

**B. E. Fourth Semester (Computer Technology)/SoE–2014-15
Examination**

Course Code : CT 1207/CT 207/CT 603

**Course Name : Computer Architecture
and Organization**

Time : 3 Hours]

[Max. Marks : 60

Instructions to Candidates :—

- (1) All questions are compulsory.
- (2) All question carry marks as indicated.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Illustrate your answers wherever necessary with the help of neat sketches.

1. What is addressing mode of an instruction ? Explain various addressing modes with example. 7

OR

Explain stack and subroutine linkages. Which assembly language instructions can be used to handle stack and subroutine. 7

2. Solve any **Two** of the following :

- (a) What is conditional and unconditional branching? 4
- (b) What are the limitations of short word length? 4
- (c) Explain single bus organization of CPU. 4

3. Solve any **Two** of the following :

- (a) Write a micro-routine showing control signals required to execute the machine instructions Mul R1, R2 for single bus CPU. 5
- (b) Draw a neat diagram and explain generation of next address field in microprogram. 3
- (c) Explain Hardwired control unit. 3

4. Draw and explain the circuit arrangement of binary division and perform the following division using non-restoring algorithm 20/4. 7

OR

Explain single precision and double precision IEEE floating point standard and represent following numbers in them :-

$$(0.1010010)_2 \text{ and } (1.005 \times 10^2)_{10} \quad 7$$

5. Solve any **Three** of the following :

- (a) How address translation is done in virtual memory ? 5
- (b) A block set associative cache consists of total 64 blocks divided into 4 blocks per set. The main memory consist of 4096 blocks, each consisting of 128 words. Find how many bits are there in memory address? How many bits are there in each of the TAG, SET and WORD fields? 5
- (c) What is dynamic RAM ? Explain the benefits of Dynamic RAM as compared to static RAM. 5
- (d) Explain following with respect to cache memory :
 - (i) Locality of reference. 2.5
 - (ii) Write through and write back policy. 2.5

6. Solve any **Three** of following :

- (a) What is the need of DMA ? How DMA works ? 5
- (b) Explain the working of USB. 5
- (c) Write short note on Online Storage. 5
- (d) Differentiate DMA and interrupts. Also write a note on interrupts. 5