328454 (28)

BE (4th Semester)
Examination, Nov-Dec 2021
Branch : Et & T

MICROPROCESSOR AND INTERFACES (NEW)

Time Allowed : Three Hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : All questions are compulsory. Part (a) is to be answered compulsorily and to be answered in short. Answer any two parts out of (b), (c) and (d). Part (a) of each question carries two marks whereas rest of the parts carry seven marks each. The microprocessor under consideration is Intel 8085 microprocessor. Any omission or

misprint in the question may be rationally assumed.

Q. 1. (a) Why the Instruction Register of 8085 is of 8-bits ?

(b) Draw the timing diagram of an instruction which can be used to initialize the stack pointer indirectly.

(c) Mention the general features of the registers available in 8085 microprocessor. Classify the registers of 8085 and mention their functions in brief.

(d) What are the control signals supported by 8085 microprocessor ? Mention two schemes to generate secondary control signals from primary control signals.

Q. 2. (a) Write instructions to clear accumulator and flag register without using any ALU related instruction.

(b) Write a technical note on assembler directives.

• (c) 256 bytes are residing at locations starting from 8000 H. Write an assembly language program to add only the bytes which are in valid BCD-format (the nibbles of a byte in valid BCD format should not exceed 9) and store the result (two bytes) at locations 9000 H and 9001 H. Use subroutine in your program.

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(d) Write an assembly language program of 8085 to multiply a byte residing at 8000 H by another byte residing at 8001 H. Assume both the bytes are in unsigned binary number format. Store the result (two bytes) at 9000 H and 9001 H. Include the condition that if either of the multiplicand or multiplier is zero or both are zero, the result must be zero. Use repeated addition algorithm in your program.

Q. 3. (a) Mention one advantage and one disadvantage of linear select decoding.

(b) Using program controlled I/O technique input 256 bytes of data from a keyboard connected through Port A and get the same data printed through a printer connected to

Port B of a PID. Assume as many ports in the PID as required in implementing the same. Draw the necessary interfacing diagram and write necessary assembly language program of 8085 to achieve the targeted job. Assume that the ports are already initialized as required. Hence initialization instructions for the ports need not to be written.

(c) Providing a typical example state the problem that may occur if decoders are not used in selecting memory devices. State how the problem can be overcome by using suitable decoder.

P.T.O.

(d) What are the various addressing schemes of I/O ports ? Bring out the differences between them (at leat six).

Q. 4. (a) Mention atleast four different ways by which RST 5.5 interrupt can be disabled.

(b) A word (two bytes) is residing at locations 8000 H and 8001 H. Write a program to output the word serially through SOD pin of 8085 using SIM instruction starting with the msb with a bit interval of 0.5 msec and a byte interval of 1.0 msec. Assume that a subroutine named 'DELAY' is available which can provide a delay of 0.50 msec. (Note : bit interval is the time interval in

between the outputting of two consecutive bits and byte interval is the interval in between the outputting of the two consecutive bytes).

(c) Design a real time clock which can count upto one minute using 8085. Assume that the CPU is being interrupted at the rate of 10 pulses/second at RST 6.5 pin. Display the seconds and $1/10^{th}$ of a second at the display devices connected through Port A and Port B respectively of a PID. As the display is to be made for a clock, hence the display must be in BCD format. The maximum count in the seconds should not exceed 59 after which it should be reset

to 00. Draw the necessary interfacing diagram.

(d) Write a technical note on non-vectored interrupt supported by 8085 microprocessor.

Q. 5. (a) Mention the features of Mode 0 of 8255 PID.

(b) Describe the architecture of 8251 USART.

(c) Name the modes being supported by 8253. With suitable timing diagram, explain at least three modes of operation of 8253.

(d) Write a program to generate a burst of 256 square pulses of frequency 2 kHz using the timer of 8155. Assume that the timer in frequency to be 2 MHz.

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