

**B****DE-2931****First Year B. Sc. (Sem. I) Examination****March / April – 2016****Applied Electronics : 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"/>
<b>FIRST YEAR B. Sc. (SEM. 1)</b>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<b>APPLIED ELECTRONICS - 2</b>	<input type="text"/>
Subject Code No. : <input type="text"/> 2 <input type="text"/> 9 <input type="text"/> 3 <input type="text"/> 1	<input type="text"/>
Section No. (1, 2,.....) : <input type="text"/> 1,2,3	
Student's Signature	

- (2) All 28 questions are compulsory.
- (3) Symbols and abbreviations used in the paper have their usual meaning.
- (4) Non-programmable calculators are allowed.

**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  
is given back side of provided O.M.R. Sheet.*

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

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

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

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

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

**23** How many gates would be required to implement the following Boolean expression before simplification ?

$$XY + X(X + Z) + Y(X + Z)$$

(A) 5

(B) 1

(C) 2

(D) 4

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

(A) were the first gates to be integrated

(B) can be found in almost all digital circuits

(C) can be used to build all the other types of gates

(D) are used in all countries of the world

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

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

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

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

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

- 26 Which of the following combinations cannot be combined into K-map groups ?
- (A) overlapping combinations
  - (B) corners in the same row
  - (C) corners in the same column
  - (D) diagonal
- 27 The base of the hexadecimal system is \_\_\_\_\_.
- (A) two
  - (B) eight
  - (C) sixteen
  - (D) ten
- 28 Which of the following expressions is in the sum-of-products (SOP) form ?
- (A)  $AB + CD$
  - (B)  $(A + B)(C + D)$
  - (C)  $(A)B(CD)$
  - (D)  $AB(CD)$