

Time: 3 Hours

Marks: 80

Note:- Question no. 1 is compulsory.

Answer any three out of remaining questions.

Figures to right indicates full marks.

Assume suitable data wherever necessary.

Q.1. Answer any four

(20)

- a) Explain following instructions of 8051 microcontroller with example.
 - i) MOVX ii) CJNE iii) JB iv) AJMP v) SWAP
- b) Draw and explain the PSW register of 8051 microcontroller.
- c) Compare RISC and CISC architectures.
- d) Draw interfacing diagram of 8051 microcontroller and DC motor. Explain the logic to rotate motor in clockwise and counter clockwise direction.
- e) Draw APSR for ARM Cortex M3 and explain.

Q.2. a) Draw and Explain the port structure of 8051 microcontroller. (10)

- b) Using CJNE instruction write a program to find how many positive numbers and negative numbers are there in an array from location 030H to 03AH? (10)

Q.3. a) Draw and explain the internal RAM memory structure of 8051 microcontroller. Write an assembly language program to perform read and write to the internal RAM. (10)

- b) Discuss NVIC and MPU of ARM Cortex M3 processor. (10)

Q.4. a) Interface temperature sensor LM35 with 8051 microcontroller and write assembly language program to display the temperature (2 digit) on 7 segment display. (10)

- b) Explain operation modes and states of ARM Cortex M3 processor with suitable diagram. (10)

Q.5. a) Design a scheme using 8051 to accept input from 4 x 4 keyboard and display the key number on the LCD display. Write program using assembly language for the same. (10)

- b) Explain interrupt structure of 8051 with suitable diagram. Hence explain all SFRs associated with interrupt. (10)

Q.6. a) Draw and interfacing diagram of 8051 microcontroller with DAC and write an assembly language program to generate triangular waveform. (10)

- b) Discuss 8051 Timer SFRs and write a program in assembly language to generate delay of 10msec. Show required calculations for the same. (Crystal = 11.0592MHz) (10)
