

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) Why are subtractions using 2's complements used in modern computer? What are the difficulties with BCD or simple binary subtractions?
b) Evaluate $(-521) + (+632)$ using the signed 10's complement representation for negative number. [15]
- 2.a) Write program to evaluate the arithmetic statement $X = \frac{A-B+C*(D*E-F)}{G+H*K}$ using a general register computer with three address instructions.
b) What are the memory reference instructions? Explain with examples. [15]
- 3.a) What are the functional parts of a micro instruction format? Explain.
b) What is the function of control memory? What is the address sequencing capabilities required in a control memory? [15]
- 4.a) Draw the flow chart of Booth algorithm for multiplication of signed 2's complement numbers.
b) Explain with a block diagram a BCD adder. [15]
- 5.a) Discuss real and virtual memory? Explain the term swapping.
b) What is a memory controller? What are its functions? [15]
- 6.a) What are the various schemes which are used for data transfer between the two devices of a computer?
b) Explain the terms hardware interrupts and software interrupts. [15]
- 7.a) What is a hazard? What are the different kinds of hazards encountered during execution of a pipeline?
b) Give an example of a program that will cause data conflict in a three segment pipeline. [15]
- 8.a) What is a multiprocessor system? What are tightly coupled and loosely coupled multiprocessor system?
b) What are the different dynamic arbitration algorithms? Explain any two. [15]

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