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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 The basic logic gate whose output is the complement of the input is the :

(A) AND gate

(B) inverter

(C) comparator

(D) OR gate

2 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 = 1

(B) 1 + 1 + 0 + 0 = 0

(C) 1 + 1 + 0 + 0 = 00

(D) 1 + 1 + 0 + 0 = 01

3 What are the symbols used to represent digits in the binary number system ?

(A) 0, 1, 2

(B) 0 through 8

(C) 1, 2

(D) 0, 1

4 A full subtracter circuit requires _____.

(A) two inputs and three outputs

(B) three inputs and one output

(C) three inputs and two outputs

(D) two inputs and two outputs

5 The output of an AND gate is LOW _____.

(A) when any input is LOW

(B) when any input is HIGH

(C) when all inputs are HIGH

(D) all the time

6 Give the decimal value of binary 10010.

(A) 9

(B) 18

(C) 20

(D) 6

7 The output of an AND gate with three inputs, A, B, and C, is HIGH when _____.

(A) A = 0, B = 0, C = 0

(B) A = 1, B = 1, C = 1

(C) A = 1, B = 0, C = 1

(D) A = 1, B = 1, C = 0

8 If a 3-input NOR gate has eight input possibilities, how many of those possibilities will result in a HIGH output ?

(A) 2

(B) 7

(C) 8

(D) 1

9 The output of a NOR gate is HIGH if _____

(A) any input is HIGH

(B) any input is LOW

(C) all inputs are LOW

(D) all inputs are HIGH

10 The Boolean expression for a 3-input AND gate is _____

(A) X = ABC

(B) X = A + B + C

(C) X = AB + C

(D) X = AB

11 What does the small bubble on the output of the NAND gate logic symbol mean ?

(A) tristate

(B) the output is inverted.

(C) none of these

(D) open collector output

12 Logically, the output of a NOR gate would have the same Boolean expression as a(n) :

(A) OR gate immediately followed by an inverter

(B) AND gate immediately followed by an inverter

(C) NOR gate immediately followed by an inverter

(D) NAND gate immediately followed by an inverter

13 Convert binary number 01011 to decimal :

(A) 35

(B) 15

(C) 10

(D) 11

14 Convert decimal 64 to binary :

(A) 01000000

(B) 00110110

(C) 01001000

(D) 01010010

15 The BCD number for decimal 347 is _____.

(A) 0011 0100 0111

(B) 0011 0100 0001

(C) 1100 1011 0110

(D) 1100 1011 1000

16 The sum of 11101 + 10111 equals _____.

(A) 100001

(B) 110100

(C) 100100

(D) 110011

17 A decimal 11 in BCD is _____.

(A) 00001100

(B) 00010001

(C) 00010010

(D) 00001011

18 The difference of 111 — 001 equals _____.

(A) 111

(B) 001

(C) 110

(D) 100

19 Which of the following is an invalid BCD code ?

(A) 1101

(B) 0101

(C) 1001

(D) 0011

20 The binary number 11001110 is equal to the decimal number _____.

(A) 206

(B) 127

(C) 66

(D) 12

21 Which of the following is not a basic Boolean operation ?

(A) NOT

(B) AND

(C) FOR

(D) OR

22 When does the output of a NAND gate = 1 ?

(A) Only when all inputs = 0

(B) Whenever a 1 is present at an input

(C) Only when all inputs = 1

(D) Whenever a 0 is present at an input

23 Which of the following expressions is in the sum-of-products (SOP) form ?

(A) (A) B (CD)

(B) AB (CD)

(C) AB + CD

(D) (A + B) (C + D)

24 How many gates would be required to implement the following Boolean expression before simplification ? XY + X (X + Z) + Y (X + Z)

(A) 2

(B) 4

(C) 5

(D) 1

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

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

(B) are used in all countries of the world

(C) were the first gates to be integrated

(D) can be found in almost all digital circuits

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

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

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

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

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

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

(A) corners in the same column

(B) diagonal

(C) overlapping combinations

(D) corners in the same row

28 The base of the hexadecimal system is :

(A) sixteen

(B) ten

(C) two

(D) eight