C 26888 (Pages : 2)
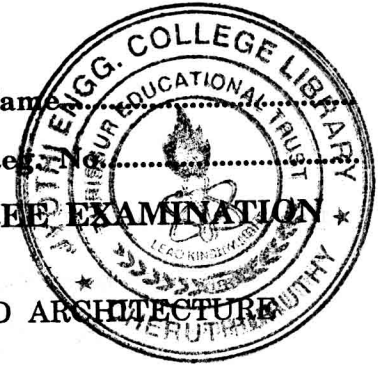
# FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION MARCH/APRIL 2012

EC 09-405/PTEC 09 404—COMPUTER ORGANIZATION AND ARCHITECTURE

(2009 Admissions)

Time : Three Hours

Maximum : 70 Marks

## Part A

### Answer all questions.

1. Registers R1 and R2 of a computer contain the decimal values 1200 and 4600. What is the effective address of the memory operand in each of the following instructions ?

    (a) Load 20(R1), R5.

    (b) Add → (R2), R5.

2. What are the most common fields found in an instruction format ?

3. Define Memory Density and Memory Access time.

4. What is an Interrupt ?

5. What is a stack ?

$(5 \times 2 = 10 \text{ marks})$

## Part B

### Answer any four questions.

6. Briefly explain the *four* methods of control organization.

7. Write a note on Multilevel Memories.

8. Explain the shared Bus system.

9. Write a note on Virtual and Cache Memories.

10. Explain Parallel Processing.

11. With a suitable example, explain the Subroutine.

$(4 \times 5 = 20 \text{ marks})$

**Turn over**

## Part C

*Answer all questions.*

12. Design a Arithmetic Circuit to perform the following functions :—

| Function select | | | Output | Operation |
|---|---|---|---|---|
| $S_1$ | $S_0$ | $C_1$ | | |
| 0 | 0 | 0 | $F = A$ | Transfer A |
| 0 | 0 | 1 | $F = A + 1$ | Increment A |
| 0 | 1 | 0 | $F = A + B$ | Addition |
| 0 | 1 | 1 | $F = A + B + 1$ | Addition with carry |
| 1 | 0 | 0 | $F = A + B'$ | A plus 1's complement of B. |
| 1 | 0 | 1 | $F = A + B' + 1$ | Subtraction |
| 1 | 1 | 0 | $F = A - 1$ | Decrement A. |
| 1 | 1 | 1 | $F = A$ | Transfer A. |

*Or*

13. Design a Hardwired control and PLA control for Binary Multiplier.

14. Explain in detail about (i) Fully Associative Mapping ; (ii) Set Associative Mapping.

*Or*

15. Explain in detail about (i) Random Access Memory ; (ii) Read Only Memory.

16. With block diagram and procedure explain the DMA data transfer.

*Or*

17. Discuss in detail about the I/O processor and its operation with the command word.

18. With functional block diagram, explain the 8085 microprocessor architecture.

*Or*

19. Discuss in detail about Memory Mapped I/O and I/O mapped I/O.

(4 × 10 = 40 marks)