Roll No. ..... **Total Pages : 03**

34009

BT-4/M-20

DIGITAL ELECTRONICS

EE-204-E

Time : Three Hours] [Maximum Marks : 100

Note: Attempt *Five* questions in all, selecting at least one question from each Unit.

Unit I

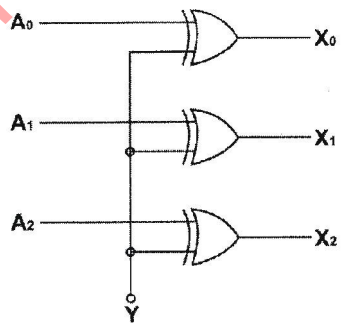
1. (a) If $(211)_x = (152)_8$ find the value of x.

(b) Subtract 79.625 from 27.125 using 12 bit 2's complement method.

(c) Convert $(4057.06)_8$ to Hexadecimal.

(d) Add 1010.11 + 1101.10 + 1001.11 + 1111.11.

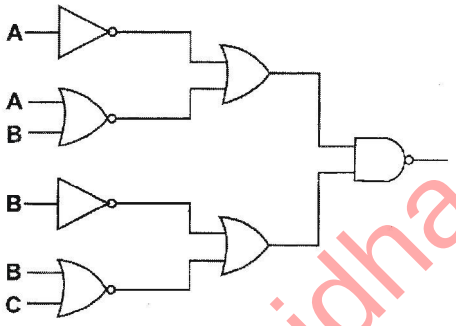
(e) What should be the value of Y so that $X_2X_1X_0$ 1's complement of $A_2A_1A_0$. Explain the reason for your answer. **5×2=10**



2. (a) Show that : **5**

$$A\bar{B}C + B + \bar{B}D + \bar{A}B\bar{D} + AC = B + C$$

(b) Draw the simplest possible logic diagram that implements the output of the logic diagram shown below : **5**



Unit II

3. (a) Reduce the function using Q-M method : **6**

$S(A, B, C, D) = \Sigma(0, 1, 2, 3, 5, 6, 8, 9, 10, 11, 13, 14)$

(b) Explain parity generator. **4**

4. (a) Prepare a K-map and write the expression in SOP form from the K-map for the following expression : **5**

$$(A + B + \bar{C} + \bar{D})(A + C + \bar{D})(\bar{A} + B + \bar{C} + D)$$
$$(\bar{B} + C)(\bar{B} + \bar{C})(A + \bar{B})(\bar{B} + \bar{D})$$

(b) Implement the following function using 8 : 1 MUX :
F = ☆(0, 1, 3, 6, 8, 9, 10, 12, 13, 14)

Unit III

5. (a) Convert a S-R flip-flop to J-K flip-flop. **5**

(b) Draw the logic and timing diagrams for SISO, shift right register for data input 1010. **5**

6. (a) Design a 4-bit weighted resistor DAC whose full scale output voltage is (+5 V). The logic levels are I = +5 V and O = 0 V. Find the output voltage for input 1101. **5**

(b) What is the difference between up and down counter ? Design a MOD 13 counter and draw its neat diagram. **5**

Unit IV

7. (a) What is interfacing of two logic families ? Explain it with the help of CMOs driving TTL logic family. **5**

(b) What is a logic family? Classify the important ones. **5**

8. (a) State the difference between ROM, PROM, EPROM and EEPROM. **5**

(b) What is PLA ? Describe its uses. **5**