Code No: 126AK

$\boxed{\textbf{R13}}$

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, October/November - 2016
MICROPROCESSORS AND INTERFACING DEVICES
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a)	List the advantages of memory segmentation.	[2]
b)	What physical address is represented by 4320:561E?	[3]
c)	How is 8255 configured if its control register contains $9B_H$?	[2]
d)	Explain the differences between synchronous and asynchronous data transfer.	[3]
e)	Give the RS 232 Standard details.	[2]
f)	What is the function of Stack and stack register?	[3]
g)	Draw the hardware diagram to acquire data using 8-bit ADC.	[2]
h)	Explain push and POP instructions in 8051.	[3]
i)	Draw the read cycle timing diagram for 8086 under minimum mode of operation.	[2]
j)	Explain the following instructions of 8051 mc	

   i) DJNZ   ii) CJNE   iii) RLC.   [3]

PART - B
(50 Marks)

2.a) Draw the Flag of register diagram of 8086 and explain the function of each flag.
  b) Explain the function of following pins of 8085.   [5+5]
     i) SID
     ii) READY
     iii) $\overline{INTA}$

OR

3.a) Draw the flag register format and state when each flag is set.
  b) Explain the following pins of 8086.   [5+5]
     (i) MN/$\overline{MX}$ (ii) $\overline{TEST}$ (iii) $\overline{BHE}$ (iv) $\overline{DEN}$

4.a) Write an 8086 assembly language program to multiply two 16 bit unsigned numbers to provide a 32 bit result.

  b) Explain the addressing modes of 8086 with examples.   [5+5]
OR
5.a) Explain the function of the following instructions.
     (i) AAD   (ii) MOVSB   (iii) LAHF
     (iv) JNZ   (v) LEA   (vi) DAD
  b) Write an assembly language program (ALP) which counts the number of A's and a's in a given string of characters.   [5+5]

6.a) Draw the functional block diagram of DMA controller and explain operation.
  b) What is the need for programmable interrupt controller? Explain how the interrupting mechanism is achieved. [5+5]

OR

7.a) Write a program to interface 4×4 keyboard to 8086 through ports A and B operating at I/O base addresses 0FFF9. Draw the necessary interface details.
  b) Interface 12-bit ADC to 8086 through 8255 I/O port. Give the interfacing details. [5+5]

8.a) Explain about communication standards.
  b) Write a program to generate 1 KHZ rectangular wave with duty cycle 40% using serial port. [5+5]

OR

9.a) Assuming the contents of the mode register of 8251 are 00010100, determine the character and message formats of the 8251 serial communication.
  b) Explain the TTL to RS 232C Conversion procedure. [5+5]

10.a) Explain SCON register programming in 8051.
  b) Write a program to multiply the data in RAM location $3A_H$ by the number 11_H. Put the result in R_4 and R_5 registers. [5+5]

OR

11.a) Explain the port structure of 8051 and explain the operation of the serial port in various modes.
  b) Interface external 8 K memory to 8051 microcontroller. Draw the necessary diagram. [5+5]

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