

**ANS-a**

**30) The \_\_\_\_\_ converts the compressed air energy into mechanical energy in the form of linear movement in one direction only.**

- (a) Piston cylinders
- (b) Double acting cylinders
- (c) Single acting cylinders
- (d) Hydraulic pumps

**ANS-c**

**31) A \_\_\_\_\_ restricts air flow.**

- (a) Throttle valve
- (b) Shuttle valve
- (c) Directional control valve
- (d) Single acting cylinder

**ANS-a**

**32) Which sensor can detect nearby objects?**

- (a) Proximity sensor
- (b) Humidity sensor
- (c) Touch sensor
- (d) Pressure sensor

**ANS-a**

**33) The monitoring of machines, gears and objects are achieved by which sensor?**

- (a) Humidity sensor
- (b) Proximity sensor
- (c) Touch sensor
- (d) Pressure sensor

**ANS-b**

**34) Which proximity sensor detects metal objects?**

- (a) Capacitive Proximity Sensor

- (b) Magnetic Proximity Sensor
- (c) Ultrasonic Proximity Sensor
- (d) Inductive Proximity Sensor

**ANS-d**

**35) Which proximity sensor indicates level?**

- (a) Inductive Proximity Sensor
- (b) Capacitive Proximity Sensor
- (c) Magnetic Proximity Sensor
- (d) Ultrasonic Proximity Sensor

**ANS-a**

**36) Which proximity sensors are used in automotive?**

- (a) Inductive Proximity Sensor
- (b) Capacitive Proximity Sensor
- (c) Magnetic Proximity Sensor
- (d) Ultrasonic Proximity Sensor

**ANS-d**

**37) Which proximity sensor detects positioning of an object?**

- (a) Inductive Proximity Sensor
- (b) Capacitive Proximity Sensor
- (c) Optical Proximity Sensor
- (d) Magnetic Proximity Sensor

**ANS-c**

**38) Which protocol is used by proximity sensor?**

- (a) I2C
- (b) SPI
- (c) UART/USART
- (d) CAN

**ANS-a**

**39) Which device generates output signal when metal objects are either inside or entering into sensing area.**

- (a) Capacitive Proximity
- (b) Magnetic Proximity
- (c) Inductive proximity
- (d) Parallel Proximity

**ANS-a**

**40) \_\_\_\_\_ detects metals but along with it can also detect resins, liquids.**

- (a) Inductive proximity
- (b) Capacitive Proximity
- (c) Magnetic Proximity
- (d) Parallel Proximity

**ANS-b**

**41) \_\_\_\_\_ sensors have no electrical noise effect and it can work DC.**

- (a) Inductive proximity
- (b) Capacitive Proximity
- (c) Magnetic Proximity
- (d) Parallel Proximity

**ANS-c**

**42) What is the sensing range for magnetic proximity sensors?**

- (a) 120mm
- (b) 90mm
- (c) 150mm
- (d) 100mm

**ANS-a**

**43) What is the sensing range for capacitive proximity sensors?**

- (a) 150mm
- (b) 25mm
- (c) 120mm
- (d) 100mm

**ANS-c**

**44) What is the purpose of back up protection?**

- (a) To increase the speed
- (b) To increase the reach
- (c) To leave no blind spot
- (d) To guard against failure of primary

**ANS-d**

**45) Which component ensures the safety of the line from damage?**

- (a) Relay
- (b) Circuit breaker
- (c) Bus bar
- (d) Current transformer

**ANS-a**

**46) What is the actuating quantity for the relays?**

- (a) Magnitude
- (b) Frequency
- (c) Phase angle
- (d) All of these

**ANS-d**

**47) Protective relays can be designed to respond to \_\_\_\_\_**

- (a) Light intensity, impedance
- (b) Temperature, resistance, reactance

- (c) Voltage and current
- (d) All of these

**ANS-d**

**48) On what factor does the operating speed of the relay depend upon?**

- (a) Rate of flux built up
- (b) Armature core air gap
- (c) Spring tension
- (d) All of these

**ANS-d**

**49) Which component ensures the safety of the line from damage?**

- (a) Relay
- (b) Circuit breaker
- (c) Bus bar
- (d) Current transformer

**ANS-a**

**50) The tripping circuit is \_\_\_\_\_**

- (a) AC
- (b) DC
- (c) Either AC or DC
- (d) None of these

**ANS-c**

**51) Plug setting of a electromagnetic relay can be altered by varying**

- (a) Number of ampere turns
- (b) Air gap of magnetic path
- (c) Adjustable back stop
- (d) None of these

**ANS-a**

**52) SPCO stands for**

- (a) Small Polar Change Over
- (b) Suitable Pole change Over
- (c) Single Pole Change Over
- (d) None of the above

**ANS-c**

**53) When we actuate a switch an output lamp will be ON, and when we deactuate the same switch the output lamp still glows ON. What kind of circuit it is –**

- (a) Latching Circuit
- (b) Inching Circuit
- (c) Open Circuit
- (d) Interlocking circuit

**ANS-a**

**54) PLC first model name was –**

- (a) MODICON 84



- (b) MODICOL 84
- (c) MDICON 84
- (d) MODCOL 84

**ANS-a**

**55) SPST stands for –**

- (a) Single Pole Single Throw
- (b) Single Pole State Throw
- (c) Solid Pole Single Throw
- (d) Single Pole Single Turn

**ANS-a**

**56) Capacitive sensor sense –**

- (a) Metal
- (b) Non metal
- (c) Both metal and non metal
- (d) None of the above

**ANS-c**

**57) EMR Relay used as a –**

- (a) Protection type Relay
- (b) Controlling type Relay
- (c) Sensing type Relay
- (d) All of the above a, b and c

**ANS-b**

**58) NC stands for –**

- (a) Normally Close
- (b) Normally contact
- (c) Naturally close
- (d) Naturally contact

**ANS-a**

**59) Ladder logic programming consists primarily of –**

- (a) Virtual Relay contacts and coil
- (b) Logic gate symbols with connecting lines
- (c) Text based code
- (d) Hieroglyphics

**ANS-a**

**60) An OR function implemented in Ladder logic uses –**

- (a) Normally closed contacts in series
- (b) Normally open contacts in series
- (c) Normally open contacts in parallel
- (d) Normally closed contacts in parallel

**ANS-c**

**61) When \_\_\_\_\_ contacts are actuated, they disrupt the power supply through them.**

- (a) normally open type
- (b) normally closed type
- (c) both a. and b.
- (d) none of the above

**ANS-b**

**62) \_\_\_\_\_ of PLCs can be done in very little time.**

- (a) Programming
- (b) Installation
- (c) Commissioning
- (d) All of the above

**ANS-d**

**63) Which of the following cannot be an input that is given to the PLC?**

- (a) Manual switches
- (b) Relays
- (c) Sensors
- (d) None of the above

**ANS-d**

**64) One of the following is an input device**

- (a) Motor
- (b) Light
- (c) Valve
- (d) Sensor

**ANS-d**

**65) Which one of the following is not a PLC manufacturer**

- (a) Siemens
- (b) Mitsubishi
- (c) Microsoft
- (d) ABB

**ANS-c**

**66) In QPDT no. of NO contacts**

- (a) 4
- (b) 6
- (c) 8
- (d) None of the above

**ANS-a**

**67) In Actuation**

- (a) NO turns into NC
- (b) NC turns into NO
- (c) Both a and b
- (d) None of the above

**ANS-c**

**68) Limit switch has**

- (a) Mechanical Actuation
- (b) Manual Actuation
- (c) Electrical Actuation
- (d) None of the above

**ANS-a**

**69) SPDT switch used as**

- (a) Staircase switch
- (b) Bed Switch
- (c) None of the above

(d) Both a and b

**ANS-d**



**70) Depending upon construction it \_\_\_\_\_ is a**

- (a) Mushroom headed push button
- (b) NO type push button
- (c) Plain headed push button
- (d) NC type push button

**ANS-c**



**71) Depending upon operation it \_\_\_\_\_ is a**

- (a) NO type push button
- (b) Mushroom headed push button
- (c) Emergency stop push button
- (d) None of the above

**ANS-c**



**72) Depending upon operation as per colour code it \_\_\_\_\_ is a**

- (a) Yellow Start process
- (b) Yellow Inch process
- (c) Yellow stop process
- (d) All of the above

**ANS-b**



**73) What kind of switch it is**

- (a) Limit Switch
- (b) Push Button
- (c) Toggle Switch
- (d) None of the above

**ANS-a**

**74) SSR stands for –**

- (a) Single stand Relay
- (b) Single Solid relay
- (c) Solid State relay
- (d) All of the above

**ANS-c**

**75) Contactor is used for**

- (a) Controlling power flow
- (b) Controlling load
- (c) protecting circuit
- (d) None of the above

**ANS-a**

**76) For frequently On/Off a motor we use**

- (a) Relay
- (b) Contactor
- (c) Switch
- (d) All of the above

**ANS-b**

**77) Which among these are the main characteristics of a fuse element?**

- (a) Low melting point
- (b) High conductivity
- (c) Least deterioration due to oxidation
- (d) All of the above

**ANS-d**

**78) Which among these is the least expensive protection for over current in low voltage system?**

- (a) Rewirable fuse.
- (b) Isolator.
- (c) Circuit breaker.
- (d) Air breaker switch.

**ANS-a**

**79) For a current upto 10A which material is used as the fusing element?**

- (a) Copper
- (b) Silver
- (c) Alloy of lead and tin
- (d) Zinc

**ANS-c**

**80) Pin 8 of 555 timer IC consist of**

- (a) voltage supply
- (b) output
- (c) ground
- (d) discharge

**ANS-a**

**81) When \_\_\_\_\_ contacts are actuated, they disrupt the power supply through them.**

- (a) normally open type
- (b) normally closed type
- (c) both a. and b.
- (d) none of the above

**ANS-b**

**82) The PLC is used in \_\_\_\_\_.**

- (a) machine tools
- (b) automated assembly equipment

- (c) moulding and extrusion machines
- (d) all of the above

**ANS-d**

**83) Which of the following can be the output of PLC?**

1. Relay coils
  2. Solenoids
  3. Indicators
  4. Motors
  5. Lamps
  6. Alarms
- (a) Only (1), (2), (3) and (4)
  - (b) Only (3), (4), (5) and (6)
  - (c) Only (1), (2), (3) and (5)
  - (d) All the (1), (2), (3), (4), (5), and (6)

**ANS-d**

**84) Which of the following form the basis of Electrical domain?**

- (a) Current
- (b) Resistance
- (c) Inductance
- (d) All of the above

**ANS-d**

**85) The sensors are classified on the basis of**

- (a) Functions
- (b) Performance
- (c) Output
- (d) All of the above

**ANS-d**

**86) Following is (are) the type(s) of Light sensor(s)**

- (a) Photo sensor
- (b) Photo transistors
- (c) Photo conductors
- (d) All of the above

**ANS-d**

**87) Inductive proximity sensors can be effective only when the objects are of \_\_\_\_\_ materials.**

- (a) Ferro magnetic
- (b) Diamagnetic
- (c) Paramagnetic
- (d) All of the above

**ANS-a**

**88) Following acts as detector in Optical sensor**

- (a) Light emitting diode
- (b) Photo diode
- (c) Transistor
- (d) All of the above

**ANS-b**

**89) DPST stands for**

- (a) Dual pole Single Throw
- (b) Dual pole Straight Throw
- (c) Double Pole Single Throw
- (d) None of the above

**ANS-c**

**90) DPDT has**

- (a) One NO terminal
- (b) One NC terminal
- (c) Two NO terminal
- (d) All of the above

**ANS-c**

**91) Relay has**

- (a) Electrical Actuation
- (b) Mechanical Actuation
- (c) Manual Actuation
- (d) None of the above

**ANS-a**

**92) Which of the following statements are true?**

- (a) Power is proportional to Voltage
- (b) Power is proportional to current
- (c) Neither of the statements are right
- (d) Both the statements are right

**ANS-d**

**93) Kilowatt-hour(kWh) is a unit of?**

- (a) Current
- (b) Power
- (c) Energy
- (d) Resistance

**ANS-c**

**94) Electrical Actuation occurs due to**

- (a) Mechanical conversion
- (b) Electromagnetic field
- (c) Manual interruption
- (d) All of the above

**ANS-b**

**95) An example of discrete (digital) control is**

- (a) Varying the volume of a music system
- (b) Turning a lamp ON or OFF
- (c) Varying the brightness of a lamp
- (d) Controlling the speed of a fan

**ANS-b**

**96) Solenoids, lamps, motors are connected to**

- (a) Analog output
- (b) Digital output
- (c) Analog input
- (d) Digital input

**ANS-b**

**97) PLCs are \_\_\_\_\_ designed for use in the control of a wide variety of manufacturing machines and systems**

- (a) Special purpose industrial computers
- (b) Personal computers
- (c) Electromechanical system
- (d) All of the above

**ANS-a**

**98) The \_\_\_\_\_ is moved toward the relay electromagnet when the relay is on**

- (a) Armature
- (b) Coil
- (c) NO contact
- (d) NC contact

**ANS-a**

**99) A good control system has all the following features except**

- (a) Good stability
- (b) Slow response
- (c) Good Accuracy
- (d) Sufficient power handling capacity

**ANS-b**

**100) Which of the following is the output of a Thermocouple**

- (a) Alternating current
- (b) Direct current
- (c) AC voltage
- (d) DC voltage

**ANS-d**