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GRAND TEST	ELECTRONICS PAPER - II HSC DIGITAL ELECTRONICS PAPER - [A]	Duration : 3 Hrs. M.M. : 50

Q.1A Select the correct alternatives and rewrite. **(4M)**

(1) For mod 150 counter, filp-flops required are ----------

(A) 10 (B) 15 (C) 8 (D) 9

(2) In ---------- if $A = 0,\ B = C$, then output $Y = C$

(A) ORgate (B) NAND gate (C) NORgate (D) EX-ORgate

(3) ---------- is sequential access secondary storage.

(A) Floppy disk (B) Hard disk (C) magnetic tape (D) none of the above

(4) In T-Flipflop the output frequency is ----------

(A) same as input frequency (B) one half of its input frequence

(C) double of its input frequency (D) none of above

B Attempt any two of the following. **(6M)**

(1) Subtract the following binary numbers using 1's complement method:

(A) $(11010)_2 - (110111)_2$ (B) $(11011)_2 - (1101)_2$

(2) How J-K flip-flop is constructed by using R-S flip-flop? Write its truth table.

(3) Write a note on EBCDIC code.

Q.2A Attempt two of the following **(6M)**

(1) What is a register? Give any 4 applications of registers

(2) Draw the diagram of 4-bit left shift register using D flip-flop and explain the working

(3) Solve the following:

(A) $(25)_{10} = (....)_2$ (B) $(C5)_{16} = (....)_{10}$ (C) $(69)_{10} = (....)_{BCD}$ (D) $(B7C)_{16} = (....)_2$

B Attempt any one the following **(4M)**

(1) Draw block diagram of computer and explain function of each block.

(2) Write a note on Shift register

Q. 3A Attempt any two of the following **(6M)**

(1) Define Counter. State the applications of counters. State types of counters.

(2) Implement the logic expression using a multiplexer IC which has inverted inputs such as IC 74150. $f(A, B, C, D) = \sum m\,(0, 2, 3, 6, 8, 9, 12, 14)$

(3) Explain the working of Ring Counter using D flip-flops.

B **Attempt any one the following** **(4M)**

(1) Draw logic diagram and symbol of clocked R-S flip-flop. Explain itd working with the help of truth table. Write its limitation (disadvantage).

(2) Explain the working of edge triggered T flip-flop.

Q.4A **Attempt any two of the following** **(6M)**

(1) State various types of volatile memories.

(2) Draw the logic circuit for the Boolean expression

$Y = (A + B).(\overline{A.B})$. Write the truth table and name the gates used

(3) Explain the working of CMOS NOR gate with necessary circuit diagram

B **Attempt any one the following** **(4M)**

(1) Draw and explain basic circuit of CMOS NAND gate.

(2) State types of D/A converters Explain the working of any one type and state its disadvantages.

Q.5A **Attempt any two of the following** **(6M)**

(1) Explain successive approximation type ADC.

(2) Explain the working of counter type A/D converter.

(3) Define half-adder in Boolean algebra. Explain the table of combinations for half-adder.

B **Attempt any one of the following** **(4M)**

(1) Draw logic diagram of decade counter and explain its working.

(2) What are the types of secondary memory devices?

OR

Q.5A **Attempt any Two of the following** **(6M)**

(1) What is logic family? Give different types of logic families.

(2) Draw and explain TTL inverter (NOT) circuit.

(3) Explain the concept of 1 - bit memory cell.

B **Attempt any one of the following** **(4M)**

(1) Draw the logic diagram for following Boolean expression using basic gates only Write its truth table.

(2) What will be the output voltage of 4 bit R-2R ladder for binary input $(1011)_2$. Given logic $0 = 0V$ and logic $1 = 32$ volts.