E 2856 (Pages : 3) Reg. No.....

Name.....

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, MARCH/APRIL 2012

Fourth Semester

Vocational Course—APPLICATIONS OF MICROPROCESSORS

(For the Vocational Subject Applied Electronics of Model—II Physics)

Time : Three Hours Maximum Weight : 25

Time allotted for the examination is 3 hours.

Answer all questions in Part A, any **five** *from Part B, any* **four** *from Part C, any* **two** *from Part D. Candidates can use Scientific, Non programmable calculators / Mathematical tables.*

Part A

Answer **all** *questions in this Part. This Part contains 4 bunches of 4 objective / one word answer type questions. For each bunch, Grade A will be awarded if all the 4 answers are correct, B for 3, C for 2, D for 1 and E for 0. Weight 1 each for every bunch.*

Bunch 1 (Choose the most appropriate alternative)

1 Which of the following is true ?

(a) Intel 8080 was the ancestor is Z 80

(b) Z 80 was the ancestor of Intel 8085.

(c) Intel 8080 was the ancestor of Intel 8085.

(d) Intel 8085 was the ancestor of Intel 8080.

2 Consider the following statements :

(1) In 8085 address and data buses are multiplexed.

(2) In Z 80 address and data buses are multiplexed.

(3) In Z 80 address and data buses are not multiplexed.

(4) Z 80 has 16 bit address bus and 8 bit data bus.

Which of the above statements arecorrect ?

(a) 1 and 2 only (b) 1, 3 and 4 only.

(c) 1, 2 and 4 only. (d) 2 and 4 only.

3 The stack pointer in 8051 is ———— bit register.

(a) 4. (b) 6.

(c) 8. (d) 16.

4 The size of volatile RAM in 8051 is ————

(a) 64 bytes. (b) 128 bytes.

(c) 256 bytes. (d) 512 bytes.

Turn over

Bunch 2 (State whether True or False)

5. In 8085 the stack pointer indicates which memory location is to be accessed.
6. ALE signal comes out of the 8085 and goes to memory chip.
7. 8051 can operate with a 12 MHz clock and is sometimes called bit and byte processor.
8. The accumulator in 8051 is a 16 bit register.

Bunch 3 (State whether True or False)

9. The stack pointer in 8051 is a 8 bit register and is initialised to 07 H after reset.
10. 8051 contains 128 bytes of data memory and 20 special function registers.
11. The serial data transfer can either be synchronous or asynchronous.
12. Each peripheral has its own associated interfacing devices or communication links for interfacing it with the CPU.

Bunch 4 (Fill in the blanks with appropriate words)

13. ———— Mode of 8255 allows the bidirectional data transfer over a single 8 bit data bus using hand-shaking mode.
14. In ———— mode, the data is transmitted with synchronous characters and is used for high speed data communication.
15. Timers of 8051 can operate in four modes which can be selected by ———— register which is one of the special function register.
16. ———— is the power control register.

(4 × 1 = 4)

Part B (Short Answer Type Question-Weight 1 each)

Answer any **five** *questions.*

17. What happens to the content of stack pointer of the 8085 microprocessor when PUCH instruction in executed ?
18. The input and output ports have the same address. How does the 8085 microprocessor differentiate them ?
19. Where do you recommend handshake signals in a microprocessor based system ?
20. Write a delay routine for 3ms using the instructions of 8085 having clock frequency of 3 MHz.
21. What is the role of SFR in 8051 ?
22. What is the function of $\overline{\text{PSEN}}$ signal in 8051 ?
23. Describe auto reload feature of timer 1 in 8051.
24. What is interrupt function ? Explain with an example.

(5 × 1 = 5)

Part C (Short Essays-Problems-Weight 2 each)

Answer any **four** *questions.*

25. Write an assembly language program to generate square pulses of 1 KHz frequency.
26. Explain the interrupt signals in 8051 and also given their priority levels.
27. Illustrate software time delay generation using 8051.
28. Explain the different flags and the PSW of 8051.
29. Explain the register bank, their uses and selection process in 8051 microcontroller ?
30. Discuss the signals of port 3 of 8051.

$(4 \times 2 = 8)$

Part D (Essay Type–Weight 4 each)

Answer any **two** *questions.*

31. Develop the stepper motor interface to 8255 and explain the working of stepper motor control system with the help of neat diagrams.
32. With neat diagrams, explain 8051 based system with respect to Reset and clock circuits, also expanding I/O and memory address decoding.
33. What are the on-chip resources available in 8051 ? Explain how they are interfaced inside 8051 with a suitable block diagram.

$(2 \times 4 = 8)$