



DE-2909

First Year B. Sc. (Sem. I) Examination
March / April – 2016
Electronics for Computer Science : Paper - II
(Digital Electronics)

Time : 2 Hours]

[Total Marks : 50

Instructions :

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
FIRST YEAR B. Sc. (SEM. 1)

Name of the Subject :
ELECTRONICS FOR COMPUTER SCIENCE - 2

Subject Code No. : **2 9 0 9** Section No. (1, 2,.....) : **3**

Seat No. :

Student's Signature

- (2) All 28 questions are compulsory.
- (3) Symbols used in the paper have their usual meaning.
- (4) Figures to right indicate full marks.
- (5) Non-programmable calculators are allowed.
- (6) Assume data if necessary.

Q. 1 to 12 Multiple choice questions : (1 mark)

Q. 13 to 22 Multiple Choise Questions : (2 marks)

Q. 23 to 28 Multiple Choice Questions : (3 marks)

***O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ
O.M.R. Sheet-ની પાછળ છાપેલ છે.***

***Important instructions to fillup O.M.R. Sheet
are given on back side of provided O.M.R. Sheet.***

- 1 What are the symbols used to represent digits in the binary number system ?
- (A) 0, 1
 - (B) 0, 1, 2
 - (C) 0 through 8
 - (D) 1, 2
- 2 A full subtracter circuit requires _____.
- (A) two inputs and two outputs
 - (B) two inputs and three outputs
 - (C) three inputs and one output
 - (D) three inputs and two outputs
- 3 The output of an AND gate is LOW _____.
- (A) all the time
 - (B) when any input is LOW
 - (C) when any input is HIGH
 - (D) when all inputs are HIGH
- 4 Give the decimal value of binary 10010.
- (A) 6
 - (B) 9
 - (C) 18
 - (D) 20

- 5 The output of an AND gate with three inputs, A, B, and C, is HIGH when _____
- (A) $A = 1, B = 1, C = 0$
 - (B) $A = 0, B = 0, C = 0$
 - (C) $A = 1, B = 1, C = 1$
 - (D) $A = 1, B = 0, C = 1$
- 6 If a 3-input NOR gate has eight input possibilities, how many of those possibilities will result in a HIGH output ?
- (A) 1
 - (B) 2
 - (C) 7
 - (D) 8
- 7 The output of a NOR gate is HIGH if _____
- (A) all inputs are HIGH
 - (B) any input is HIGH
 - (C) any input is LOW
 - (D) all inputs are LOW
- 8 The Boolean expression for a 3-input AND gate is _____
- (A) $X = AB$
 - (B) $X = ABC$
 - (C) $X = A + B + C$
 - (D) $X = AB + C$

- 9 What does the small bubble on the output of the NAND gate logic symbol mean ?
- (A) open collector output
 - (B) tristate
 - (C) the output is inverted.
 - (D) none of the above
- 10 Logically, the output of a NOR gate would have the same Boolean expression as a(n) :
- (A) NAND gate immediately followed by an inverter
 - (B) OR gate immediately followed by an inverter
 - (C) AND gate immediately followed by an inverter
 - (D) NOR gate immediately followed by an inverter
- 11 The basic logic gate whose output is the complement of the input is the :
- (A) OR gate
 - (B) AND gate
 - (C) inverter
 - (D) comparator
- 12 Which of the following equations would accurately describe a four-input OR gate when $A = 1$, $B = 1$, $C = 0$ and $D = 0$?
- (A) $1 + 1 + 0 + 0 = 01$
 - (B) $1 + 1 + 0 + 0 = 1$
 - (C) $1 + 1 + 0 + 0 = 0$
 - (D) $1 + 1 + 0 + 0 = 00$

- 13 Which of the following is not a basic Boolean operation ?
- (A) OR
 - (B) NOT
 - (C) AND
 - (D) FOR
- 14 When does the output of a NAND gate = 1 ?
- (A) Whenever a 0 is present at an input
 - (B) Only when all inputs = 0
 - (C) Whenever a 1 is present at an input
 - (D) Only when all inputs = 1
- 15 Convert binary number 01011 to decimal :
- (A) 11
 - (B) 35
 - (C) 15
 - (D) 10
- 16 Convert decimal 64 to binary :
- (A) 01010010
 - (B) 01000000
 - (C) 00110110
 - (D) 01001000
- 17 The BCD number for decimal 347 is _____.
- (A) 1100 1011 1000
 - (B) 0011 0100 0111
 - (C) 0011 0100 0001
 - (D) 1100 1011 0110

- 18 The sum of $11101 + 10111$ equals _____.
- (A) 110011
 - (B) 100001
 - (C) 110100
 - (D) 100100
- 19 A decimal 11 in BCD is _____.
- (A) 00001011
 - (B) 00001100
 - (C) 00010001
 - (D) 00010010
- 20 The difference of $111 - 001$ equals _____.
- (A) 100
 - (B) 111
 - (C) 001
 - (D) 110
- 21 Which of the following is an invalid BCD code ?
- (A) 0011
 - (B) 1101
 - (C) 0101
 - (D) 1001
- 22 The binary number 11001110 is equal to the decimal number _____.
- (A) 12
 - (B) 206
 - (C) 127
 - (D) 66

- 23 The base of the hexadecimal system is :
- (A) eight
 - (B) sixteen
 - (C) ten
 - (D) two
- 24 Which of the following expressions is in the sum-of-products (SOP) form ?
- (A) $(A + B) (C + D)$
 - (B) $(A) B (CD)$
 - (C) $AB (CD)$
 - (D) $AB + CD$
- 25 How many gates would be required to implement the following Boolean expression before simplification ? $XY + X(X + Z) + Y(X + Z)$
- (A) 1
 - (B) 2
 - (C) 4
 - (D) 5

26 The NAND or NOR gates are referred to as "universal" gates because either :

- (A) can be found in almost all digital circuits
- (B) can be used to build all the other types of gates
- (C) are used in all countries of the world
- (D) were the first gates to be integrated

27 Which of the examples below expresses the distributive law of Boolean algebra ?

- (A) $(A + B) + C = A + (B + C)$
- (B) $A(B + C) = AB + AC$
- (C) $A + (B + C) = AB + AC$
- (D) $A(BC) = (AB) + C$

28 Which of the following combinations cannot be combined into K-map groups ?

- (A) corners in the same row
- (B) corners in the same column
- (C) diagonal
- (D) overlapping combinations