

(8)

**SARDAR PATEL UNIVERSITY**  
**M.C.A.(First Semester) Examination**  
**PS01CMCA02 Logical Organization of Computers**  
**Monday, 6<sup>th</sup> January, 2014**

Time : 10:30 a.m. to 1:30 p.m.

Total Marks : 70

Note : Answers to the two sections must be written in separate answer-books.

**SECTION – I**

- 1.(A) Specify the IEEE single-precision floating-point representations for the decimal numbers 426.125 and -17.5. Represent the final answer in hexadecimal. **5**
- (B) Describe the architecture and working of a pipeline machine with diagram. **5**
- 2.(A) Answer the following questions in brief (**ANY FIVE**) : **10**
- (i) Which steps are involved in instruction execution by a CPU ?
  - (ii) Draw the diagram showing logical position of a cache memory. What is the locality principle ?
  - (iii) Construct a Hamming code for the ASCII character 'B' considering odd parity.
  - (iv) What is the octal equivalent of the hexadecimal number 58DA.24E ? What is its binary equivalent ?
  - (v) Distinguish between the direct and indirect addressing techniques. What are the drawbacks of immediate addressing technique ?
  - (vi) What do you understand by a trap ? List any four common conditions that can cause traps.
3. Explain **ANY THREE** from the following : **15**
- (i) Hard disks, (ii) CD-ROM,
  - (iii) Design criteria for instruction formats, (iv) Laser printer.

**SECTION – II**

- 4.(A) Explain the 2's complement adder-subtractor with a circuit diagram. **5**
- (B) State and prove the DeMorgan's theorems. **5**
- (C) Explain the logic circuit for the odd parity generator. **5**
- 5.(A) Explain the 1-of-10 decoder circuit diagram. **5**
- (B) What is a multiplexer ? Explain the 16-to-1 multiplexer with circuit diagram. Why is it called a data selector ? **5**
6. (A) What is a flip flop ? Draw the logic circuit of a clocked D latch. Explain its truth table and timing diagram. Differentiate between level clocking and edge triggering. **5**
- (B) Explain **ANY ONE** from the following : **5**
- (i) Controlled Buffer Register, (ii) Ring counter.
- X←

