

Time: 3 Hours

**DECEMBER 2013**

Max. Marks: 100

*PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.*

**NOTE: There are 9 Questions in all.**

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (2×10)**

- a. Which of the following microprocessor is not a 16-bit microprocessor?
- (A) 8086 (B) 80286  
(C) 8085 (D) 80186
- b. Intel 8086 microprocessor operates at a frequency of
- (A) 1MHz and 50% duty cycle (B) 3MHz and 25% duty cycle  
(C) 10MHz and 33% duty cycle (D) 10MHz and 66% duty cycle
- c. The data bus of any microprocessor is always \_\_\_\_\_
- (A) Unidirectional  
(B) bi-directional  
(C) Either unidirectional or bi-directional  
(D) None of the above
- d. Compare to BIOS services execution speed of DOS operating system service is \_\_\_\_\_
- (A) Faster (B) slower  
(C) Similar (D) none of these
- e. Intel 80486 is a \_\_\_\_\_ bit microprocessor
- (A) 32 bits (B) 16 bits  
(C) 4 bits (D) 8 bits
- f. The tool used to convert source program into an object program is \_\_\_\_\_
- (A) an assembler (B) a loader  
(C) a linker (D) a monitor

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- g. Direction flag is used with \_\_\_\_\_
- (A) Branch Instruction                      (B) Stack Instruction  
(C) Arithmetic Instruction                (D) String Instruction
- h. The test instruction perform bitwise \_\_\_\_\_ of the two operands
- (A) OR    (B) AND  
(C) XOR    (D) None of these
- i. Total number of controlled flag used in 8086
- (A) 3    (B) 5  
(C) 8    (D) none of these
- j. Clock generator of 8284 also generates
- (A) Test    (B) Ready  
(C) ALE    (D) None of these

**Answer any FIVE Questions out of EIGHT Questions.  
Each question carries 16 marks.**

- Q.2** a. Explain the architecture of 8086 with suitable diagram. (8)
- b. Draw the register organisation of 8086 & explain typical application of each register. (8)
- Q.3** a. Explain the following instructions with eg: and indicate its addressing mode. (8)
- (i) MOV AX,BX  
(ii) XCHG BL,83H[SI]  
(iii) AAD 52H[BX], CX  
(iv) POP [SI]
- b. Explain the flags of 8086 and write the instructions for set and reset. (8)
- Q.4** a. What is an interrupt? Explain hardware and software interrupt of 8086. (8)
- b. What is conditional and unconditional jump instruction? Explain with example. (8)
- Q.5** a. What are the functions of the following pins of numeric co-processor 8087: (6)
- (i)  $\overline{\text{BHE}}/S7$   
(ii) READY  
(iii) INT  
(iv) RESET

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- b. Describe the maximum mode signals of 8086 and 8087 signals with the same name. (6)
- c. Explain any two compare instructions used in 8087 instruction bit. (4)
- Q.6** a. Write an 8086 assembly language program to sort in descending order using selection sort. (6)
- b. Write an 8086 assembly language program to perform addition and subtraction of two signed numbers which are 64 bit in size. (6)
- c. Write the features of linking and single step execution in assembly program. (4)
- Q.7** a. Write an 8086 assembly language program to compute factorial of a given 8 bit integer at a byte location using recursion. (8)
- b. Explain the various method of accessing IBM PC hardware. (4)
- c. Explain various PTR directive used in 8086. (4)
- Q.8** a. Write a C program using DOS function to obtain size (in bytes) of a given file. Display the message indicating size of file on the screen. (8)
- b. Write the approach methodology & program in 'C' to create a subdirectory using DOS interrupt. (4)
- c. Write the overview of 8087 coprocessor. (4)
- Q.9** a. Write short notes on any **Two**: (8)
- (i) 80286
- (ii) 80386
- (iii) 80486
- b. Explain the architecture of Pentium processor with suitable block diagram. (8)