Test 1

Digital Electronics (ECE213)

Name SET B Duration: 45 Mins

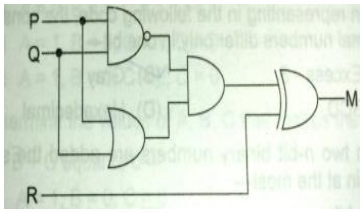
Roll No. Max Marks: 30 Date:

Note: All Questions are compulsory. Questions 1 to 20 each of one mark and Questions 20 to 25 each of 2 marks. There will be negative marking of 0.25 marks from Question 1 to 20 and 0.50 marks from Question 20 to 25 for each wrong answer

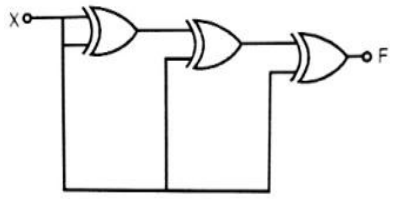
Mark a proper circle on a correct answer

1. In positive logic
   (a) A HIGH = 1, a LOW = 0
   (b) A LOW = 1, a HIGH = 0
   (c) Only HIGH = 1 are present
   (d) Only LOW = 0 are present
2. The parallel transmission of digital data
   (a) is much slower than the serial transmission of data.
   (b) Requires only one signal line between sender and receiver.
   (c) Requires as many signal lines between sender and receiver as there are data bits.
   (d) is less expensive than the serial method of data transmission.
3. Convert the fractional binary number 0001.0010 to decimal.
   (a) 1.40 (b) 1.125
   (c) 1.20 (d) 1.120
4. Perform the following hex subtraction: $(ACE)_{16} - (999)_{16}$ =
   (a) 235_{16} (b) 135_{16}
   (c) 035_{16} (d) 335_{16}
5. Excess-3 code is known as
   (a) Weighted code
   (b) Cyclic redundancy code
   (c) Self-complementing code
   (d) Algebraic code.
6. Find $(177)_8$ + 1, in decimal –
   (a) 128 (b) 200
   (c) 178 (d) 179
7. The decimal number -34 is expressed in the 2's complement form as
   (a) 01011110 (b) 10100010
   (c) 11011110 (d) 01011101
8. How many Ex-OR gates are required to convert $(10110)_2$ to gray code
   (a) 2 (b) 5
   (c) 3 (d) 4
9. OR operation can be produced with
   (a) Two NOR Gates
   (b) Three NAND Gates
   (c) Four NAND Gates
   (d) Both answers (a) and (b)
10. The output of a logic gate is 1 when all its inputs are at logic 0. the gate is either
    (a) a NAND or an EX-OR
    (b) an OR or an EX-NOR
    (c) an AND or an EX-OR
    (d) a NOR or an EX-NOR
11. In Boolean algebra if $F = (A + B)(\bar{A} + C)$, then F is equivalent to –
    (a) $AB + \bar{A}C$ (b) $AB + \bar{A}\bar{B}$
    (c) $AC + \bar{A}B$ (d) $AA + \bar{A}B$
12. The simplified form of the Boolean expression $Y = (\bar{A}BC + D)(\bar{A}D + \bar{B}\bar{C})$ can be written as
    (a) $\bar{A}D + \bar{B}\bar{C}D$ (b) $AD + B\bar{C}D$
    (c) $(\bar{A} + D)(\bar{B}C + D)$
    (d) $(A + \bar{D}) + BC\bar{D}$
13. What are the pin numbers of the outputs of the gates in a 7432 IC
    (a) 3, 6, 10, 13 (b) 1, 4, 10, 13
    (c) 3, 6, 8, 11 (d) 1, 4, 8, 11

14. How many only NOR gates are required to implement EX-OR gate?
    (a) 6 (b) 3
    (c) 4 (d) 5
15. Obtain 16's Complement of $(FFFF)_{16}$ is
    (a) $(0001)_{16}$ (b) $(0000)_{16}$
    (c) $(1515)_{16}$ (d) $(1000)_{16}$
16. The Octal equivalent of the HEX number AB.CD is –
    (a) 253.314 (b) 253.632
    (c) 526.314 (d) 526.632
17. A four variable switching function has minterms m_6 and m_9. If the literals in these minterms are complemented, the corresponding minterm numbers are –
    (a) $m_3 \; and \; m_6$ (b) $m_9 \; and \; m_6$
    (c) $m_2 and \; m_0$ (d) $m_6 and \; m_9$
18. If the information bits is given by 10111,the number of parity Bits in hamming code is
    (a) 5 (b) 4
    (c) 3 (d) 2
19. The circuit whose output is depend on input present at that instant of time is known as
    (a) Sequential Circuit
    (b) Bushless Circuit
    (c) Present circuit
    (d) Combinational Circuit
20. Which of the following expressions correctly represents the relation between P, Q, R and M?



    (a) $M = (P + Q) \oplus R$
    (b) $M = (P.Q) \oplus R$
    (c) $M = (\overline{P + Q}) \oplus R$
    (d) $M = (P \oplus Q) \oplus R$
21. $(17)_X + (24)_X = (40)_X$ calculate the base x
    (a) 8 (b) 11
    (c) 16 (d) 9
22. Simplify the following expression
    Y = ∏M (0, 2, 3, 5, 7)
    (a) $Y = (A + C)(\bar{A} + \bar{C})(\bar{B} + A)$
    (b) $Y = (A + C)(\bar{A} + \bar{C})(\bar{B} + \bar{C})$
    (c) $Y = (A + C)(\bar{A} + \bar{C})$
    (d) $Y = (A + C)(\bar{B} + \bar{C})$
23. For the circuit shown below, the output F is given by



    (a) F = X (b) F = 0
    (c) F = 1 (d) $F = \bar{X}$

24. If Y=A'B'C+A'BC+AB'C'+AB'C. Then Y' can be expressed as
    (a) (A+B')(A+C')
    (b) (A'+B)(A+C)
    (c) (A'+B)(A+C')
    (d) (A'+B')(A+C')
25. Obtain the minimal SOP expression for
    Y = ∑m (0,1,2,4,6,9,11,12,13)
    (a) Y = AD + ABC + ABD
    (b) $Y = \bar{A}\bar{D} + \bar{A}\bar{B}\bar{C} + AB\bar{C} + A\bar{B}D$
    (c) $Y = \bar{A}\bar{D} + \bar{A}\bar{B}\bar{C} + AB\bar{C}$
    (d) $Y = \bar{A}\bar{D} + AB\bar{C} + A\bar{B}D$