No. of Printed Pages : 4
Roll No. .....

221543

4th Sem.
Branch : Instrumentation & Control
Sub. : Microcontroller and Embedded Systems

Time : 3 Hrs. **M.M. : 60**

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (6x1=6)

Q.1 Which microcontroller family is developed by Atmel Corporation?

a) AVR b) PIC

c) ARM d) None of the above

Q.2 Which of the following is NOT a typical component of an embedded system?

a) Microcontroller b) Operating system

c) Sensors d) Display monitor

Q.3 Which instruction in the 8051 is used to rotate the accumulator left through the carry bit?

a) RLA b) RLCA

c) RRCA d) RRA

SECTION-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)

Q.23 Explain the 8051 Architecture with block Diagram. Write any four applications of it

Q.24 Describe the function of the SJMP instruction in the context of program control in the 8051 microcontroller. Explain the functions of MOV and SUB instructions in 8051.

Q.25 Explain how the register file organization differs between AVR, PIC and ARM microcontrollers and how it impacts the execution of instructions and overall performance.

Q.4 Which of the following is the correct number of interrupt sources in the 8051 microcontroller?

a) 3 b) 4

c) 5 d) 6

Q.5 PSW is _____ bit register.

a) 8 b) 16

c) C4 d) D32

Q.6 ALE stands for

a) Address Enable Latch b) Latch Enable Address

c) Address Latch Enable d) Enable Latch Address

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Expand CPU.

Q.8 The instruction CLR A in the 8051 is used to clear the carry flag. (True/False)

Q.9 _____memory is commonly used for storing program code in embedded systems.

Q.10 Expand AVR.

Q.11 The internal ROM memory of 8051 is _____kB memory.

Q.12 Expand CISC.

SECTION-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)

Q.13 Explain program counter and data pointer in 8051.

Q.14 Explain stack pointer in 8051. Write down its importance.

Q.15 What is the significance of the INC and DEC instruction in the 8051 instruction set?

Q.16 Explain the purpose of the MOV instruction in the 8051 instruction set.

Q.17 What are some common examples of embedded systems found in everyday life?

Q.18 How does real-time operating system (RTOS) differ from general-purpose operating systems in the context of embedded systems?

Q.19 Explain the key characteristics of the ARM microcontroller architecture.

Q.20 Compare the fundamental architectural differences between AVR and ARM microcontrollers.

Q.21 Write down the applications of microcontroller.

Q.22 What are the limitations of internal memory in 8051?