

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

**FOURTH SEMESTER**

**B-TECH DEGREE EXAMINATION**

**Model Question Paper**

**IC 206 MICROCONTROLLERS**

**Time: 3 hours**

**Max Mark:100**

**PART-A**

**ANSWER ANY TWO**

**QU:1**

- A] Differentiate between microcontroller and micro processor (3.5)
- B] Explain the working of 8051 oscillator and clock (4)
- C] Write a note on five addressing modes of 8051 and explain with examples (7.5)

**QU:2**

- A] Draw the block diagram of 8051 microcontroller and explain each block in detail. (7.5)
- B] What are assembler directives? Explain any four of them. (4)
- C] Discuss any four data transfer instructions with suitable examples (3.5)

**QU:3**

- A] Explain the use of SFRs (3.5)
- B] Write a note on stack and stack pointer (4)
- C] Compare machine language, assembly language and high level language? Explain the assembly language program format. (4)
- D] Discuss any four bit processing instructions (3.5)

**PART-B**

**ANSWER ANY TWO**

**QU:1**

A] Write an assembly language program of 8051 to get a data from port 0 and send to port 1 continuously (3.5)

B] Write an 8051 C-program to toggle all the bits of P1 continuously. (4)

C] Write a note on serial communication and serial buffers in 8051 and also explain different modes of serial data transmission in microcontroller with an example (7.5)

**QU:2**

A] Write a program to generate a square wave in the 5<sup>th</sup> pin of port 2 continuously using timer1, check timer flag by polling (7.5)

B] Write a note on RS232 protocol (3.5)

C] Write a note on baud rate and explain the importance of baud rate in serial communication?  
(4)

**QU: 3**

A] Write a C program for 8051 to transmit the letter 'A' serially and continuously with baud rate 9600 (4)

B] Write a note on timer modes in 8051. Write a simple example for auto reload type timer mode programming in 8051? (3.5)

C] Program the 8051 in C to receive bytes of data serially and out them in P1. Set the baud rate at 4800, 8-bit data, and 1 stop bit. (4)

D] Write an assembly language program to receive the data which has been sent in serial form and send it out to port 0 in parallel form. Also save the data at RAM location 60H (3.5)

**PART-C**

**ANSWER ANY TWO**

**QU:1**

- A] Assume the interrupt priority set by the instruction “MOV IP, #00001100B . Discuss the sequence in which the interrupts are serviced. (5)
- B] Write a note on memory address decoding (5)
- C] Explain the interfacing details of ADC with 8051 microcontroller and explain the role of ALE pin in the ADC. (10)

**QU:2**

- A] Write a note on external memory and external memory moves in 8051 (10)
- B] Write a note on I<sup>2</sup>C protocol (4)
- C] Write a note on Interfacing sensors and details with any simple example (6)

**QU:3**

- A] What is the purpose interrupt priority SFR in 8051? (5)
- B] Discuss the interrupt enable register and explain the steps for enabling an interrupt (5)
- C] Explain matrix keyboard interfacing with 8051 (5)
- D] Explain how relays can be interfaced with 8051 (5)