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RM-7757

B. E. IV (Sem. VIII) (Electrical) Examination

May / June – 2010

Advanced Microprocessor & Its Application (Elective)

Time : **3** Hours] [Total Marks : **100**

Instruction :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 4 (Sem. 8) (Electrical)**

Name of the Subject :

☛ **Adva. Microprocessor & Its Application (Elective - 1)**

☛Subject Code No. : **7 7 5 7** ☛Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Attempt **all** questions.

(3) Answer to the **two** sections must be written in **separate** answer books.

(4) Figures to the **right** indicate marks.

(5) Assume data wherever required **necessary**.

SECTION - I

Q-1 (a) Explain the functionality of the following registers in 8086: **(4)**
(i) CX (ii) DI

(b) Assume that the state of 8086's registers and memory locations are as follows just prior to execution of SHL BYTE PTR [SI][DI], CL instruction. **(4)**
CX=0604H , DI=0200H , DS=0B00H , BX=0300H , SI=0100H,
[DS:0300H]=55H
[DS:0301H]=5BH
Compute the physical address of the destination operand of above instruction. What will be the content of the destination memory location after execution of above instruction?

(c) Explain the function of the 'D' flag in 8086. **(2)**

(d) Write equivalent string instruction sequence for the following: **(2)**
MOV AL , [SI]
MOV [DI] , AL
DEC SI
DEC DI

(e) Check if the following instruction statements are true or false. If false, suggest the correction. **(4)**
(i) SHL AX, 04
(ii) MOV AL, WORD PTR [SI]
(iii) MOV [DI], [SI]
(iv) CMP BYTE PTR [DI] , AX

Q-2 (a) Write an assembly language program with the following conditions: **(10)**

(i) Print a massage "Enter number :" on the screen to prompt user to enter two digit number between 00 to 99 .

(ii) Through keyboard input , take in two numbers as above and store the numbers in appropriate variables in memory.

(iii) Print a massage "Enter Operator :" on the screen to prompt user to enter a single operator ('+' or '-' or '*').

(iv) Through keyboard input , take in single operator and store in memory.

(v) Perform the operation(addition,subtraction or multiplication) on two numbers depending upon the operator entered by the user.

(vi) Display the string "Result =" on the screen and display the actual result of operation.

Make use of macro and procedure for different task to be performed.

(b) Explain difference between macro and procedure.Give advantages and disadvantages of each. **(4)**

(c) What is the use of stack? **(2)**

OR

Q-2 (a) Write an assembly language program with the following conditions: **(10)**

(vii) Print a massage "Enter number n :" on the screen to prompt user to enter a single digit number (0 to 8) .

(viii) Through keyboard input , take in single digit number above in variable n .

(ix) Print a massage "Enter number r :" on the screen to prompt user to enter a single digit number (0 to 8) .

(x) Through keyboard input , take in single digit number above in variable r .

(xi) Compute nPr.

(xii) Display the string "Result of nPr =" on the screen and display the actual result.

Make use of macro and procedure for different task to be performed.

(b) How a procedure can be designed as re-entrant procedure. Explain with an example. **(6)**

Q-3 Attempt any three. **(18)**

(a) (i)What does the REP prefix accomplish and with what type of instruction it is used?

(ii)Write a short program that uses the XLAT instruction to convert the BCD numbers 0-9 into ASCII-coded numbers 30H-39H. Store the ASCII-coded data in a table located within the data segment.

(b) Write a program to arrange five bytes stored in memory in descending order at the same memory location.

(c) There are three lamps indicating different temperature.Write a program that reads temperature from the port.

If temperature is below 30° c, yellow lamp is turned ON.

If temperature is above or equal to 30° c but below 40° c, green lamp is turned ON.

If temperature is above or equal to 40° c , red lamp is turned ON.

(d) Describe the difference between JMP and CALL instruction.
Explain RET n instruction.

(e) Explain in brief about following INT functions:
(i) INT 21H AH=0AH (String input)
(ii) INT 10H AH=02H (Set Curser Position)

SECTION - II

Q-4 (a) Explain the functions of following pins of 8086 MPU. **(6)**
(1)INTR, (2) TEST, (3) MN/MX

(b) Draw and explain memory write bus cycle with two wait states inserted in it for 8086 based system. **(7)**

(c) What would be the status of DT/R & DEN for reading as well as writing bus cycle. **(3)**

Q-5 (a) Why wait state generator is needed ? Explain the operation of wait state generator with its associated circuitry. **(8)**

(b) Write & explain control word format of 8255 & explain its BSR mode. **(8)**

OR

Q-5 (a) Explain memory addressing scheme in 8086 using A0 & BHE signals. What is the purpose of ALE signals. **(8)**

(b) Explain & write all four ICWs of 8259 considering two cascaded PICs. **(8)**

Q-6 (a) Attempt any THREE **(18)**

(1) Draw & explain each block of 8254.

(2) Describe the function of 8086 queue. How does the queue speed up processing.

(3) An ASCII keyboard needs to be interfaced with 8086 using interrupt. Suggest and explain scheme. Write algorithm for main line & its interrupt service procedure.

(4) Explain single step & Type -2 interrupt.

(5) Draw & explain address decoding circuit using PROM decoder 3625 for 4 K (address range 0000h to 0FFFh) using RAM chip 2142
