



12. a) i) Subtract $(11010)_2 - (10000)_2$ using 1's complement and 2's complement method. (8)
 ii) Differentiate arithmetic shift and logical shift. (5)

(OR)

- b) Write down the Booth's algorithm. List the two attractive features of Booth's algorithm. Give an example for worst case of Booth's algorithm. (5+4+4)

13. a) Name and explain the two approaches used for generating the control signals in proper sequence. Differentiate the approaches. (13)

(OR)

- b) List the reasons of pipeline conflicts in pipelined processor. How are they resolved? (13)

14. a) What is virtual memory? Describe the advantages of virtual memory. (13)

(OR)

- b) What is Cache memory? What are the two ways in which the system using cache can proceed for a write operation? (13)

15. a) i) List the characteristics of Graphics Processing units. (8)

- ii) Differentiate in-order execution and out-of-order execution. (5)

(OR)

- b) Explain in detail, the shared memory multiprocessor, with a neat diagram. (13)

PART - C

(1×15=15 Marks)

16. a) i) Use the Booth and bit-pair recording techniques to multiply $(-10 \times -10)_{10}$. (10)

- ii) List the rules to perform addition on floating point numbers. (5)

(OR)

- b) i) Compare UMA and NUMA multiprocessors. (5)

- ii) A virtual memory has a page size of 1K words. There are eight pages and four blocks. The associative memory page table contains the following entries. (10)

Page	Block
0	3
1	1
4	2
6	0

Make a list of all virtual address (in decimal) that will cause a page fault if used by the CPU.