Combinational Logic Circuits

Question 1: A combinational circuit is one in which the output depends on the
A. input combination at the time
B. input combination and the previous output
C. input combination at that time and the previous input combination
D. present output and the previous output

Question 2: Which one of the following set of gates are best suited for 'parity' checking and 'parity' generation.
A. NOR gate
B. AND, OR, NOT gates
C. EX-NOR or EX-OR gates
D. NAND gate

Question 3: Which is the major functioning responsibility of the multiplexing combinational circuit?
A. Decoding the binary information
B. Generation of all minterms in an output function with OR-gate
C. Generation of selected path between multiple sources and a single destination
D. All of the above

Question 4: The number of control lines for an 8 – to – 1 multiplexer is
A. 2
B. 3
C. 4
D. 5

Question 5: The Gray code for decimal number 6 is equivalent to
A. 1100
B. 1001
C. 0101
D. 0110

Question 6: The gates required to build a half adder are
A. The gates required to build a half adder are
B. EX-OR gate and AND gate
C. EX-OR gate and OR gate
D. Four NAND gates.

Question 7: A device which converts BCD to seven segment is called

A. Encoder

B. Decoder

C. Multiplexer

D. Demultiplexer

Question 8: The logic circuit given below (Fig.1) converts a gray code y_1y_2 y_3 into

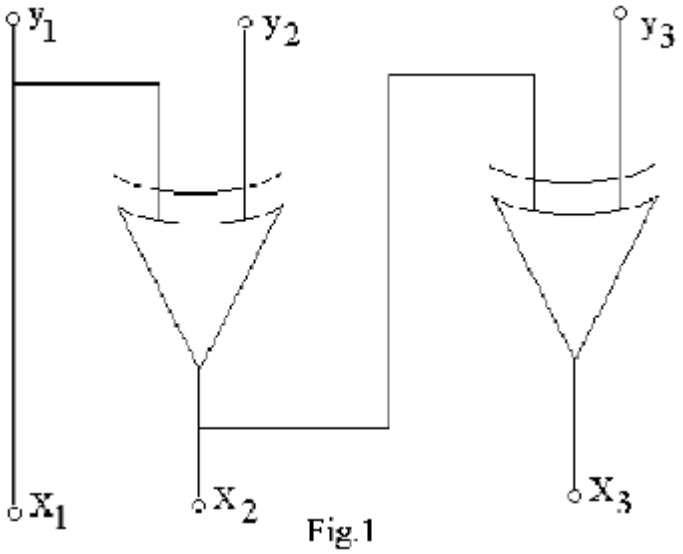


Fig.1

A. Excess-3 code.

B. Binary code.

C. BCD code.

D. Hamming code

Question 9: The excess 3 code of decimal number 26 is

A. 0100 1001

B. 1000 1001

C. 01011001

D. 01001101

(Add 011 to each BCD)

Question 10: The number of control lines for 32 to 1 multiplexer is

A. 4

B. 5

C. 16

D. 6

Question 11: The result of adding hexadecimal number A6 to 3A is

A. DD

B. EF

C. F0

D. E0

Question 12: A full adder logic circuit will have

A. Two inputs and one output.

B. Three inputs and three outputs.

C. Two inputs and two outputs.

D. Three inputs and two outputs.

Question 13: The 2's complement of the number 1101110 is

A. 0010001

B. 0010001

C. 0010010

D. None

Question 14: For a binary half adder having two inputs A and B the correct set of logical expressions for the output $(=A\ plus\ B)\ and\ C(=carry)$ are

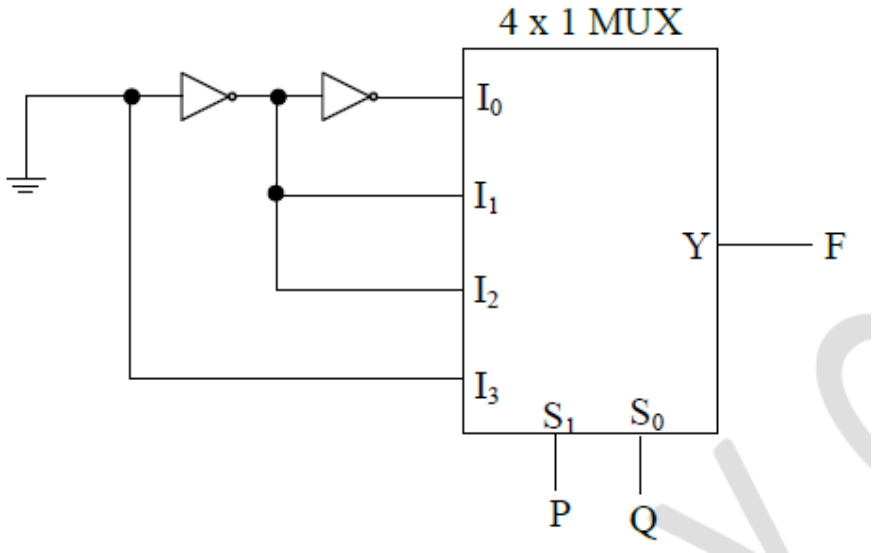
A. $S=AB+\bar{A}B$ & $C=\bar{A}B$

B. $S=\bar{A}B+A\bar{B}$ & $C=AB$

C. $S=\bar{A}B+A\bar{B}$ & $C=\bar{A}B$

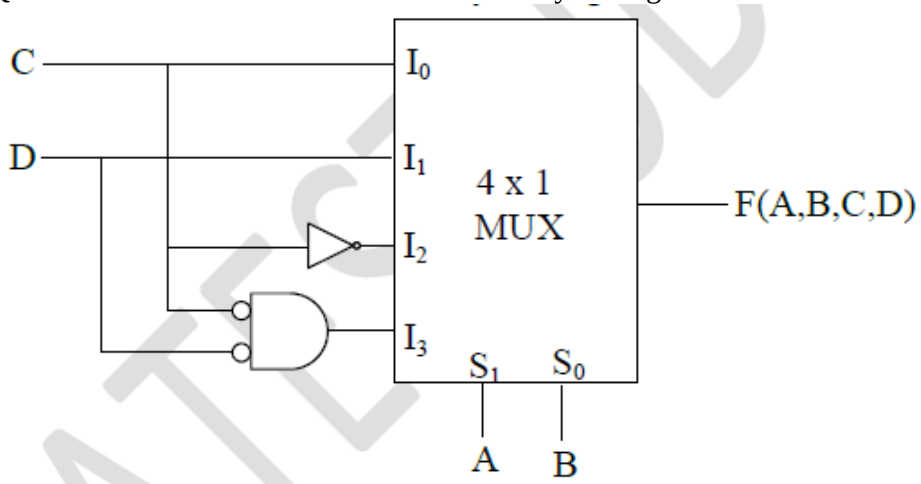
D. $S=AB+\bar{A}\bar{B}$ & $C=AB$

Question 15: The logic function implemented by the circuit below is (ground implies a logic "0")



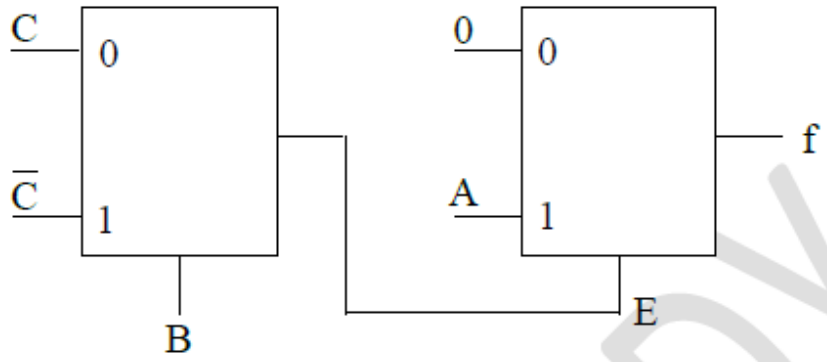
A. F = AND (P,Q)
B. F = OR (P,Q)
C. F = XNOR (P,Q)
D. F = XOR (P,Q)

Question 16: The Boolean function realized by the logic circuit shown is



A. F = Σm (0,1,3,5,9,10.14)
B. F = Σm (2,3,5,7,8,12.13)
C. F = Σm (1,2,4,5,11,14.15)
D. F = Σm (2,3,5,7,8,9.12)
($F = \bar{A}\bar{B}\bar{C}(D + \bar{D}) + \bar{A}B\bar{D}(C + \bar{C}) + AB\bar{C}(D + \bar{D}) + ABC\bar{D}$)

Question 17: The Boolean function f implemented in the figure using two input multiplexers is



A. $A\bar{B}C + ABC$
B. $ABC + A\bar{B}\bar{C}$
C. $\bar{A}BC + \bar{A}\bar{B}C$
D. $A\bar{B}C + \bar{A}BC$

Question 18: The minimum number of 2-to-1 multiplexers required to realize a 4-to-1 multiplexer is
A. 1
B. 2

C. 3
D. 4

Question 19: Full adder can be implemented using ----------.
A. 3 half adders
B. 2 half adders
C. 2 subtractors
D. None of the above

Question 20: Design a combinational circuit with three inputs which produces output 1 when more than 1 input are 1.
A. AC + BC + AB
B. AC + BC + A
C. AC + B + AB
D. C + BC + AB

Question 21: how many 2 line to 4 line decoders are required to form 4 line to 16 line
A. 2
B. 3
C. 4
D. 5

Question 22: An encoder has 2^n inputs and n outputs.
A. True
B. False

Question 23: Octal to binary encoder has
A. 3 inputs, 8 outputs
B. 8 inputs, 3 outputs
C. 9 inputs, 3 outputs
D. None of the above

Question 24: To design 16:1 multiplexer by using 4:1 multiplexer requires how many flip flop?
A.3
B.4
C.5
D.6

Question 25: In a 7 segment display the segments b and c are lit up. The decimal number displayed will be

A. 9

B. 7

C. 3

D. 1

Question 26: x = 1, y = 1, z = 1, choose correct from the following

A. sum = 1, carry = 0

B. sum = 0, carry = 1

C. sum = 1, carry = 1

D. None of the above

Question 27: Divide 1011.11 by 11

A. 11.01

B. 11.11

C. 11.00

D. None of the above

Question 28: Divide 100100.11 by 111

A. 101.11

B. 101.10

C. 101.01

D. 101.00

Question 29:

Inputs = Encoder: ___ :: Decoder : ____

Outputs = Encoder: ____ :: Decoder: _____

A. 3,3,8,8

B. 3,8,8,3

C. 8,3,3,8

D. 8,8,3,3

Question 30: Which of the following is not output of comparator?

A. A=B

B. A-B

C.A<B

D.A>B