

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

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