

- Q.28 Describe how SFRs are accessed and give examples of commonly used SFRs in 8051.
- Q.29 Give names of any five PLC manufacturers.
- Q.30 What do you mean by ON-Delay timer in PLC?
- Q.31 Explain the difference between assembler and compiles in case of microcontroller?
- Q.32 What are the differences between a microprocessor and a microcontroller?
- Q.33 Write any five applications of microcontrollers.
- Q.34 Describe the role of the EEPROM memory in a PLC microcontroller.
- Q.35 Draw the pin diagram of 8051 microcontroller.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain various addressing modes of 8051 microcontroller with examples.
- Q.37 Draw the detailed block diagram of a PLC and explain the function of each block in detail.
- Q.38 Write short note any two :
- Comparison instructions of PLCs.
 - Application of PLCs in bottling operations.
 - Interfacing keypad with 8051 microcontroller .

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**6th Sem / Elect, Eltx, Mecatronics, GE, Power
Station Engg., Elect & Eltx Engg.**

**Subject:- Programmable Logic Controllers And
Microcontrollers/ Microcontrollers And PLCs**

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 The programmable logic controllers are used in _____
- Glass and paper industry
 - Process automation plants
 - Cement manufacturing
 - All of the above
- Q.2 An AND Function implemented in ladder logic uses:
- Normally-closed contacts in series
 - Normally-open contacts in series
 - A single normally-closed contact
 - Normally-open contacts in parallel
- Q.3 The 8051 is a:
- Microprocessor
 - Microcontroller
 - Digital Signal Processor (DSP)
 - Field-Programmable Gate Array (FPGA)
- Q.4 The programming language most commonly associated with basic PLC programming is:
- c++
 - Java
 - Ladder Logic
 - Python

- Q.5 What is the size of the on-chip RAM (Data Memory) in the standard 8051 ?
 a) 64KB b) 128KB
 c) 4 KB d) 128 bytes
- Q.6 Which of the following is an example of a discrete input device for a PLC ?
 a) Temperature sensor b) Pressure Transducer
 c) Limit switch d) Flow meter
- Q.7 Which of the following is a common application of PLCs in manufacturing ?
 a) Word processing
 b) Controlling robotic assembly lines
 c) managing email servers
 d) Playing video games
- Q.8 Interrupts which cannot be ignored are known as
 a) Maskable Interrupts
 b) Non-maskable interrupts
 c) Vectored Interrupts
 d) Non-vectored Interrupts
- Q.9 How many 8-bit parallel I/O ports does the 8051 microcontroller have ?
 a) 2 b) 4
 c) 6 d) 8
- Q.10 The central processing unit (CPU) of a PLC is responsible for:
 a) Providing power to the input and output modules
 b) Communicating with other devices on a network
 c) Executing the control program and making decisions
 d) Interfacing with human operators

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 PLC stands for _____.
 Q.12 RAM stands for _____.
 Q.13 8051 microcontroller is a _____ pin IC.
 Q.14 The _____ timer in a PLC is used to delay an output action for a specific time.
 Q.15 What does PLC stand for in PLC , microcontroller ?
 Q.16 FBD stands for _____.
 Q.17 Name any two applications of PLCs.
 Q.18 _____ module in a PLC receive signals from field devices (like sensors or switches)
 Q.19 What is the clock frequency range of the 8051 microcontroller ?
 Q.20 RTC stands for _____

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 What are the advantages of PLCs over relays.
 Q.22 Explain the implementation of OR gate using a ladder diagram.
 Q.23 What is the purpose of MOV instruction in PLC ?
 Q.24 Explain the general structure of a ladder diagram in case of PLC.
 Q.25 Explain any two arithmetic instructions for PLCs
 Q.26 What is the purpose of a latch instruction in a PLC program ?
 Q.27 Explain the role of Port 0 in the 8051 and its dual functionality.