

# INSTITUTE OF AERONAUTICAL ENGINEERING

(AUTONOMOUS)

Code No: **BES003**

**MODEL QUESTION PAPER - II**

M. Tech I Semester Regular Examinations, February 2017

## COMPUTER ARCHITECTURE

(Embedded Systems)

Time: 3 hours

Max. Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

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### UNIT – I

- 1 (a) Design the organization and hardware to meet goals and functional requirements of computer architecture. [7M]
- (b) What are the trends in technology? Explain performance trends bandwidth over latency. [7M]
- 2 (a) Classify memory addressing. Explain the addressing modes for instruction set architecture. [7M]
- (b) Describe the type and size of operands in set architecture. Explain the operations in the instruction set. [7M]

### UNIT – II

- 3 (a) What is instruction level parallelism? Elaborate instruction level parallelism concepts and challenges. [7M]
- (b) Explain basic compiler techniques for exposing ILP with basic pipeline scheduling and loop unrolling. [7M]
- 4 (a) Discuss ILP using dynamic scheduling, multiple issue and speculation with one example. [7M]
- (b) Show how the loop would look on IMPS, both scheduled and unscheduled, including may stalls or idle clock cycle. Schedule for delays from floating-point operations, but remember that we are ignoring delayed branches. [7M]

### UNIT – III

- 5 (a) Describe the protection and examples of virtual memory (VM) mapping with a neat diagram. [7M]
- (b) What are the limitations of dynamically scheduled pipelines and how hardware based speculation can address these limitations? [7M]
- 6 (a) Distinguish distributed shared memory and directory based cache coherence protocols with diagram. [7M]
- (b) What are the limitations in symmetric shared memory multiprocessors and snooping protocols? [7M]

#### UNIT – IV

- 7 (a) Explain how the input/output (I/O) performance, reliability measures and bench marks. [7M]
- (b) Distinguish the real faults and failures in storage systems? Discuss in detail with the faults and failures. [7M]
- 8 (a) Summarize the concept of Redundant Array of Independent Disk (RAID) and explain various levels and their applicability. [8M]
- (b) What is bench marking on a storage device? Distinguish between the crosscutting issues of block servers and filers. [6M]

#### UNIT – V

- 9 (a) Explain interconnection network media. How it will affect the interconnection networking media. [7M]
- (b) Elaborate the practical issues in interconnecting networks discuss in detail with few examples? [7M]
- 10 (a) Illustrate the concepts of practical issues in interconnecting networks. How it will effect on a network media. [8M]
- (b) Interpret the designing procedure of a cluster. Design a cluster with an example in interconnection networks. [6M]