Printed Pages: 3 EEC-402/EC-403(MTU)

| (Following Paper ID and Roll No. to be filled in your Answer Books) | |
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| **Paper ID : 131402** | **Roll No.** |

**B.TECH.**

**Theory Examination (Semester-IV) 2015-16**

**COMPUTER ARCHITECTURE AND ORGANISATION**

***Time : 3 Hours*** ***Max. Marks : 100***

**Section-A**

**1. Attempt all parts of the following** (10×2 = 20)

(a) What, in general terms, is the distinction between computer organization and computer architecture?

(b) List and briefly define the four main components of a general purpose computer.

(c) Draw the Von Neumann architecture.

(d) Briefly define an embedded system with help of an example.

(e) Represent $(128.25)_{10}$ in double precision.

(f) Define ROM, PROM, EPROM, EEPROM.

(g) Draw the ARM cache organization.

(h) What are the advantages of using a glass substrate for a magnetic disk?

(i) List the key services provided by an Operating system.

(j) What are the four essential elements of a number in floating-point notation.

## Section-B

**Attempt any five Parts of the following:** [5×10=50]

(a) Explain in detail, how data is written onto and read from a magnetic disk?

(b) List and explain the major types of Operating System scheduling.

(c) What is RAID ? Explain the seven RAID levels in detail.

(d) Evaluate the Hamming code for a four bit message word 1101. Also show how a single error be detected if there occurs an error in the fourth bit of the generated hamming code.

(e) What is an operating system? Explain the different categories of Operating System. Explain the major functions of an I/O module?

(f) Explain the difference between the programmed I/O and interrupt driven I/O.

(g) Explain the cache memory principle using three level cache organizations.

(h) What is the purpose of a translation lookaside buffer?

(i) Explain DMA.

## Section-C

**Attempt any two questions.** (2×15=30)

3. Explain direct mapping, associative mapping, and set associative mapping? What is the benefit of using a multiple-bus architecture compared to a single-bus architecture?

4. What is the difference between a process and a program? Is it necessary for all of the pages of a process to be in main memory and in sequential order?

5. Explain in detail:

   (a) PCI

   (b) ALU

   (c) Microcontroller families