



**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.	Seat No. :
Name of the Examination :	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="text" value="FIRST YEAR B. Sc. (SEM. 1)"/>	<input type="text" value="Student's Signature"/>
Name of the Subject :	
<input type="text" value="ELECTRONICS FOR COMPUTER SCIENCE - 2"/>	
Subject Code No. : <input type="text" value="2"/> <input type="text" value="9"/> <input type="text" value="0"/> <input type="text" value="9"/>	Section No. (1, 2,.....) : <input type="text" value="3"/>

- (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 Give the decimal value of binary 10010.
- (A) 18
  - (B) 20
  - (C) 6
  - (D) 9
- 2 The output of an AND gate with three inputs, A, B, and C, is HIGH when \_\_\_\_\_
- (A)  $A = 1, B = 1, C = 1$
  - (B)  $A = 1, B = 0, C = 1$
  - (C)  $A = 1, B = 1, C = 0$
  - (D)  $A = 0, B = 0, C = 0$
- 3 If a 3-input NOR gate has eight input possibilities, how many of those possibilities will result in a HIGH output ?
- (A) 7
  - (B) 8
  - (C) 1
  - (D) 2
- 4 The output of a NOR gate is HIGH if \_\_\_\_\_
- (A) any input is LOW
  - (B) all inputs are LOW
  - (C) all inputs are HIGH
  - (D) any input is HIGH

- 5 The Boolean expression for a 3-input AND gate is \_\_\_\_\_
- (A)  $X = A + B + C$
  - (B)  $X = AB + C$
  - (C)  $X = AB$
  - (D)  $X = ABC$
- 6 What does the small bubble on the output of the NAND gate logic symbol mean ?
- (A) the output is inverted.
  - (B) none of these
  - (C) open collector output
  - (D) tristate
- 7 Logically, the output of a NOR gate would have the same Boolean expression as a(n) :
- (A) AND gate immediately followed by an inverter
  - (B) NOR gate immediately followed by an inverter
  - (C) NAND gate immediately followed by an inverter
  - (D) OR gate immediately followed by an inverter
- 8 The basic logic gate whose output is the complement of the input is the :
- (A) inverter
  - (B) comparator
  - (C) OR gate
  - (D) AND gate

- 9 Which of the following equations would accurately describe a four-input OR gate when  $A = 1$ ,  $B = 1$ ,  $C = 0$  and  $D = 0$  ?
- (A)  $1 + 1 + 0 + 0 = 0$
  - (B)  $1 + 1 + 0 + 0 = 00$
  - (C)  $1 + 1 + 0 + 0 = 01$
  - (D)  $1 + 1 + 0 + 0 = 1$
- 10 What are the symbols used to represent digits in the binary number system ?
- (A) 0 through 8
  - (B) 1, 2
  - (C) 0, 1
  - (D) 0, 1, 2
- 11 A full subtracter circuit requires \_\_\_\_\_.
- (A) three inputs and one output
  - (B) three inputs and two outputs
  - (C) two inputs and two outputs
  - (D) two inputs and three outputs
- 12 The output of an AND gate is LOW \_\_\_\_\_.
- (A) when any input is HIGH
  - (B) when all inputs are HIGH
  - (C) all the time
  - (D) when any input is LOW

- 13 Which of the following is an invalid BCD code ?
- (A) 0101
  - (B) 1001
  - (C) 0011
  - (D) 1101
- 14 The binary number 11001110 is equal to the decimal number \_\_\_\_\_.
- (A) 127
  - (B) 66
  - (C) 12
  - (D) 206
- 15 Which of the following is not a basic Boolean operation ?
- (A) AND
  - (B) FOR
  - (C) OR
  - (D) NOT
- 16 When does the output of a NAND gate = 1 ?
- (A) Whenever a 1 is present at an input
  - (B) Only when all inputs = 1
  - (C) Whenever a 0 is present at an input
  - (D) Only when all inputs = 0
- 17 Convert binary number 01011 to decimal :
- (A) 15
  - (B) 10
  - (C) 11
  - (D) 35

- 18** Convert decimal 64 to binary :
- (A) 00110110
  - (B) 01001000
  - (C) 01010010
  - (D) 01000000
- 19** The BCD number for decimal 347 is \_\_\_\_\_.
- (A) 0011 0100 0001
  - (B) 1100 1011 0110
  - (C) 1100 1011 1000
  - (D) 0011 0100 0111
- 20** The sum of 11101 + 10111 equals \_\_\_\_\_.
- (A) 110100
  - (B) 100100
  - (C) 110011
  - (D) 100001
- 21** A decimal 11 in BCD is \_\_\_\_\_.
- (A) 00010001
  - (B) 00010010
  - (C) 00001011
  - (D) 00001100
- 22** The difference of 111 — 001 equals \_\_\_\_\_.
- (A) 001
  - (B) 110
  - (C) 100
  - (D) 111

**23** Which of the examples below expresses the distributive law of Boolean algebra ?

(A)  $A + (B + C) = AB + AC$

(B)  $A(BC) = (AB) + C$

(C)  $(A + B) + C = A + (B + C)$

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

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

(A) diagonal

(B) overlapping combinations

(C) corners in the same row

(D) corners in the same column

**25** The base of the hexadecimal system is :

(A) ten

(B) two

(C) eight

(D) sixteen

- 26 Which of the following expressions is in the sum-of-products (SOP) form ?
- (A)  $AB(CD)$
  - (B)  $AB + CD$
  - (C)  $(A + B)(C + D)$
  - (D)  $(A)B(CD)$
- 27 How many gates would be required to implement the following Boolean expression before simplification ?  $XY + X(X + Z) + Y(X + Z)$
- (A) 4
  - (B) 5
  - (C) 1
  - (D) 2
- 28 The NAND or NOR gates are referred to as "universal" gates because either :
- (A) are used in all countries of the world
  - (B) were the first gates to be integrated
  - (C) can be found in almost all digital circuits
  - (D) can be used to build all the other types of gates