2021

COMPUTER SCIENCE — GENERAL

Paper : DSE-B-1

(Embedded Systems)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer ***question no.*** **1** and ***any four*** questions from the rest.

1. Answer ***any five*** questions : 2×5

(a) What is the size of internal program memory of MCS-51 ? What is the maximum size if an external memory is attached?

(b) Name at least four Special Function Registers (SFR).

(c) Give an example of direct addressing with respect to MCS-51.

(d) What is the difference between CY and OV flags of PSW related to MCS-51 ?

(e) Which part of the internal RAM is related with PUSH and POP instructions?

(f) What is maximum length of jump possible in case of SJMP? Justify your answer.

(g) How many bytes of forward jump are possible for any DJNZ instruction?

(h) Give examples of ANL instruction related to MCS-51.

2. (a) Describe the internal Architecture of MCS-51 with a suitable diagram.

(b) What is the purpose of RET instruction? 7+3

3. (a) What is the difference between Concurrent and Sequential Statements in VHDL?

(b) Explain the instruction: XCHD A, @R0 with example and proper illustration. 5+5

4. (a) Write a short note on memory organization of MCS-51.

(b) Write an assembly language program to find out number of 1's in a byte, available in internal data memory location 50H. Store the result in the accumulator itself. 5+5

5. (a) Explain the working of Port registers of MCS-51 with a suitable diagram,

(b) What is PCON? Explain its function. 7+3

6. (a) What are the different types of bit oriented program jumps in MCS-51? Explain in brief with a suitable example and a diagram.

(b) What is Hardware and Software key de-bouncing? Explain with suitable examples. 7+3

7. (a) Explain stack operation in MCS-51 with proper illustrations.

(b) What is the difference between function and procedure in VHDL? Give example. 5+5

8. (a) What is the difference between a Timer and a Counter?

(b) Explain the different modes of serial communication possible with respect to MCS-51. 3+7