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INSTITUTE OF PETROCHEMICAL ENGINEERING, LONERE**

Course:- Electrical Engineering Department

Course Code:- DEE3205 (A)

Subject: Industrial Automation

Question Bank

- 1 Ladder logic programming consists primarily of**
 - A Virtual relay contacts and coils
 - B Logic gate symbol with connecting line
 - C Function blocks with connecting line Text-based code
 - D Text-based code

- 2 The address T4:6. ACC is used to address what?**
 - A Accumulator for timer 4 in file 6.
 - B Preset value of timer 6 in file 4.
 - C Accumulator for timer 6 in file 4.
 - D Accumulator for counter 6 in file 4

- 3 The part that monitors the inputs and makes decisions in a PLC is the CPU**
 - A TRUE
 - B FALSE
 - C None of above
 - D Option either A or B

- 4 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

- 5 To increase the number of inputs and outputs of the PLC, one can use expansion**

modules.

- A TRUE
 - B FALSE
 - C None of above
 - D Option either A or B
- 6 **A solenoid is an example of an output device.**
- A TRUE
 - B FALSE
 - C None of above
 - D Option either A or B
- 7 **Examine-on instruction in PLC language is symbolically represented by what shape ?**
- A -] [-
 - B -()-
 - C -]/ [-
 - D None of these
- 8 **In counter Counted Value is greater than or equal to Preset value**
- A DN Bit set
 - B DN Bit reset
 - C EN bit set
 - D EN bit reset
- 9 **Most industrial control Application**
- A Can be solved using more than one method of control
 - B Can be done more reliably using solid state method
 - C All of above
 - D None of above
- 10 **Automation normally means:**
- A a net loss of jobs.
 - B a net increase in jobs
 - C no change in jobs
 - D All of the above

- 11 The word automation derived from_____ and _____.
- A Greek word auto, moto's .
 - B Chinese word auto, moto's.
 - C Japanese word auto, moto's
 - D None of the above
- 12 **Automation minimize the person involvement in process with improved _____and_____.**
- A Speed of operation, efficiency.
 - B Productivity, quality.
 - C Flexibility, safety of operation.
 - D All of the above.
- 13 **PLC stands for_____.**
- A Programmable Logic Controller
 - B Programming Logical Controller
 - C Programming Logic Controller
 - D All of the above
- 14 **Machine can work continuously without tiredness so, the automation usually _____ duty cycle for machine so that there is more machine hours/day which produce _____ goods/manufacturing.**
- A More, increases
 - B Less, Decreases
 - C increases, more
 - D Decreases, less
- 15 **In automation, manufacturing can easily switch from one product to another product without changing its existing setup.**
- A TRUE
 - B FALSE
 - C None of above
 - D Either A or B
- 16 **NO stands for_____**
- A Naturally Open
 - B Normally Open



- 17 C Naturally ON
D Normally ON
Solenoids, Lamps, Motors are connected to_____
A Analog output
B Digital output
C Analog input
D Analog input
- 18 **An example of discrete (digital) control is _____**
A Varying the volume of music system
B Turning a lamp on/off
C Varying the brightness of lamp
D Controlling the speed of fan
- 19 **Following component act as a detector in optical sensor**
A Light emitting diode
B Photoelectric sensor (photodiode)
C Transistor
D All of the above
- 20 **Inductive proximity sensor is detects _____ object**
A Metal object
B Di magnetic Material
C Para-magnetic Material
D All of the Above
- 21 **Which of the following can be the output of PLC?**
1)Relay coil
2)Solenoid
3)Motors
4)Lamps
5)Indicators
A Only 1, 2,3 and 4
B Only 1, 2,3 and 5
C Only 1, 2,4 and 5

- 22 D All the 1, 2, 3, 4, 5
Limit switch has_____
A Mechanical actuation
B Manual actuation
C Electrical actuation
D None of the above
- 23 **Which of the following is not a PLC manufacturer?**
A Siemens
B Mitsubishi
C Microsoft
D ABB
- 24 **NC stands for_____**
A Naturally Close
B Normally Close
C Naturally OFF
D Normally OFF
- 25 **Capacitive sensor sense_____**
A Metal
B Non metal
C Both A and B
D None of the above
- 26 **Which proximity sensor detects metal object?**
A Capacitive proximity sensor
B Inductive proximity sensor
C Ultrasonic proximity sensor
D Magnetic proximity sensor
- 27 **One of the following is an input device_____**
A Motor
B sensor
C light



- D valve
- 28 In PLC 'I' is used for output and 'Q' is used for input
- A TRUE
- B FALSE
- C None of the above
- 29 Limit switch is a device which gets activated when moving part reaches to its _____ point.
- D Limiting point
- A Middle point
- B Ending point
- C Starting point
- 30 _____ detects metal along with it can also detects resins and liquids.
- A Capacitive proximity sensor
- B Inductive proximity sensor
- C Ultrasonic proximity sensor
- D Magnetic proximity sensor
- 31 The part that monitors the input the input and makes the decision in a PLC in CPU.
- A TRUE
- B FALSE
- C None of the above
- 32 Solenoid is an example of an output device.
- A TRUE
- B FALSE
- C None of the above
- 33 In pressure switch diaphragm can be used instead of bellows
- A TRUE
- B FALSE
- C None of the above
- 34 Which sensor can detect object without physical contact?
- A Touch sensor
- B Humidity sensor

- C Pressure Sensor
D Proximity sensor
- 35 _____are the parts of optical proximity sensor.
- A Photo transistor
B Crystal oscillation
C LED
D All of the above
- 36 Discrete input devices provide either of signal logical output either ____or ____.
- A 0,0
B 0,1
C 1,2
D 1,1
- 37 _____ sensors are similar in principal to optical proximity switch but, it uses sound instead of light.
- A Capacitive proximity sensor
B Inductive proximity sensor
C Ultrasonic proximity sensor
D Acoustic proximity sensor
- 38 _____is used for connecting load to power supply through appropriate switch gears and protecting devices such as relay.
- A Power Circuit
B Control Circuit
C Both A and B
D None of the above
- 39 The _____ is moved towards the relay electromagnet when the relay is ON.
- A Armature coil
B NO Contact
C NC contact
D None
- 40 Relay has _____ actuation
- A Electrical

- B Mechanical
- C Manual
- D Automatic

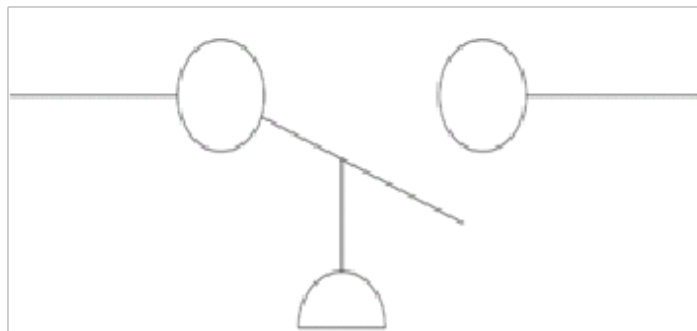
41 Power circuit connected between _____ and _____.

- A Phase terminal, Neutral terminal
- B Main supply, Load
- C Protecting device, Phase terminal
- D None of the above

42 Switching circuit produce RFI (Radio Frequency Interference) and pollute power grid as high harmonics to prevent these _____ circuit is used.

- A Power circuit
- B Control Circuit
- C Snubber Circuit
- D Electric circuit

43



Define the name of the following symbols.

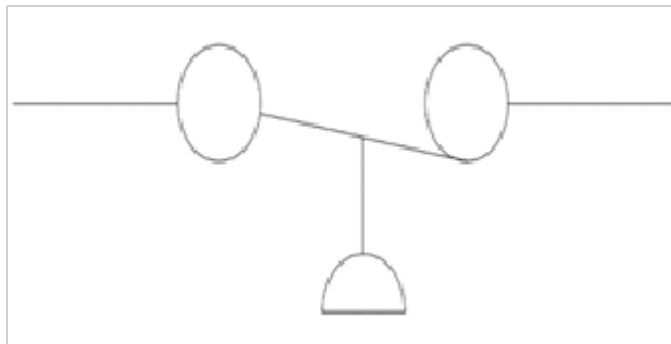
- A Limit switch NO
- B Temperature switch NO
- C Float switch NO
- D Pressure switch NO

44 Analog input device can be connected to the PLC through _____.

- A Analog to Digital converter
- B Digital to analog converter
- C Ethernet
- D None of the above

- 45 The input device can be classified in _____ and _____ categories
- A Analog, digital
 - B ON, OFF
 - C Both A and B
 - D None of above

46



Define the name of the following symbols.

- A Limit switch NC
 - B Temperature switch NC
 - C Float switch NC
 - D Pressure switch NC
- 47 **PLC is a digital industrial computer which perform _____ or _____ logic in factory environment.**
- A Discrete, Logical
 - B Logical, Sequential
 - C Discrete, Sequential
 - D None of the above
- 48 **What are advantage of PLC?**
- A Low maintenance cost
 - B More reliable compared to relay.
 - C PLC can operate number of machines.
 - D All the above
- 49 **PLC offer easy _____ and correcting any errors.**
- A Reprogrammed.
 - B Troubleshooting

- C Maintenance.
D Autocorrect
- 50 **PLC is user friendly _____ base specialized computer.**
A Microprocessor
B Micro-controller
C Digital
D Manual
- 51 **Nano PLC has how many input and outputs?**
A 10 input and 5 output.
B 15 input and 10 output.
C Few input and Few output.
D None of the above
- 52 **What is operating speed of PLC?**
A Nano-sec
B Milli-sec
C Nano- min
D Milli-min
- 53 **PLC has _____ Programming language, which is similar to _____ so it is easy to be understood by operator or Electrical Technician also.**
A Functional block dig., functional chart.
B Ladder, Electrical wiring
C C, Electrical installation.
D Sequential function chart, Machine language
- 54 **What are sub-parts of CPU?**
A Micro-processor
B Memory
C Power supply
D All of the above
- 55 **CPU means _____.**
A Central processing unit



- B Common processing unit
C Central practices unit
D Central passing unit
- 56 The part that monitors the inputs and makes decisions in a PLC is the CPU.
A TRUE
B FALSE
C None of the above
- 57 One of the following is an input device
A Motor
B light
C valve
D None of the above
- 58 PLC stands for Programmable logic controller
A TRUE
B FALSE
C None of the above
- 59 Lamps, motors are connected to:
A Analog output
B Digital output
C Analog input
D Digital input
- 60 Small PLC is also called as _____ PLC.
A Show- box
B See-box
C Shoe- box
D None
- 61 Unitary PLC has 20 input and _____ output.
A 20
B 18
C 12

- D 15
- 62 The type of memory which is fast and temporarily stores the data which are immediately required for used is called as _____.
- A HDD
 - B ROM
 - C RAM
 - D SSD
- 63 _____ of PLC can be done in very little time
- A Programming.
 - B Re -Programming.
 - C Commissioning
 - D All the above
- 64 _____ language can be programmed interactively with the PLC
- A C
 - B Basic
 - C Online
 - D offline
- 65 Main difference between online and offline PLC programming is
- A Where the edited program resides
 - B Whether the programming PC has internet connectivity
 - C Whether the PLC is running or stopped
 - D The type of program used
- 66 Output coil or coil instruction in PLC language is symbolically represented by what shape ?
- A -] [-
 - B -()-
 - C -]/[-
 - D None of these
- 67 What is the largest integer number that a PLC counter function can reach if it uses a 16-bit register?
- A 32768

- B 65535
- C 32766
- D 65537

An example of discrete(digital) control is

68

- A Varying the volume of a music system
- B Varying the brightness of a lamp
- C Turning a lamp ON or OFF
- D Controlling the speed of a fan

What are the advantage of Modular PLC?

69

- A Input and output terminals are fixed No. of terminals
- B PLC does not take much space they are smaller in size
- C Construction is not much flexible
- D None of the above

70

What are the disadvantage of Fixed PLC.?

- A Is more expensive.
- B Input and output terminals are fixed No. of terminals
- C PLC does not take much space they are smaller in size
- D None

71

A solenoid

- A Can be used only in DC circuit
- B Is spring operated
- C Widely used in industrial automation
- D None of above

72

Examine-OFF instruction in PLC language is symbolically represented by what shape ?

- A -] [-
- B -()-
- C -]/ [-
- D None of these

- 73 The counter start counting when
- A DN Bit set
 - B DN Bit reset
 - C EN bit set
 - D EN bit reset
- 74 Ladder logic programming consists primarily of :
- A Hieroglyphics.
 - B Text based code.
 - C Virtual relay contacts and coil
 - D Function blocks with connecting lines.
- 75 Medium PLC has _____ inputs and output.
- A 100-200
 - B 1000-2000
 - C 3000-4000
 - D 4000-8000
- 76 PLC having less than _____ inputs and outputs are called as small plc.
- A 50
 - B 100
 - C 150
 - D 200
- 77 PLC can be _____ in plant to change the sequence of operation
- A Only programmed
 - B Only Re-programmed
 - C Programmed and reprogrammed
 - D None of the above
- 78 RAM means_____
- A Random access memory
 - B Reverse access memory
 - C Rapid access memory
 - D None of the above

79 **Who is the father of PLC?**

- A Dick Morley
- B James
- C Charles Babbage
- D None of the above

80 **What are the different PLC brands?**

- A ABB PLC
- B Fatek PLC
- C Honeywell PLC
- D All of above

81 **What is not part of plc system?**

- A CPU
- B Input and Output model
- C Programmer or monitor
- D All the above

82 **The capability of convention relay system for complex operations is _____ that of the PLC**

- A Poor than
- B Excellent than
- C As good as
- D None of the above

84 **Comparing between PLC and Relay logic system using (less and more)**

Points	PLC	Relay logic
Reliability		

- A Less, more
- B More, less
- C More, more
- D Less , less

85 **Fixed PLC is also called as**

- A Nano PLC
- B Micro PLC
- C Mini PLC
- D Small PLC

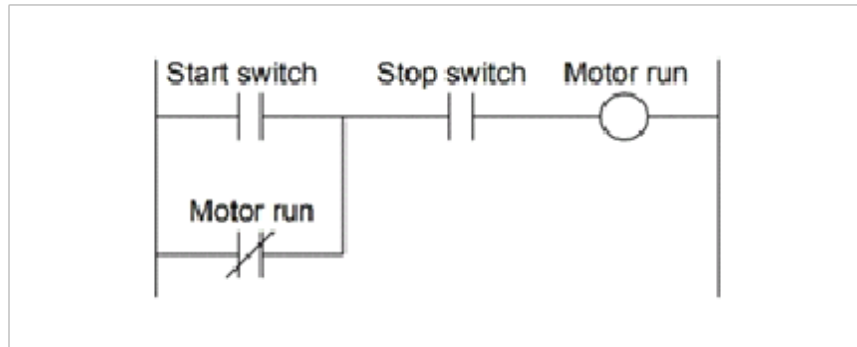
86 The PLC where originally designed to replace

- A Analog controllers
- B DCS
- C Microcomputers
- D Hardwired control

87 Programming language for PLC is.

- A Function Block Diagram (FBD)
- B Statement List (STL)
- C Ladder Diagram
- D All of the above

88



Identify the problem in this motor control PLC program

- A Start contact
- B Coil
- C Stop contact
- D none

Matches the following

- | | | |
|----|--------------------|-------------------|
| 89 | 1. Small size PLC | A) 4000 to 8000 |
| | 2. Medium size PLC | B) more than 8000 |
| | 3. Large size PLC | C) less than 100 |

- A 1-a, 2-b, 3-c
- B 1-c, 2-a, 3-b
- C 1-b, 2-c, 3-a
- D None of the above

90 Which of the following cannot be an input that is given to the PLC?

- A Manual switches.
- B Relay
- C sensor
- D None of this

91 The PLC is used in _____.

- A Machine tools
- B Automated assembly equipment
- C Moulding and extrusion machines
- D All the above

Comparing between PLC and Relay logic system using (less and more)

92

Points	PLC	Relay logic
Maintenance Cost		

- A Less, more
- B More, less
- C More, more
- D Less , less

Comparing between PLC and Relay logic system using (less and more)

93

Points	PLC	Relay logic
Life		

- A Less, more
- B More, less
- C More, more
- D Less , less

- 94 **How is the speed of operation of conventional relay system as compared to digital controllers ?**
- A Very slow
 - B Very fast
 - C Same
 - D None of the above
- 95 **What are disadvantage of plc?**
- A Operation speed of PLC is in milli-sec
 - B The overall cost of PLC system for small application is very high
 - C Both A and B
 - D None of the above
- 96 **PLC is develop in _____ year**
- A 1952
 - B 1968
 - C 1953
 - D 1969
- 97 **The address T6:4. ACC is used to address what?**
- A Accumulator for timer 4 in file 6.
 - B Preset value of timer 6 in file 4.
 - C Accumulator for timer 6 in file 4.
 - D Accumulator for counter 6 in file 4
- 98 **Every word is ---- bits long**
- A 16
 - B 17
 - C 8
 - D 4
- 99 **I:12.1/12 where I indicates**
- A I/O file type
 - B File type
 - C Word number
 - D Bit number

- 100 **Graphical Language are**
- A Ladder logic- diagram
 - B Function block diagram
 - C Sequential functional chart
 - D All of the above
- 101 **International Standard for Programmable Controller**
- A IEC1130-3
 - B IEC1131-4
 - C IEC1129-3
 - D IEC1132-3
- 102 **Text-based language are**
- A Instruction List
 - B Structured text
 - C Both A and B
 - D None of the above
- 103 **Instruction list is text type language**
- A TRUE
 - B FALSE
 - C None of the above
- 104 **When both input are high then output is low**
- A AND
 - B NAND
 - C OR
 - D EX-OR
- 105 **_____ is an instruction which add delay of predefined value in the operation.**
- A Counter
 - B Timer
 - C ON- timer
 - D OFF- timer
- 106 **Time base 1.0 indicates that processor increment accumulated value in _____ interval**

- A 1 min
B 1 milisec
C 1 sec
D None of the above
- 108 If the time base is 1.0 and preset value is 5 then delay for timer is
- A 0.5 sec
B 0.05sec
C 5sec
D 50 sec
- 109 When timer is running ----- bit will set
- A EN or TT
B DN
C Reset
D Halt
- 110 -----remains ON for fixed period of time before turning OFF
- A Timer ON
B Timer OFF
C Timer ON-OFF
D None of the above
- 111 When any one or both input are high, then output is high
- A AND gate
B OR Gate
C NAND gate
D NOT gate
- 112 Two NO are connected in parallel form -----gate
- A AND
B OR
C NAND
D Ex-OR
- 113 $A + B = Y$ this equation follows

- A AND
B OR
C NAND
D Ex-OR
- 114 When odd number of inputs are high then output is high
- A AND
B OR
C NAND
D Ex-OR
- 115 Various modules are housed in an I/O -----
- A Rack
B Chassis
C Base plate
D All of the above
- 116 Small PLC having -----input and -----output are mounted on rack
- A 20, 12
B 12,20
C 20,21
D 20,22
- 117 Large PLC is called as ----- PLC
- A Box
B Rack
C Both A and B
D None of the above
- 118 Micro PLC has -----type of structure
- A Rack
B Brick
C Box
D none
- 119 ----- module are used to inetrface DC or AC load with PLC

- A Input
B output
C Relay output
D Relay input
- 120 **PLC operate on**
A AC supply only
B DC supply only
C AC or DC Both
D None of the above
- 121 **Output is complement of input**
A AND gate
B OR Gate
C NAND gate
D NOT gate
- 122 **Control circuit operate on ----- voltage level**
A High
B Medium
C Low
D none
- 123 **Conductor seelction for power wiring is based on ----- of load and -----capacity**
A Rating , overload
B Overload, rating
C Rating , Under voltage
D None of the above
- 124 **Maintenance cost of PLC is----- then relay logic**
A high
B Very high
C low
D None of the above
- 125 **PLC can operate number of machines**

- 126 A TRUE
 B FALSE
 C None of the above
 PLC's are —— reliable then relay
- A less
 B More
 C Very less
 D None of the above
- 127 **Password lock is available in —————**
- A Relay logic
 B PLC
 C Both A and B
 D None of the above
- 128 **Information provided by Input device used in PLC will be always in form of an ——
 or———**
- A More , Less
 B High, low
 C Yes, No
 D None of the above
- 129 **ROM is a ————— memory used to store operating system.**
- A Temporary
 B Permanent
 C semi-automatic
 D Automatic
- 130 **RAM is —— memory**
- A Non - volatile
 B Volatile
 C Permanent
 D None of the above
- 131 **Type of timer available in PLC is**
- A Re-tentative type

- B Non- retentive type
C Both A and B
D None of the above
- 132 **Instruction list is -----type of language**
A Text based
B graphical
C Structure text
D None
- 133 **When input to count up counter goes true accumulator value will increase by --**
A 0
B 2
C 1
D None
- 134 **----- remains ON for a fixed period of time before turning OFF**
A TON
B TOFF
C Retentive timer
D None of the above
- 135 **Type of counter available in PLC**
A UP- counter
B Down Counter
C UP-DOWN counter
D All of the above
- 136 **Two NO connected in Series form a -----gate**
A NAND
B AND
C NOR
D OR
- 137 **NOR gate is -----of OR gate**
A Same

- B Complement
 C Both A and B
 D None
- 138 Power conversion block consist of _____ to convert AC into DC
 A Opto isolator
 B Threshold Detector
 C Bridge rectifier
 D None
- 139 Power tranformer in power supply is _____type
 A Step- up
 B Step -down
 C Auto transformer
 D None of the above
- 140 When all input are high, then output is high
 A AND gate
 B OR Gate
 C NAND gate
 D NOT gate
- 141 When accumulator value reaches the preset value the counter _____ bit will be set
 A EN
 B TT
 C DN
 D None
- 142 When accumulator value reaches the preset value the counter DN bit will be set
 A TRUE
 B FALSE
 C None
- 143 When accumulator value is equal or greater then _____ then DN bit of up-counter set to 1
 A Set value
 B Preset value

- C Peak value
D None
- 144 When input to count-Down counter goes true the accumulator value will Decreases by -----
A 1
B 2
C 0
D 3
- 145 When input to count-up counter goes true the accumulator value will increase by ----
A 1
B 2
C 0
D 3
- 146 Counter are operate on Internal clock
A TRUE
B FALSE
C None
- 147 Counter are operate on external clock
A TRUE
B FALSE
C None
- 148 When teh accumulated value is equal to preset value then ----- bit is set
A DN
B EN
C TT
D none
- 149 ----- timer holds the current elapsed time whe input turn OFF in between the operation.
A ON timer
B OFF timer
C Retentive Timer

- 150
- D None of the above
- If time base is 0.01s and preset value is 400 then timer delay is
- A 40 s
- B 4s
- C 0.04s
- D 0.4s