



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.

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

Name of the Subject :
ELECTRONICS - 2

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

Seat No. :
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Student's Signature

- (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 છાપેલ છે.***

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

- 1 Which of the following decimal number is equivalent to binary number 110111_2 ?
- (A) 65
 - (B) 55
 - (C) 75
 - (D) 57
- 2 Which of the following binary number is equivalent to decimal number 20 ?
- (A) 10001
 - (B) 10101
 - (C) 10100
 - (D) 11111
- 3 What is the difference between binary coding and binary coded decimal?
- (A) Binary coding is pure binary
 - (B) BCD is pure binary
 - (C) Binary coding has a decimal format
 - (D) BCD has no decimal format
- 4 The code which can represent numbers, characters and special characters are called
- (A) Gray code
 - (B) BCD code
 - (C) EBCDIC code
 - (D) Alphanumeric code

- 5 If a 3-input OR gate has eight input possibilities, how many of those possibilities will result in a HIGH output?
- (A) 1
 - (B) 2
 - (C) 7
 - (D) 8
- 6 What is the circuit number of the IC that contains four two-input AND gates in standard TTL?
- (A) 7402
 - (B) 7404
 - (C) 7408
 - (D) 7432
- 7 The logic expression for a NOR gate is _____.
- (A) $X = \bar{A} + B$
 - (B) $X = A + \bar{B}$
 - (C) $X = A + B$
 - (D) $X = \overline{A + B}$
- 8 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) $A(BC) = (AB) + C$

- 9 Which of the examples below expresses the commutative law of multiplication?
- (A) $A + B = B + A$
 - (B) $AB = B + A$
 - (C) $AB = BA$
 - (D) $AB = A \times B$
- 10 Most de-multiplexers facilitate which type of conversion?
- (A) decimal-to-hexadecimal
 - (B) single input, multiple outputs
 - (C) ac to dc
 - (D) odd parity to even parity
- 11 One application of a digital multiplexer is to facilitate:
- (A) data generation
 - (B) serial-to-parallel conversion
 - (C) parity checking
 - (D) data selector
- 12 The primary use for Gray code is:
- (A) coded representation of a shaft's mechanical position
 - (B) turning on/off software switches
 - (C) to represent the correct ASCII code to indicate the angular position of a shaft on rotating machinery
 - (D) to convert the angular position of a shaft on rotating machinery into hexadecimal code

- 13 Which of the following decimal number is equivalent to octal number $(125)_8$
- (A) 95
 - (B) 65
 - (C) 75
 - (D) 85
- 14 3428 is the decimal value for which of the following binary coded decimal (BCD) groupings?
- (A) 11010001001000
 - (B) 11010000101000
 - (C) 011010010000010
 - (D) 110100001101010
- 15 What is binary code of 0110 and 0111 gray code ?
- (A) 0100,0101
 - (B) 0101,0101
 - (C) 1111,0001
 - (D) 1010,0011
- 16 What is the gray code of decimal number 12 ?
- (A) 1110
 - (B) 1010
 - (C) 1111
 - (D) 0001
- 17 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 NOR and an AND gate with inverted inputs
 - (B) a NAND and an OR gate with inverted inputs
 - (C) an AND and a NOR gate with inverted inputs
 - (D) a NOR and a NAND gate with inverted input

- 18 A basic multiplexer principle can be demonstrated through the use of a :
- (A) single-pole relay
 - (B) DPDT switch
 - (C) rotary switch
 - (D) linear stepper
- 19 $A+(B+C)=(A+B)+C$ and $A.(B+C)=(A.B)+(A.C)$ are _____ and _____ law of Boolean algebra
- (A) commutative, associative
 - (B) associative, distributive
 - (C) commutative, distributive
 - (D) consensus, distributive
- 20 A binary code that progresses such that only one bit changes between two successive codes is:
- (A) nine's-complement code
 - (B) 8421 code
 - (C) excess-3 code
 - (D) Gray code
- 21 How many select lines would be required for an 8-line-to-1-line multiplexer?
- (A) 2
 - (B) 3
 - (C) 4
 - (D) 8
- 22 Most of multiplexers facilitate which type of conversion?
- (A) decimal-to-hexadecimal
 - (B) single input, multiple outputs
 - (C) ac to dc
 - (D) odd parity to even parity

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

(A) $(1027.105)_8$

(B) $(1037.201)_8$

(C) $(1037.200)_8$

(D) $(1037.205)_8$

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

(A) 15524

(B) 15514

(C) 14414

(D) 13414

25 Simplify : $A+BC =$ _____

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

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

(C) $AB+A$

(D) $A(B+C)$

- 26 Simplify $A+0=$ _____ $A+A=$ _____ and $A+1=$ _____
- (A) $A,A,1$
- (B) $1,1,A$
- (C) $A,A,0$
- (D) A,A,A
- 27 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 $S =$ _____ and $C =$ _____
- (A) $S=0$ $C=1$
- (B) $S=0$ $C=0$
- (C) $S=1$ $C=1$
- (D) $S=1$ $C=0$
- 28 If u apply $A = 1$, $B = 1$ as input and $B_i = 0$ is the borrow in full subtractor circuit then difference $D =$ _____ and B_0 borrow out = _____
- (A) $D = 0$ $B_0 = 0$
- (B) $D = 0$ $B_0 = 1$
- (C) $D = 1$ $B_0 = 0$
- (D) $S = 1$ $C = 01$

