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) 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

Seat No. :

Section No. (1, 2,....) 1,2,3

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 फर्मा अंगेली अन्तर्गत अन्यत्र उपलब्धी आपेक्ष
O.M.R. Sheet-वी पावण आपेक्ष आहे.

Important instructions to fillup O.M.R. Sheet is given back side of provided O.M.R. Sheet.
1 The code which can represent numbers, characters and special characters are called
   (A) EBCDIC code
   (B) Alphanumeric code
   (C) Gray code
   (D) BCD code

2 If a 3-input OR gate has eight input possibilities, how many of those possibilities will result in a HIGH output?
   (A) 7
   (B) 8
   (C) 1
   (D) 2

3 What is the circuit number of the IC that contains four two-input AND gates in standard TTL?
   (A) 7408
   (B) 7432
   (C) 7402
   (D) 7404

4 The logic expression for a NOR gate is ________.
   (A) \( X = A + B \)
   (B) \( X = \overline{A + B} \)
   (C) \( X = \overline{A} + B \)
   (D) \( X = A + \overline{B} \)
5 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) \( A(B + C) = AB + AC \)

6 Which of the examples below expresses the commutative law of multiplication?
   (A) \( AB = BA \)
   (B) \( AB = A \times B \)
   (C) \( A + B = B + A \)
   (D) \( AB = B + A \)

7 Most de-multiplexers facilitate which type of conversion?
   (A) ac to do
   (B) odd parity to even parity
   (C) decimal-to-hexadecimal
   (D) single input, multiple outputs

8 One application of a digital multiplexer is to facilitate:
   (A) parity checking
   (B) data selector
   (C) data generation
   (D) serial-to-parallel conversion
9. The primary use for Gray code is:
   (A) to represent the correct ASCII code to indicate the angular position of a shaft on rotating machinery
   (B) to convert the angular position of a shaft on rotating machinery into hexadecimal code
   (C) coded representation of a shaft's mechanical position
   (D) turning on/off software switches

10. Which of the following decimal number is equivalent to binary number 1101112?
   (A) 75
   (B) 57
   (C) 65
   (D) 55

11. Which of the following binary number is equivalent to decimal number 20?
   (A) 10100
   (B) 11111
   (C) 10001
   (D) 10101

12. What is the difference between binary coding and binary coded decimal?
   (A) Binary coding has a decimal format
   (B) BCD has no decimal format
   (C) Binary coding is pure binary
   (D) BCD is pure binary
13 How many select lines would be required for an 8-line-to-1-line multiplexer?
   (A)  4
   (B)  8
   (C)  2
   (D)  3

14 Most de multiplexers facilitate which type of conversion?
   (A)  ac to dc
   (B)  odd parity to even parity
   (C)  decimal-to-hexadecimal
   (D)  single input, multiple outputs

15 Which of the following decimal number is equivalent to octal number (125)₈
   (A)  75
   (B)  85
   (C)  95
   (D)  65

16 3428 is the decimal value for which of the following binary coded decimal (BCD) groupings?
   (A)  011010010000010
   (B)  110100001101010
   (C)  11010001001000
   (D)  11010000101000

17 What is binary code of 0110 and 0111 gray code?
   (A)  1111,0001
   (B)  1010,0011
   (C)  0100,0101
   (D)  0101,0101
18 What is the gray code of decimal number 12?
   (A) 1111
   (B) 0001
   (C) 1110
   (D) 1010

19 One of De Morgan's theorems states that $\overline{X + Y} = \overline{X} \cdot \overline{Y}$. Simply stated, this means that logically there is no difference between:
   (A) an AND and a NOR gate with inverted inputs
   (B) a NOR and a NAND gate with inverted input
   (C) a NOR and an AND gate with inverted inputs
   (D) a NAND and an OR gate with inverted inputs

20 A basic multiplexer principle can be demonstrated through the use of a:
   (A) rotary switch
   (B) linear stepper
   (C) single-pole relay
   (D) DPDT switch

21 $A+(B+C)=(A+B)+C$ and $A.(B+C)=(A.B)+(A.C)$ are ______ and ______ law of Boolean algebra
   (A) commutative, distributive
   (B) consensus, distributive
   (C) commutative, associative
   (D) associative, distributive

22 A binary code that progresses such that only one bit changes between two successive codes is:
   (A) excess-3 code
   (B) Gray code
   (C) nine's-complement code
   (D) 8421 code
23. It u, apply A=0, B=1 as input and Cₗ = 1 is the carry of the previous stage in full adder circuit then S = _____ and C = _____

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

24. If u apply A = 1, B = 1 as input and Bₗ = 0 is the borrow in full substractor circuit then difference D = _____ and B₀ borrow out = _____

(A) D = 1 B₀ = 0
(B) S =1 C = 01
(C) D = 0 B₀ = 0
(D) D = 0 B₀ = 1

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

(A) (1037.200)₈
(B) (1037.205)₈
(C) (1027.105)₈
(D) (1037.201)₈
What is the decimal value of the hexadecimal number 3C9A?

(A) 14414

(B) 13414

(C) 15524

(D) 15514

Simplify: A+BC = ________

(A) AB+A

(B) A(B+C)

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

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

Simplify A+0= ________ A+A= ________ and A+1= ________

(A) A,A,0

(B) A,A,A

(C) A,A,1

(D) 1,1,A