Total No. of printed pages = 3

Subject Code: **INT054105**

Roll No. of candidate

2017

End Semester M.Sc. (IT) Examination

1st Semester

ADVANCED COMPUTER ORGANIZATION AND ARCHITECTURE.

Full Marks- 70 Pass Marks- 21 Time- 3 hours

The figures in the margin indicate full marks.

PART – A

Q.1. Answer all questions: **16 x 1 = 16**

a) Perform 8+ (-9) using 2's complement arithmetic.

b) Convert 41.6875 to binary.

c) What is the greatest magnitude negative number one can represent in 8 bit 1's complement code?

d) What is a bus?

e) What is a cache memory?

f) Mention the basic registers of a computer.

g) Define hit ratio.

h) What are the modes of data transfer to and from a peripheral? .

i) What is an Assembly language?

j) What do mean by Addressing modes?

k) What is pipelining?

l) What are the three types of CPU organization basically most computer fall into?

m) What is parallel processing?

n) Define the various software performance issues.

o) What do you mean by an instruction?

p) What is Cache Coherence?

PART – B

Q.2. Answer all questions: **4 x 3.5 = 14**

a) Differentiate between computer organization and computer architecture?

b) Differentiate between RAM and ROM.

c) Write an assembly language program to perform addition of two numbers.

d) Explain parallel processing.

PART – C

Q.3. Explain the basic building block of a computer. (10 marks)

OR

Represent $(44.25)_{10}$ in single precision and double precision floating point format.

Q.4. Write a short note on DMA. (10 marks)

OR

A virtual memory system has an address space of 8K word a memory space of 4K words and page and block size of 1K word. The following page reference changes occur during a given time interval (only page changes are listed. If the same page is referenced again, it is not listed twice).

4,2,0,1,2,6,1,4,0,1,0,2,3,5,7.

Determine the four pages that are resident in the main memory after each page reference change if the replacement algorithm used is:

i. FIFO

ii. LRU

iii. LIFO

Q.5. What is memory mapping? Explain associative, direct and set associative memory mapping techniques. (10 marks)

OR

The access time of cache memory is 100nsec and that of main memory is 1000ns .It is estimated that 80% of the memory requests are for read and remaining 20 % for write. The hit ratio for re-access only is 0.9.A write through procedure is used. Find :

i. Average access time of the system considering only memory read cycle
ii. Average access time of the system for both read and write request.
iii. What is the hit ratio, taking into consideration the write cycle?

Q.6. Explain the addressing modes in details. (10 marks)

OR

Write a short note on Flynn's classification of computer