



**DE-2923**

**First Year B. Sc. (Sem. I) Examination**

**March / April – 2016**

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

- (2) This exam contains 28 multiple choice questions.
- (3) Figure on the right indicates full marks
- (4) All symbols and abbreviations have their usual meaning.
- (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 Choice 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 છે.***

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

- 1 One application of a digital multiplexer is to facilitate:
- (A) serial-to-parallel conversion
  - (B) parity checking
  - (C) data selector
  - (D) data generation
- 2 The primary use for Gray code is:
- (A) turning on/off software switches
  - (B) to represent the correct ASCII code to indicate the angular position of a shaft on rotating machinery
  - (C) to convert the angular position of a shaft on rotating machinery into hexadecimal code
  - (D) coded representation of a shaft's mechanical position
- 3 Which of the following decimal number is equivalent to binary number  $110111_2$  ?
- (A) 55
  - (B) 75
  - (C) 57
  - (D) 65
- 4 Which of the following binary number is equivalent to decimal number 20 ?
- (A) 10101
  - (B) 10100
  - (C) 11111
  - (D) 10001

- 5 What is the difference between binary coding and binary coded decimal?
- (A) BCD is pure binary
  - (B) Binary coding has a decimal format
  - (C) BCD has no decimal format
  - (D) Binary coding is pure binary
- 6 The code which can represent numbers, characters and special characters are called
- (A) BCD code
  - (B) EBCDIC code
  - (C) Alphanumeric code
  - (D) Gray code
- 7 If a 3-input OR gate has eight input possibilities, how many of those possibilities will result in a HIGH output?
- (A) 2
  - (B) 7
  - (C) 8
  - (D) 1
- 8 What is the circuit number of the IC that contains four two-input AND gates in standard TTL?
- (A) 7404
  - (B) 7408
  - (C) 7432
  - (D) 7402

- 9 The logic expression for a NOR gate is \_\_\_\_\_.
- (A)  $X = A + \bar{B}$
  - (B)  $X = A + B$
  - (C)  $X = \overline{A + B}$
  - (D)  $X = \bar{A} + B$
- 10 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)  $(A + B) + C = A + (B + C)$
- 11 Which of the examples below expresses the commutative law of multiplication?
- (A)  $AB = B + A$
  - (B)  $AB = BA$
  - (C)  $AB = A \times B$
  - (D)  $A + B = B + A$
- 12 Most de-multiplexers facilitate which type of conversion?
- (A) single input, multiple outputs
  - (B) ac to dc
  - (C) odd parity to even parity
  - (D) decimal-to-hexadecimal

- 13 What is binary code of 0110 and 0111 gray code ?
- (A) 0101,0101
  - (B) 1111,0001
  - (C) 1010,0011
  - (D) 0100,0101
- 14 What is the gray code of decimal number 12 ?
- (A) 1010
  - (B) 1111
  - (C) 0001
  - (D) 1110
- 15 One of De Morgan's theorems states that  $\overline{X+Y} = \bar{X} \cdot \bar{Y}$ . Simply stated, this means that logically there is no difference between:
- (A) a NAND and an OR gate with inverted inputs
  - (B) an AND and a NOR gate with inverted inputs
  - (C) a NOR and a NAND gate with inverted input
  - (D) a NOR and an AND gate with inverted inputs
- 16 A basic multiplexer principle can be demonstrated through the use of a :
- (A) DPDT switch
  - (B) rotary switch
  - (C) linear stepper
  - (D) single-pole relay
- 17  $A+(B+C)=(A+B)+C$  and  $A.(B+C)=(A.B)+(A.C)$  are \_\_\_\_\_ and \_\_\_\_\_ law of Boolean algebra
- (A) associative, distributive
  - (B) commutative, distributive
  - (C) consensus, distributive
  - (D) commutative, associative

- 18 A binary code that progresses such that only one bit changes between two successive codes is:
- (A) 8421 code
  - (B) excess-3 code
  - (C) Gray code
  - (D) nine's-complement code
- 19 How many select lines would be required for an 8-line-to-1-line multiplexer?
- (A) 3
  - (B) 4
  - (C) 8
  - (D) 2
- 20 Most of the multiplexers facilitate which type of conversion?
- (A) single input, multiple outputs
  - (B) ac to dc
  - (C) odd parity to even parity
  - (D) decimal-to-hexadecimal
- 21 Which of the following decimal number is equivalent to octal number  $(125)_8$
- (A) 65
  - (B) 75
  - (C) 85
  - (D) 95
- 22 3428 is the decimal value for which of the following binary coded decimal (BCD) groupings?
- (A) 11010000101000
  - (B) 011010010000010
  - (C) 110100001101010
  - (D) 11010001001000

23 What is the decimal value of the hexadecimal number 3C9A?

(A) 15514

(B) 14414

(C) 13414

(D) 15524

24 Simplify :  $A+BC =$  \_\_\_\_\_

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

(B)  $AB+A$

(C)  $A(B+C)$

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

25 Simplify  $A+0=$  \_\_\_\_\_  $A+A=$  \_\_\_\_\_ and  $A+1=$  \_\_\_\_\_

(A) 1,1,A

(B) A,A,0

(C) A,A,A

(D) A,A,1

26 If u, apply  $A=0$ ,  $B=1$  as input and  $C_i = 1$  is the carry of the previous stage in full adder circuit then  $S = \underline{\hspace{2cm}}$  and  $C = \underline{\hspace{2cm}}$

(A)  $S=0$   $C=0$

(B)  $S=1$   $C=1$

(C)  $S=1$   $C=0$

(D)  $S=0$   $C=1$

27 If u apply  $A = 1$ ,  $B = 1$  as input and  $B_i = 0$  is the borrow in full subtractor circuit then difference  $D = \underline{\hspace{2cm}}$  and  $B_0$  borrow out =  $\underline{\hspace{2cm}}$

(A)  $D = 0$   $B_0 = 1$

(B)  $D = 1$   $B_0 = 0$

(C)  $S = 1$   $C = 01$

(D)  $D = 0$   $B_0 = 0$

28 Which of the following Octal number is equivalent to decimal number 543.26 ?

(A)  $(1037.201)_8$

(B)  $(1037.200)_8$

(C)  $(1037.205)_8$

(D)  $(1027.105)_8$

