CBCS SCHEME

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17CS44

Fourth Semester B.E. Degree Examination, Aug./Sept.2020
Microprocessor and Microcontroller

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1	a.	Explain with a neat block diagram basic structure of 8086 microprocessor.	(10 Marks)
	b.	Compare 8086, 80486 and Pentium microprocessor.	(05 Marks)
	c.	List out the flags of 8086 microprocessor.	(05 Marks)

OR

2	a.	Explain with suitable examples various addressing modes of 8086 microprocessor.	(07 Marks)
	b.	What is assembler directive? Explain the following assembler directives. (i) Program organization directives (ii) Data definition directives (iii) Program end directives.	(07 Marks)
	c.	Explain the control transfer instructions of 8086 microprocessor or processor control instructions.	(06 Marks)

Module-2

3	a.	Explain the following with an example for each: (i) DAA (ii) IDIV (iii) ADD (iv) PUSH	(08 Marks)
	b.	Write a program to convert 34 and 37 ASCII numbers into packed BCD numbers.	(06 Marks)
	c.	Explain the following rotate instructions with suitable examples. (i) ROL (ii) ROR (iii) RLC (iv) RRC	(06 Marks)

OR

4	a.	Explain the following, with a code of BIOS INT10H programming mode of interrupts. (i) Clearing the screen (ii) Sets the cursor at the center of the screen	(06 Marks)
	b.	Explain the following DOS interrupts 21H with an example for each. (i) Int 21H option 09 (ii) Int 21H option 02	(06 Marks)
	c.	Define macro and write the syntax of macro definition for the following functions: (i) Setting the cursor position (ii) Display string (iii) Clearing the screen	(08 Marks)

Module-3

5	a.	What is FlashROM? Explain the functional block diagram of 6116 SRAM.	(06 Marks)
	b.	List out at least five differences between SRAM and DRAM.	(05 Marks)
	c.	Explain how to access the even and odd words in 8086 microprocessor with a suitable diagram.	(04 Marks)
	d.	Explain 74LS138 decoder with a neat diagram.	(05 Marks)

OR

6 a. Assume that we have 4 bytes of hexadecimal data 25H, 62H, 3FH and 52H.
   - (i) Find the checksum byte
   - (ii) Perform the checksum operation to ensure data integrity
   - (iii) If the second byte 62 has been changed to 22 show the checksum detects the error.

   (06 Marks)
   b. Explain each pin of 8255 programmable peripheral interface device with its neat pin diagram. (10 Marks)
   c. Explain the basic I/O modes of 8255 device. (04 Marks)

Module-4

7 a. What is RISC machine? Explain RISC design philosophy. (06 Marks)
   b. Explain the instruction set for embedded system. (05 Marks)
   c. Explain with neat sketch AMBA bus protocol. (05 Marks)
   d. Explain embedded system software. (04 Marks)

OR

8 a. Explain ARM core data flow model functional units with suitable diagram. (07 Marks)
   b. Explain current program status register with a bitwise manipulated operation with a neat sketch. (05 Marks)
   c. Explain complete ARM register set. (08 Marks)

Module-5

9 a. Explain the concept of Barrel shifter with ALU of ARM processor along with logical left shift operation. (08 Marks)
   b. Explain the following logical instructions of ARM processor with an example.
   (i) ORR   (ii) BIC   (iii) CMP   (06 Marks)
   c. Explain single register transfer instruction of ARM processor. (06 Marks)

OR

10 a. List out the addressing methods for stack operations of ARM processor. Explain STMFD instruction of ARM processor. (07 Marks)
   b. List out and explain SWAP instruction of ARM processor with examples. (06 Marks)
   c. Explain software interrupt instructions of ARM processor with examples. Explain how SWI handler can be implemented. (07 Marks)

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