Computer Organization and Architecture

MAY 18

Computer Engineering (Semester 4)

Total marks: 80
Total time: 3 Hours

INSTRUCTIONS
(1) Question 1 is compulsory.
*(2) Attempt any **three** from the remaining questions.*
(3) Draw neat diagrams wherever necessary.

1.a Compare Von Neumann architecture and Harvard Architecture.   (5 marks)

1.b Explain IEEE 754 floating point representation formats and represent $(34.25)_{10}$
to single precision format.   (5 marks)

1.c Explain memory hierarchy in the computer system.   (5 marks)

1.d Explain the requirements of the I/O modules   (5 marks)

2.a Draw the flowchart of Booth's algorithm. Perform following multiplication using
Booth's M = $(-9)_{10}$, Q = $(6)_{10}$ (10 marks)
2.b Explain the restoring method of binary division with algorithm. Divide $(7)_{10}$ by $(4)_{10}$
using restoring method of binary division   (10 marks)

3.a What is the necessity of cache memory? Explain set associative cache mapping   (10 marks)

3.b Explain the page address translation in case of virtual memory and explain TLB   (10 marks)

4.a Explain interrupt driven I/O method of data transfer   (10 marks)

4.b Explain DMA method of I/O data transfer   (10 marks)

5.a Explain the superscalar architecture   (10 marks)

5.b State the functions of control unit. Explain Micro-programmed control unit   (10 marks)

Write Short Notes on (Any Two)

6.a Write short notes: Principle of locality of references   (10 marks)

6.b. Write short notes: Instruction pipelines and its hazards.   (10 marks)

6.c Write short notes: Flynn's classification   (10 marks)

6.d Write short notes: Bus arbitration   (10 marks)