Note:- 1) All questions are compulsory
        2) All questions carry equal marks
        3) Figures to the right indicate maximum marks.

Q.1 Attempt any four of the following: (any 4)   **(20 M)**
1) Minimize the following expression using K-map & realize using basic gates
$$Y= \sum m(1,2,9,10,11,14,15)$$
2) Explain 4:1 multiplexer with truth table and circuit diagram.
3) Write short note on asynchronous counter.
4) State the rules of Boolean algebra.
5) Compare multiplexer and demultiplexer.
6) Explain the operation of a half adder and state its disadvantages.

Q.2) Attempt any four of the following : (any 4)   **(20 M)**
1) Differentiate between computer architecture and computer organization.
2) Explain structure of CPU with diagram.
3) Explain structure of control unit.
4) Explain functional view of a computer with diagram.
5) Explain Von Neuman architecture with diagram.
6) Write short note on single bus - structure.

Q.3) Attempt any four of the following: (any 4)   **(20 M)**
1) Explain different types of busses.
2) Explain multiple – bus hierarchies with diagram.
3) Explain bus arbitration and state its different schemes.
4) Explain independent requesting with diagram.
5) Write short note on daisy chaining.
6) State various functions of IO module and draw its internal block diagram.

Q.4) Attempt any three of the following   **(15 M)**
1) Differentiate between parallel & serial interface.
2) Write short note on types of communication systems.
3) Write short note on programmed IO.
4) Explain interrupt processing.
5) Explain DMA Transfer modes.
6) Explain working of direct memory access.

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