

Question Paper Code : 11257

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2011

Fourth Semester

Computer Science and Engineering

CS 2253 - COMPUTER ORGANIZATION AND ARCHITECTURE

(Common to Information Technology)

(Regulation 2008)

Time: Three hours

Maximum: 100 marks

Answer ALL questions

PART A - (10 × 2 = 20 marks)

1. What is an opcode? How many bits are needed to specify 32 distinct operations?
2. Write the logic equations of a binary half adder.
3. Write the difference between Horizontal and Vertical Microinstructions.
4. In what ways the width and height of the control memory can be reduced?
5.
$$A = 5 \quad \begin{array}{l} \leftarrow \\ A \quad 3+A \\ \leftarrow \\ B \quad 4xA \end{array}$$

What hazard does the above two instructions create when executed concurrently?
6. What are the disadvantages of increasing the number of stages in pipelined processing?
7. What is the use of EEPROM?
8. State the hardware needed to implement the LRU in replacement algorithm.
9. What is distributed arbitration?
10. How interrupt requests from multiple devices can be handled?

PART B - (5 x 16 = 80 marks)

11. (a) With examples explain the Data transfer, Logic and Program Control Instructions? (16)

Or

- (b) Explain the Working of a Carry-Look Ahead adder. (16)
12. (a) (i) Describe the control unit organization with a separate Encoder and Decoder functions in a hardwired control. (8)
- (ii) Generate the logic circuit for the following functions and explain. (8)

$$Z_{in} = T_1 + T_6.ADD + T_4.BR + \dots$$

$$END = T_7.ADD + T_5.BR + (T_5.N + T_4.\bar{N}).BRN + \dots$$

Or

- (b) Write a brief note on nano programming. (16)
13. (a) What are the hazards of conditional branches in pipelines? how it can be resolved? (16)

Or

- (b) Explain the super scalar operations with a neat diagram. (16)
14. (a) What is a mapping function? What are the ways the cache can be mapped? (16)

Or

- (b) Explain the organization and accessing of data on a Disk. (16)
15. (a) (i) How data transfers can be controlled using handshaking technique? (8)
- (ii) Explain the protocols of USB. (8)

Or

- (b) How the parallel port output interface circuit works? (16)