

B.Tech II Year II Semester (R13) Regular &amp; Supplementary Examinations May/June 2016

**COMPUTER ORGANIZATION & ARCHITECTURE**

(Common to CSE and IT)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

- (a) Define the following terms.  
(i) Computer Organization. (ii) Computer Architecture.
- (b) Write any two differences between High level language and Machine level language.
- (c) What is Indirect addressing mode and Relative addressing mode?
- (d) What is an overflow? How does an overflow can be detected?
- (e) Define Selective clear and Mask Operations.
- (f) Draw the block diagram for microinstruction format.
- (g) What are the different levels of memory hierarchy in a computer?
- (h) What are the peripheral devices of a computer?
- (i) What is the purpose of hardware interlock in data dependency conflict?
- (j) Write the Characteristics of Multiprocessors.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

2 Explain about the Memory Subsystem Organization with neat diagrams.

**OR**

3 What are the Design issues of Instruction Set Architecture? Explain about the simple Instruction Set Architecture.

**UNIT – II**

4 Draw and explain about the instruction cycle with flowchart.

**OR**

- 5 (a) Discuss briefly about data transfer and data manipulation instructions.
- (b) Write a note on program control instructions.

**UNIT – III**

- 6 (a) Show that the block diagram of the hardware that implements the following register transfer statement  $P:R2 \leftarrow R1$ .
- (b) Construct common bus system by using multiplexers.

**OR**

- 7 (a) What are the methods for designing a control unit? Design a circuit for hardwired control unit.
- (b) How controls signals are generated using micro-programmed control unit and explain with neat diagram?

**UNIT – IV**

- 8 (a) Analyze memory hierarchy in terms of speed, size and cost.
- (b) Illustrate the characteristics of some common memory technologies.

**OR**

9 What is the purpose of DMA? Draw the block diagram for DMA controller and explain about DMA transfer in a computer.

**UNIT – V**

10 What is parallel processing? How one can achieve Parallel processing with single CPU? Explain in detail.

**OR**

11 What are the different types of Inter-processor Arbitration Procedures? Explain in detail with neat diagrams.