

- N.B.: (1) All questions are compulsory.  
(2) Figures to the right indicate maximum marks.  
(3) Answers to the two sections must be written in the same answer-book.

**SECTION I**

- Q1 A Explain the RIM and SIM instructions used in 8085 instruction set and explain how they are used in the serial data communication in 8085. 06
- B Draw and explain the block diagram of the IC 8155. Explain the different modes of operation of its timer section. 07
- OR**
- Q1 P With the help of neat diagram explain how 8-bit D/A converter can be interfaced to buses of the 8085 microprocessor chip. 07
- Q Explain in brief the I/O modes of operation of IC 8255. 06
- Q2 A Explain the Request and Bus Grant in Minimum Mode and Maximum Mode of 8086  $\mu$ P with the help of the timing diagrams. 06
- B Explain the meaning of the following 8086 instructions with suitable examples:  
(i) LAHF (ii) SCASB (iii) XLAT 06
- OR**
- Q2 P With the help of a neat diagram, explain the maximum mode of 8086  $\mu$ P. 06
- Q Explain the following Machine Controlled Instructions of 8086  $\mu$ P:  
(i) WAIT (ii) ESC (iii) LOCK 06
- Q3 A Explain the functions of i)  $\overline{EA}$  pin ii) ALE pin in 8051 microcontroller. 04
- B Explain the various addressing modes of 8051 with the help of suitable examples. 09
- OR**
- Q3 In 8051 microcontroller how many pins are designated as I/O port pins? Which ports are bit addressable? Explain the port structure of P0. Find the machine cycle for a) XTAL=11.0592MHz, b)XTAL=16MHz. 13

**SECTION II**

- Q4 A Explain the power saving options (i) Idle mode (ii) Power Down mode in Atmel microcontroller. 06
- B Explain the logic of pulse width measurement using Atmel microcontroller 89C2051. Explain the term Watchdog Timer in this microcontroller. 07
- OR**
- Q4 P Distinguish between built-in -precision analog comparator in 89C2051  $\mu$ C and any 07

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other external comparator. Explain the working of the built-in precision analog comparator in 89C2051.

- Q Explain the logic of sine wave generation using 89C51. Write a program for the same. 06
- Q5 A Give an account of the PIC reset action. 06
- B Explain with the help of an example any three of the following instructions of the PIC microcontrollers: 06  
i) movf f, F(W), ii) btfsc f, b , iii) sublw k , iv) incfsz f, F(W).
- OR**
- Q5 P Describe the various interrupts available in PIC 16C61/71. 06
- Q Give functional description of the pin signals and features of the PIC 16C71. Explain oscillator connections for the PIC. 06
- Q6 A Design a digital thermometer having a temperature range of 0 - 127°C using a PIC microcontroller which has an built-in ADC. Use LM 35 as a temperature sensor, which has an output of 10mv/°C. The least count of the digital thermometer should be 0.5°C. 06
- B Write short notes on SPP, EPP and ECP. 06
- OR**
- Q6 P Explain the three control signal lines of an LCD module; “Enable” (EN), “Register Select” (RS), and Read/Write” (RW). 06
- Q Explain the working of an Incremental Optical Shaft Encoder in detail. 06
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