

Digital Computer Electronics - 2010

Note: Attempt all Sections.

Section-A (Objective Type Questions)

- 1.(i) The most commonly used number system in computer is-
(a) Binary Number System
(b) Octal Number System
(c) Decimal Number System
(d) Hexadecimal Number System
- 1.(ii) Let X and Y be inputs and Z be the output of a NAND gate. The value of Z is given by-
(a) $X + Y$ (b) $X.Y$ (c) $\overline{X.Y}$ (d) $\overline{X} . \overline{Y}$
- 1.(iii) Memory is made up of- <http://www.onlinebu.com>
(a) Set of wires (b) Set of circuits
(c) Large number of cells (d) All of the above
- 1.(iv) Which of the following transmission systems provides the highest data rate to an individual device?
(a) Digital PBX (b) Computer Bus
(c) LAN (d) Voice band modem
- 1.(v) In which addressing mode, the effective address of the operand is generated by adding a constant value to the contents of a register?
(a) Absolute mode (b) Indirect mode
(c) Immediate mode (d) Index mode

Section-B (Short Answer Type Questions)

2. Subtract $1010100 - 1000011$ using 2's complement.
3. Convert $(2222)_{10}$ into hexadecimal number.
4. Design a two input NAND gate using 2 : 1 multiplexer.
5. Find the complement of the boolean function and reduce it to a minimum number of literals:

$$B'D + A'BC' + ACD + A'BC$$

6. Write the difference between RAM and ROM.
7. Describe secondary storage and explain why it is needed.
8. Draw a logic diagram of 4 bit universal shift register.
9. What do you mean by BUS?
10. What is a hazard in asynchronous sequential circuit?
11. Write advantages of synchronous over asynchronous counters.

Section-C (Long Answer Type Questions)

1. Convert the following numbers-
(a) $(5321)_8 = (?)_{16}$ (b) $(6FD51)_{16} = (?)_{16}$
(c) $(011111010)_2 = (?)_8$ (d) $(6710)_{10} = (?)_2$
2. Give the full form of EBCDIC code and explain how different characters are represented through this code.

8. ✓ Explain working operation of master-slave J-K flip-flop.
Or ✓ Explain the logical gates NAND and NOR Gates through diagrams and give their truth values.
9. Define random access memory. What are the advantages of dynamic RAM over static RAM?
Or ✓ Compare serial and direct access memory and give their specifications.
10. Describe the various addressing modes and compare them.
Or Describe the various microinstruction formats.
11. What is direct memory access? Explain with diagram DMA controller.
Or What are the properties of simple input/output devices? Explain about their controllers.

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