Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018
Course Code: EC305
Course Name: MICROPROCESSOR & MICROCONTROLLERS (EC)

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks
Marks

1 a) The internal architecture of 8085 microprocessor has internal units capable to execute a program stored in external memory. Justify with relevant features and diagram. (8)

   b) Differentiate between register addressing and register indirect addressing in 8085 microprocessor and justify with sample instructions. (4)

   c) Identify the peripheral chip to interface 8085 microprocessor to communicate with serial I/O devices and mention the different sections in the peripheral chip. (3)

2 a) Illustrate with relevant timing diagram the sequence of operations involved for fetching and executing the instruction MVI C, 08H in 8085 microprocessor. (7)

   b) Bring out the significance of the signals S0, S1 and $\overline{IO}/M$ with reference to various operations of 8085 microprocessor. (4)

   c) Mention the addressing capability of 8085 microprocessor. Justify your answer . (4)

3 a) Suggest a suitable peripheralinterface to input the status of 4 switches(ON/OFF) connected to 8085 microprocessor and indicate their status by 4 LEDs connected to 8085. Illustrate the above with schematic. (8)

   b) How many modes of operations are possible in 8253 interface IC? List out the different functions which can be achieved in those modes. (7)

PART B
Answer any two full questions, each carries 15 marks

4 a) How does the internal architecture of 8086 microprocessor enable high speed execution of instruction? (5)

   b) Compare the features of 8086 processor and 80286 processor. (3)

   c) Write an assembly language program for 8051 microcontroller to find out how many bytes are zeros out of 30 bytes stored in memory locations starting from RAM location 45H. (7)

5 a) Differentiate between microprocessorand microcontroller. (3)

   b)   Mention the specific features of 8051 microcontroller architecture. (4)

   c) Compare the various addressing modes in 8051 microcontroller and illustrate with examples. (8)

6 a) What is the type of memory architecture for 8051 microcontroller? Illustrate the (9)

memory organisation of 8051 with necessary memory mapping schematic.

b) Differentiate between the operations involved while executing the 8051 (6)
instructions MOVX A,@DPTR and MOVC A,@A+DPTR

PART C
Answer any two full questions, each carries 20 marks

7 a) What are the features of the different modes of operations of 8051 timers?   (8)

b) Illustrate how mode setting of counters/timers of 8051 is done.   (6)

c) Show the schematic diagram of a 4-digit dynamic LED display system   (6)
interfaced to 8051 microcontroller.

8 a) Mention the different interrupt sources of 8051 microcontroller and their order of   (6)
priority.

b) Illustrate how an 8-bit ADC   of 8-channel input is interfaced to 8051 with a   (7)
schematic.

c) Write an assembly language program for 8051 to generate a staircase waveform   (7)
with 15 steps.

9 a) Compare the different modes of configuring the serial port of 8051.   (6)

b) Illustrate the interfacing of a stepper motor to 8051 microcontroller with necessary   (7)
schematic diagram.

c) Write an assembly language programme to rotate a stepper motor interfaced to   (7)
8051 microcontroller clockwise continuously.

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