

SEAT No. \_\_\_\_\_

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## SARDAR PATEL UNIVERSITY

M.Sc. (Instrumentation & Control) Semester I Examination  
PS01CINC22 (8- BIT MICROPROCESSOR AND MICROCONTROLLER SYSTEMS)

Monday, 9<sup>th</sup> April 2018

10.00 am to 1.00 pm

Total Marks: 70

- Que.1 Choose a correct option for the questions given below: 8
- In 8085, which interrupt has lowest priority?
    - RST 5.5
    - INTR
    - TRAP
    - RST 7.5
  - What will be the contents of register A after the following instructions are been executed.  
MVI B, 8D  
MVI A, 7F  
ADD B
    - 0C and Carry flag is set
    - 0C and Carry flag is reset
    - 0A and Carry Flag is set
    - 0A and Carry flag is reset
  - \_\_\_\_\_ Section of 8085 microprocessor decode machine code of instruction.
    - ALU
    - Control Section
    - Instruction decoder
    - Interrupt Control
  - In 8255 which signal is generated by the peripheral to indicate that it has transmit data or written data to input port.
    - Strobe input
    - Input buffer full
    - Interrupt request
    - Interrupt enable
  - Which of the following statements will add the accumulator with register R0?
    - ADD @ R0, A
    - ADD A, @R0
    - ADD R0, A
    - ADD A, R0
  - The content of the accumulator after executing following instruction will be?  
MOV A, #55 H  
ORL A, 01 H
    - 1B H
    - 55 H
    - 3B H
    - 4B H
  - INC instruction affect,
    - CY Flag
    - AC Flag
    - OV Flag
    - None of these
  - If DPTR = 20FF H, the content of DPH after execution of instruction INC DPTR will be,
    - 20 H
    - 21 H
    - 00 H
    - FF H

C.P.T.O.)

|       |  |   |
|-------|--|---|
| Que.2 | Answer any seven in brief:   |   |
|       | A. Explain LDA address and STA address data transfer instructions in 8085.   | 2 |
|       | B. What is the function of GATE and CLK pin in 8254 programmable timer?  | 2 |
|       | C. What are difference between Hardware and Software Interrupts?   | 2 |
|       | D. What will be the control word to initialize 8255 in following modes:<br>Port A- Mode 0 – Input, Port B – Mode 0 – Output,<br>Port Cupper – Mode 0 – Output, Port Clower – Mode 0 – Input. | 2 |
|       | E. What is the significance of ALE pin in 8085 Microprocessor?   | 2 |
|       | F. What is the difference between microprocessor and microcontroller?  | 2 |
|       | G. What are program counter and data pointer?  | 2 |
|       | H. Define bits in PSW.   | 2 |
|       | I. Describe the function and format of following SFRs.<br>TMODE (Timer mode), TCON (Timer Control).  | 2 |
| Que.3 | A Draw and explain the block diagram of 8085 microprocessor.   | 6 |
|       | B Discuss Arithmetic instructions of 8085 system with illustration.  | 6 |
|       | OR   |   |
|       | B (i) Write a program to perform 16 bit addition on following data 1234 H and 4321 H, store the answer in H and L register.  | 3 |
|       | (ii) Write a program to transfer 16 bytes of data stored in location at C250 to C25F to new memory location C300 onwards.  | 3 |
| Que.4 | A Explain with waveforms the mode-2 (Pulse generator) of 8254.   | 6 |
|       | B Draw block diagram of 8259 and explain each block.   | 6 |
|       | OR   |   |
|       | B Explain 8255 I/O ports in mode 1 with suitable timing wave form.   | 6 |
| Que.5 | A Describe the various operating modes of the timer/counters in 8051 Microcontroller.  | 6 |
|       | B State the physical differences between the port 0, 1, 2 and 3 i/o pins.  | 6 |
|       | OR   |   |
|       | B (i) Calculate number of pulses required for 500 $\mu$ s time delay?<br>(Consider crystal frequency is 11.0592 MHz).  | 3 |
|       | (ii) List the types of interrupts, and the interrupt control registers.  | 3 |

- Que.6 A Explain different Addressing modes in 8051. 6
- B (i) Write a program to add three numbers stored at internal RAM address 10H, 11H & 12H and store the lower byte of result into internal RAM address 20H & Upper byte into 21H. 3
- (ii) Swap the nibble of R2 and R3 so that the low nibble of R2 swaps with the high nibble of R3 and the high nibble of R2 swaps with the low nibble of R3. 3
- OR
- B Describe all the logical instructions in 8051. 6



