



Faculty of MCA - 544

Dr. Subhash Technical Campus, Junagadh
Master of Computer Applications

Subject: 619403 Basic Mathematics Semester - 1 MCQs

NO.	QUESTION	ANS
Q.1	The Cartesian Product $B \times A$ is equal to the Cartesian product $A \times B$. a) True b) False	B
Q.2	What is the cardinality of the set of odd positive integers less than 10? a) 10 b) 5 c) 3 d) 20	B
Q.3	Which of the following two sets are equal? a) $A = \{1, 2\}$ and $B = \{1\}$ b) $A = \{1, 2\}$ and $B = \{1, 2, 3\}$ c) $A = \{1, 2, 3\}$ and $B = \{2, 1, 3\}$ d) $A = \{1, 2, 4\}$ and $B = \{1, 2, 3\}$	C
Q.4	The members of the set $S = \{x \mid x \text{ is the square of an integer and } x < 100\}$ is a) $\{0, 2, 4, 5, 9, 58, 49, 56, 99, 12\}$ b) $\{0, 1, 4, 9, 16, 25, 36, 49, 64, 81\}$ c) $\{1, 4, 9, 16, 25, 36, 64, 81, 85, 99\}$ d) $\{0, 1, 4, 9, 16, 25, 36, 49, 64, 121\}$	B
Q.5	Two sets are called disjoint if there _____ is the empty set. a) Union b) Difference c) Intersection d) Complement	C
Q.6	The difference of $\{1, 2, 3\}$ and $\{1, 2, 5\}$ is the set _____ a) $\{1\}$ b) $\{5\}$ c) $\{3\}$ d) $\{2\}$	C
Q.7	In which of the following sets $A - B$ is equal to $B - A$? a) $A = \{1, 2, 3\}$, $B = \{2, 3, 4\}$ b) $A = \{1, 2, 3\}$, $B = \{1, 2, 3, 4\}$ c) $A = \{1, 2, 3\}$, $B = \{2, 3, 1\}$ d) $A = \{1, 2, 3, 4, 5, 6\}$, $B = \{2, 3, 4, 5, 1\}$	C



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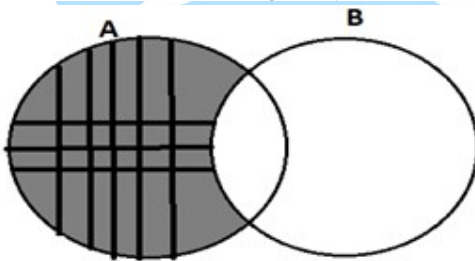
- Q.8 Let A be set of all prime numbers, B be the set of all even prime numbers, C be the set of all odd prime numbers, then which of the following is true? D
- a) $A \equiv B \cup C$
 - b) B is a singleton set.
 - c) $A \equiv C \cup \{2\}$
 - d) All of the mentioned

- Q.9 If A has 4 elements B has 8 elements then the minimum and maximum number of elements in $A \cup B$ are _____ B
- a) 4, 8
 - b) 8, 12
 - c) 4, 12
 - d) None of the mentioned

- Q.10 If A is $\{\{\Phi\}, \{\Phi, \{\Phi\}\}\}$, then the power set of A has how many element? B
- a) 2
 - b) 4
 - c) 6
 - d) 8

- Q.11 Which sets are not empty? D
- a) $\{x: x \text{ is a even prime greater than } 3\}$
 - b) $\{x: x \text{ is a multiple of } 2 \text{ and is odd}\}$
 - c) $\{x: x \text{ is an even number and } x+3 \text{ is even}\}$
 - d) $\{x: x \text{ is a prime number less than } 5 \text{ and is odd}\}$

- Q.12 The shaded area of figure is best described by? B



- a) A' (Complement of A)
- b) $A \cup B - B$
- c) $A \cap B$
- d) B

- Q.13 If $n(A)=20$ and $n(B)=30$ and $n(A \cup B) = 40$ then $n(A \cap B)$ is? D
- a) 20
 - b) 30
 - c) 40



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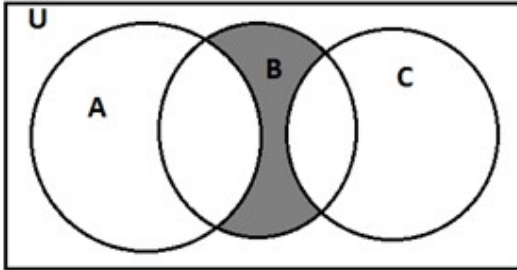
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d) 10

Q.14 The shaded area of figure is best described by?

B



- a) A' (Complement of A)
- b) $B - (A \cap B) - (C \cap B)$
- c) $A \cap C \cap B$
- d) B' (Complement of B)

Q.15 What is the Cardinality of the Power set of the set $\{0, 1, 2\}$?

A

- a) 8
- b) 6
- c) 7
- d) 9

Q.16 The intersection of the sets $\{1, 2, 5\}$ and $\{1, 2, 6\}$ is the set _____

A

- a) $\{1, 2\}$
- b) $\{5, 6\}$
- c) $\{2, 5\}$
- d) $\{1, 6\}$

Q.17 The complement of the set A is _____

B

- a) $A - B$
- b) $U - A$
- c) $A - U$
- d) $B - A$

Q.18 Let $A_i = \{i, i+1, i+2, \dots\}$. Then set $\{n, n+1, n+2, n+3, \dots\}$ is the _____ of the set A_i .

B

- a) Union
- b) Intersection
- c) Set Difference
- d) Disjoint

Q.19 The set difference of the set A with null set is _____

A

- a) A



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- b) null
c) U
d) B
- Q.20 Two sets A and B contains a and b elements respectively. If power set of A contains 16 more elements than that of B, value of 'b' and 'a' are _____ A
a) 4, 5
b) 6, 7
c) 2, 3
d) None of the mentioned
- Q.21 If $n(A)=10$, $n(B)=30$, $n(C)=50$ and if set A, B, C are pairwise disjoint then which of the following is correct? D
a) $n(A \cup B)=0$
b) $n(B \cup C)=0$
c) $n(A \cup B \cup C)=90$
d) All of the mentioned
- Q.22 A symmetric matrix is a one in which? C
a) All diagonal elements are zero
b) All diagonal elements are 1
c) $A = A^T$
d) $A = -A^T$
- Q.23 A matrix having one row and many columns is known as? A
a) Row matrix
b) Column matrix
c) Diagonal matrix
d) None of the mentioned
- Q.24 The trace of the matrix is defined as _____ B
a) Sum of all the elements of the matrix
b) Sum of all the elements of leading diagonal of matrix
c) Sum of all non-zero elements of matrix
d) None of the mentioned
- Q.25 Two matrix can be added if _____ C
a) rows of both the matrices are same
b) columns of both the matrices are same
c) both rows and columns of both the matrices are same
d) number of rows of first matrix should be equal to number of column of second
- Q.26 For matrix A if $AA^T = I$, I is identity matrix then A is? A



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- a) Orthogonal matrix
b) Nilpotent matrix
c) Idempotent matrix
d) None of the mentioned
- Q.27 Let A order (a x b) and B order(c x d) be two matrices, then for AB to exist, correct relation is given by? B
a) $a = d$
b) $b = c$
c) $a = b$
d) $c = d$
- Q.28 Let $A = [a_{ij}]$ be an $m \times n$ matrix and k be a scalar then kA is equal to A
a) $[ka_{ij}]_{m \times n}$
b) $[a_{ij}/k]_{m \times n}$
c) $[k^2 a_{ij}]_{m \times n}$
d) None of the mentioned
- Q.29 The matrix multiplication is distributive over matrix addition. A
a) True
b) False
- Q.30 For matrix A, B if $A - B = O$, where O is a null matrix then? C
a) $A = O$
b) $B = O$
c) $A = B$
d) None of the mentioned
- Q.31 All the diagonal elements of a skew-symmetric matrix is? A
a) 0
b) 1
c) 2
d) Any integer
- Q.32 The determinant of identity matrix is? A
a) 1
b) 0
c) Depends on the matrix
d) None of the mentioned
- Q.33 If determinant of a matrix A is Zero than _____ A
a) A is a Singular matrix



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- b) A is a non-Singular matrix
c) Can't say
d) None of the mentioned
- Q.34 Let $A = [ka_{ij}]_{n \times n}$, $B = [a_{ij}]_{n \times n}$, be an $n \times n$ matrices and k be a scalar then $\det(A)$ is equal to _____ B
a) $k \det(B)$
b) $k^n \det(B)$
c) $k^3 \det(b)$
d) None of the mentioned
- Q.35 Let A be a nilpotent matrix of order n then? A
a) $A^n = O$
b) $nA = O$
c) $A = nI$, I is Identity matrix
d) None of the mentioned
- Q.36 Which of the following property of matrix multiplication is correct? D
a) Multiplication is not commutative in general
b) Multiplication is associative
c) Multiplication is distributive over addition
d) All of the mentioned
- Q.37 If A is a lower triangular matrix then A^T is a _____ B
a) Lower triangular matrix
b) Upper triangular matrix
c) Null matrix
d) None of the mentioned
- Q.38 For a matrix A , B and identity matrix I , if a matrix $AB=I=BA$ then? D
a) B is inverse of A
b) A is inverse of B
c) $A^{-1} = B$, $B^{-1} = A$
d) All of the mentioned
- Q.39 Let $A = [0 \ 1 \ 0 \ 0]$, A^{-1} is equal to _____ C
a) Null matrix
b) Identity matrix
c) Does not exist
d) None of the mentioned
- Q.40 If A is an invertible square matrix then _____ A
a) $(A^T)^{-1} = (A^{-1})^T$



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- b) $(A^T)^T = (A^{-1})^T$
- c) $(A^T)^{-1} = (A^{-1})^{-1}$
- d) None of the mentioned

UNIT – 2

- Q.1 Which of the following statement is a proposition? D
- a) Get me a glass of milkshake
 - b) God bless you!
 - c) What is the time now?
 - d) The only odd prime number is 2
- Q.2 Which of the following option is true? A
- a) If the Sun is a planet, elephants will fly
 - b) $3 + 2 = 8$ if $5 - 2 = 7$
 - c) $1 > 3$ and 3 is a positive integer
 - d) $-2 > 3$ or 3 is a negative integer
- Q.3 What is the value of x after this statement, assuming the initial value of x is 5? C
- 'If x equals to one then $x=x+2$ else $x=0$ '.**
- a) 1
 - b) 3
 - c) 0
 - d) 2
- Q.4 Let P: I am in Bangalore.; Q: I love cricket.; then $q \rightarrow p$ (q implies p) is? A
- a) If I love cricket then I am in Bangalore
 - b) If I am in Bangalore then I love cricket
 - c) I am not in Bangalore
 - d) I love cricket
- Q.5 Let P: If Sahil bowls, Saurabh hits a century.; Q: If Raju bowls, Sahil gets out on first ball. Now if P is true and Q is false then which of the following can be true? C
- a) Raju bowled and Sahil got out on first ball
 - b) Raju did not bowled
 - c) Sahil bowled and Saurabh hits a century
 - d) Sahil bowled and Saurabh got out
- Q.6 Let P: I am in Delhi.; Q: Delhi is clean.; then $q \wedge p$ (q and p) is? A
- a) Delhi is clean and I am in Delhi
 - b) Delhi is not clean or I am in Delhi
 - c) I am in Delhi and Delhi is not clean



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d) Delhi is clean but I am in Mumbai

- Q.7 Let P: We should be honest. , Q: We should be dedicated. , R: We should be overconfident. Then 'We should be honest or dedicated but not overconfident.' is best represented by? D
- a) $\sim P \vee \sim Q \vee R$
b) $P \wedge \sim Q \wedge R$
c) $P \vee Q \wedge R$
d) $P \vee Q \wedge \sim R$
- Q.8 What is the negation of the statement $A \rightarrow (B \vee C)$? A
- a) $A \wedge \sim B \wedge \sim C$
b) $A \rightarrow B \rightarrow C$
c) $\sim A \wedge B \vee C$
d) None of the mentioned
- Q.9 The compound statement $A \rightarrow (A \rightarrow B)$ is false, then the truth values of A, B are respectively _____ C
- a) T, T
b) F, T
c) T, F
d) F, F
- Q.10 The statement which is logically equivalent to $A \wedge B$ is? D
- a) $A \rightarrow B$
b) $\sim A \wedge \sim B$
c) $A \wedge \sim B$
d) $\sim(A \rightarrow \sim B)$
- Q.11 Let P: We give a nice overall squad performance, Q: We will win the match. Then the symbolic form of "We will win the match if and only if we give a nice overall squad performance." is? C
- a) $P \vee Q$
b) $Q \wedge P$
c) $Q \leftrightarrow P$
d) $\sim P \vee Q$
- Q.12 Let P, Q, R be true, false true, respectively, which of the following is true? C
- a) $P \wedge Q \wedge R$
b) $P \wedge \sim Q \wedge \sim R$
c) $Q \rightarrow (P \wedge R)$
d) $P \rightarrow (Q \wedge R)$



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- Q.13 "Match will be played only if it is not a humid day." The negation of this statement is? A
a) Match will be played but it is a humid day
b) Match will be played or it is a humid day
c) All of the mentioned statement are correct
d) None of the mentioned
- Q.14 Consider the following statements. B
A: Raju should exercise.
B: Raju is not a decent table tennis player.
C: Raju wants to play good table tennis.
The symbolic form of "Raju is not a decent table tennis player and if he wants to play good table tennis then he should exercise." is?
a) $A \rightarrow B \rightarrow C$
b) $B \wedge (C \rightarrow A)$
c) $C \rightarrow B \wedge A$
d) $B \leftrightarrow A \wedge C$
- Q.15 The statement $(\sim P \leftrightarrow Q) \wedge \sim Q$ is true when? A
a) P: True Q: False
b) P: True Q: True
c) P: False Q: True
d) P: False Q: False
- Q.16 Let P, Q, R be true, false, false, respectively, which of the following is true? C
a) $P \wedge (Q \wedge \sim R)$
b) $(P \rightarrow Q) \wedge \sim R$
c) $Q \leftrightarrow (P \wedge R)$
d) $P \leftrightarrow (Q \vee R)$
- Q.17 A compound proposition that is always _____ is called a tautology. A
a) True
b) False
- Q.18 A compound proposition that is always _____ is called a contradiction. B
a) True
b) False
- Q.19 If A is any statement, then which of the following is a tautology? C
a) $A \wedge F$
b) $A \vee F$



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- c) $A \vee \neg A$
d) $A \wedge T$
- Q.20 If A is any statement, then which of the following is not a contradiction? B
a) $A \wedge \neg A$
b) $A \vee F$
c) $A \wedge F$
d) None of mentioned
- Q.21 $\neg (A \vee q) \wedge (A \wedge q)$ is a _____ B
a) Tautology
b) Contradiction
c) Contingency
d) None of the mentioned
- Q.22 $(A \vee \neg A) \vee (q \vee T)$ is a _____ A
a) Tautology
b) Contradiction
c) Contingency
d) None of the mentioned
- Q.23 $A \wedge \neg(A \vee (A \wedge T))$ is always _____ B
a) True
b) False
- Q.24 $A \vee F) \vee (A \vee T)$ is always _____ A
a) True
b) False
- Q.25 $A \rightarrow (A \vee q)$ is a _____ A
a) Tautology
b) Contradiction
c) Contingency
d) None of the mentioned
- Q.26 Which of the following is De-Morgan's law? B
a) $P \wedge (Q \vee R) \equiv (P \wedge Q) \vee (P \wedge R)$
b) $\sim(P \wedge R) \equiv \sim P \vee \sim R, \sim(P \vee R) \equiv \sim P \wedge \sim R$
c) $P \vee \sim P \equiv \text{True}, P \wedge \sim P \equiv \text{False}$
d) None of the mentioned
- Q.27 What is the dual of $(A \wedge B) \vee (C \wedge D)$? B
a) $(A \vee B) \vee (C \vee D)$



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b) $(A \vee B) \wedge (C \vee D)$

c) $(A \vee B) \vee (C \wedge D)$

d) $(A \wedge B) \vee (C \vee D)$

Q.28 Negation of statement $(A \wedge B) \rightarrow (B \wedge C)$ is _____ A

a) $(A \wedge B) \rightarrow (\sim B \wedge \sim C)$

b) $\sim(A \wedge B) \vee (B \vee C)$

c) $\sim(A \rightarrow B) \rightarrow (\sim B \wedge C)$

d) None of the mentioned

Q.29 Which of the following satisfies commutative law? D

a) \wedge

b) \vee

c) \leftrightarrow

d) All of the mentioned

Q.30 If the truth value of $A \vee B$ is true, then truth value of $\sim A \wedge B$ can be A

a) True if A is false

b) False if A is false

c) False if B is true and A is false

d) None of the mentioned

UNIT - 3

Q.1 The quotient when 19 is divided by 6 is? C

a) 1

b) 2

c) 3

d) 0

Q.2 The remainder when 111 is divided by 12 is? D

a) 0

b) 1

c) 2

d) 3

Q.3 The quotient and remainder when -1 is divided by 3 is? B

a) -1 and -1

b) -1 and 2

c) 1 and 2

d) -1 and -2



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- Q.4 The value of $12 \bmod 3$ is? A
- a) 0
 - b) 1
 - c) 2
 - d) 3
- Q.5 The value of $155 \bmod 9$ is? C
- a) 0
 - b) 1
 - c) 2
 - d) 3
- Q.6 Is 17 congruent to 4 modulo 6. B
- a) True
 - b) False
- Q.7 If $a \mid b$ and $a \mid c$, then? C
- a) $a \mid bc$
 - b) $c \mid a$
 - c) $a \mid (b+c)$
 - d) $b \mid a$
- Q.8 The quotient and remainder when 18 is divided by 5 is? D
- a) 2 and 3
 - b) 1 and 2
 - c) 3 and 2
 - d) 3 and 3
- Q.9 The value of $15 \bmod 11$ is? D
- a) 1
 - b) 2
 - c) 3
 - d) 4
- Q.10 How many prime numbers are there between 1 to 20? D
- a) 5
 - b) 6
 - c) 7
 - d) None of the mentioned
- Q.11 How many even 4 digit whole numbers are there? C
- a) 1358
 - b) 7250



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- c) 4500
- d) 3600

- Q.12 How many words with seven letters are there that start with a vowel and end with an A? Note that they don't have to be real words and letters can be repeated. D
- a) 45087902
 - b) 64387659
 - c) 12765800
 - d) 59406880
- Q.13 How many five-digit numbers can be made from the digits 1 to 7 if repetition is allowed? A
- a) 16807
 - b) 54629
 - c) 23467
 - d) 32354
- Q.14 Amit must choose a seven-digit PIN number and each digit can be chosen from 0 to 9. How many different possible PIN numbers can Amit choose? A
- a) 10000000
 - b) 9900000
 - c) 67285000
 - d) 39654900
- Q.15 A drawer contains 12 red and 12 blue socks, all unmatched. A person takes socks out at random in the dark. How many socks must he take out to be sure that he has at least two blue socks? D
- a) 18
 - b) 35
 - c) 28
 - d) 14
- Q.16 When four coins are tossed simultaneously, in _____ number of the outcomes at most two of the coins will turn up as heads. C
- a) 17
 - b) 28
 - c) 11
 - d) 43
- Q.17 How many numbers must be selected from the set {1, 2, 3, 4} to guarantee that at least one pair of these numbers add up to 7? B
- a) 14



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- b) 5
- c) 9
- d) 24

Q.18 The number of words of 4 consonants and 3 vowels can be made from 15 consonants and 5 vowels, if all the letters are different is _____ D

- a) $3! \cdot {}^{12}C_5$
- b) ${}^{16}C_4 \cdot {}^4C_4$
- c) $15! \cdot 4$
- d) ${}^{15}C_4 \cdot {}^5C_3 \cdot 7!$

Q.19 If a, b, c, d and e are five natural numbers, then find the number of ordered sets(a, b, c, d, e) possible such that $a+b+c+d+e=75$. D

- a) ${}^{65}C_5$
- b) ${}^{58}C_6$
- c) ${}^{72}C_7$
- d) ${}^{74}C_4$

Q.20 There are six movie parts numbered from 1 to 6. Find the number of ways in which they be arranged so that part-1 and part-3 are never together. B

- a) 876
- b) 480
- c) 654
- d) 237

UNIT - 4

Q.1 The binary relation $\{(1,1), (2,1), (2,2), (2,3), (2,4), (3,1), (3,2)\}$ on the set $\{1, 2, 3\}$ is _____ C

- a) reflexive, symmetric and transitive
- b) irreflexive, symmetric and transitive
- c) neither reflexive, nor irreflexive but transitive
- d) irreflexive and antisymmetric

Q.2 Determine the characteristics of the relation aRb if $a^2 = b^2$. D

- a) Transitive and symmetric
- b) Reflexive and asymmetry
- c) Trichotomy, antisymmetry, and irreflexive
- d) Symmetric, Reflexive, and transitive

Q.3 Let $A = \{1, 2, 3, 4\}$ and $B = \{4, 8, 9, 10\}$. A function $f: A \rightarrow B$ given by $f = \{(1, 4), (2, 8), (3, 9), (4, 10)\}$ is a C



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- a) Many-one function
- b) Identity function
- c) One-to-one function
- d) Into function

Q.4 If $\{(a, 8), (6, b)\}$ represents an identity function, then the value of a and b are respectively A

- a) (8,6)
- b) (8,8)
- c) (6,8)
- d) (6,6)

Q.5 If $f: A \rightarrow B$ is a bijective function and if $n(B) = 7$, then $n(A)$ is equal to A

- a) 7
- b) 49
- c) 1
- d) 4

Q.6 Let f and g be two functions given by D

$$f = \{(0, 1), (2, 0), (3, -4), (4, 2), (5, 7)\}$$

$$g = \{(0, 2), (1, 0), (2, 4), (-4, 2), (7, 0)\}$$

then the range of $f \circ g$ is

- a) $\{0, 2, 3, 4, 5\}$
- b) $\{-4, 1, 0, 2, 7\}$
- c) $\{1, 2, 3, 4, 5\}$
- d) $\{0, 1, 2\}$

Q.7 The function $f(x) = x + 1$ from the set of integers to itself is onto. Is it True or False? A

- a) True



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b) False

- Q.8 The domain of the function that assign to each pair of integers the maximum of these two integers is _____ D
a) \mathbb{N}
b) \mathbb{Z}
c) \mathbb{Z}^+
d) $\mathbb{Z}^+ \times \mathbb{Z}^+$
- Q.9 Let f and g be the function from the set of integers to itself, defined by $f(x) = 2x + 1$ and $g(x) = 3x + 4$. Then the composition of f and g is _____ A
a) $6x + 9$
b) $6x + 7$
c) $6x + 6$
d) $6x + 8$
- Q.10 The inverse of function $f(x) = x^3 + 2$ is _____ B
a) $f^{-1}(y) = (y - 2)^{1/2}$
b) $f^{-1}(y) = (y - 2)^{1/3}$
c) $f^{-1}(y) = (y)^{1/3}$
d) $f^{-1}(y) = (y - 2)$
- Q.11 Which of the following relations is symmetric but neither reflexive nor transitive for a set $A = \{1, 2, 3\}$. B
a) $R = \{(1, 2), (1, 3), (1, 4)\}$
b) $R = \{(1, 2), (2, 1)\}$
c) $R = \{(1, 1), (2, 2), (3, 3)\}$
d) $R = \{(1, 1), (1, 2), (2, 3)\}$
- Q.12 Which of the following relations is transitive but not reflexive for the set $S = \{3, 4, 6\}$? A
a) $R = \{(3, 4), (4, 6), (3, 6)\}$
b) $R = \{(1, 2), (1, 3), (1, 4)\}$
c) $R = \{(3, 3), (4, 4), (6, 6)\}$
d) $R = \{(3, 4), (4, 3)\}$
- Q.13 Let R be a relation in the set \mathbb{N} given by $R = \{(a, b) : a + b = 5, b > 1\}$. Which of the following will satisfy the given relation? A
a) $(2, 3) \in R$
b) $(4, 2) \in R$
c) $(2, 1) \in R$
d) $(5, 0) \in R$



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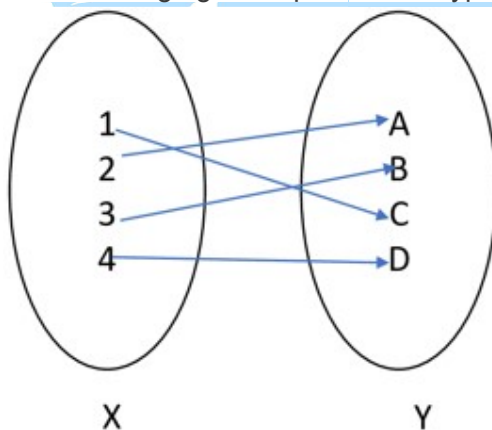
Q.14 $(a, a) \in R$, for every $a \in A$. This condition is for which of the following relations? A
a) Reflexive relation
b) Symmetric relation
c) Equivalence relation
d) Transitive relation

Q.15 $(a_1, a_2) \in R$ implies that $(a_2, a_1) \in R$, for all $a_1, a_2 \in A$. This condition is for which of the following relations? C
a) Equivalence relation
b) Reflexive relation
c) Symmetric relation
d) Universal relation

Q.16 A function $f: R \rightarrow R$ is defined by $f(x) = 5x^3 - 8$. The type of function is C
a) one -one
b) onto
c) many-one
d) both one-one and onto

Q.17 The function $f: R \rightarrow R$ defined as $f(x) = 7x + 4$ is both one-one and onto. A
a) True
b) False

Q.18 The following figure depicts which type of function? B



a) injective
b) bijective
c) surjective
d) neither injective nor surjective



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- Q.19 Let $M=\{5,6,7,8\}$ and $N=\{3,4,9,10\}$. Which one of the following functions is neither one-one nor onto? A
- a) $f=\{(5,3),(5,4),(6,4),(8,9)\}$
 - b) $f=\{(5,3),(6,4),(7,9),(8,10)\}$
 - c) $f=\{(5,4),(5,9),(6,3),(7,10),(8,10)\}$
 - d) $f=\{(6,4),(7,3),(7,9),(8,10)\}$

- Q.20 Which of the following relations is reflexive but not transitive for the set $T = \{7, 8, 9\}$? A
- a) $R = \{(7, 7), (8, 8), (9, 9)\}$
 - b) $R = \{(7, 8), (8, 7), (8, 9)\}$
 - c) $R = \{0\}$
 - d) $R = \{(7, 8), (8, 8), (8, 9)\}$

UNIT - 5

- Q.1 In a finite graph the number of vertices of odd degree is always _____ A
- A. Even
 - B. Odd
 - C. even or odd
 - D. infinite
- Q.2 An undirected graph has 8 vertices labelled 1, 2, ..., 8 and 31 edges. Vertices 1, 3, 5, 7 have degree 8 and vertices 2, 4, 6, 8 have degree 7. What is the degree of vertex 8? B
- A. 15
 - B. 8
 - C. 5
 - D. 23
- Q.3 Number of edges incident with the vertex V is called? C
- A. Degree of a Graph
 - B. Handshaking Lemma
 - C. Degree of a Vertex
 - D. None of the above
- Q.4 If in a graph multiple edges between the same set of vertices are allowed, it is called? C
- A. Hamiltonian Graphs
 - B. Simple graph
 - C. Multi graph
 - D. Euler Graphs
- Q.5 A Tree is a connected? B
- A. cyclic undirected graph
 - B. acyclic undirected graph
 - C. acyclic directed graph



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- Q.6 D. cyclic directed graph
A tree with N number of vertices contains? A
- A. (N-1) Edges
B. (N²)-1 Edges
C. N Edges
D. (N+1) Edges
- Q.7 The vertex which is of 0 degree is called? B
- A. Leaf
B. Root
C. Internal node
D. None of the above
- Q.8 A graph is collection of B
- A. Rows and columns
B. Vertices and edges
C. Equations
D. None of above
- Q.9 A graph with no edges is known as empty graph. Empty graph is known as..... A
- A. Trivial graph
B. Regular graph
C. Bipartite graph
D. None of these
- Q.10 If the origin and terminus of a walk are same, the walk is known as...? B
- A. Open
B. Closed
C. Path
D. None of these
- Q.11 In a graph if $e=(u, v)$ means.... D
- A. u is adjacent to v but v is not adjacent to u
B. e begins at u and ends at v
C. u is processor and v is successor
D. both B and C
- Q.12 The complete graph K, has... different spanning trees? A
- A. n^{n-2}
B. $n*n$
C. nn



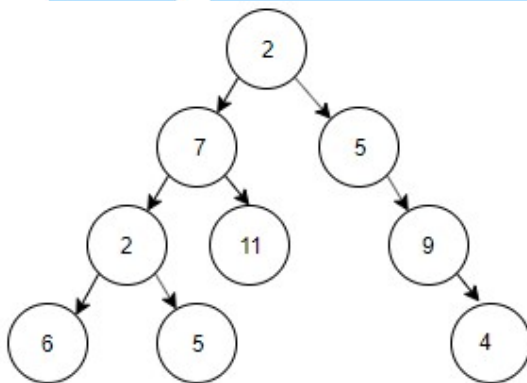
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D. n

- Q.13 Which of the following is not a type of graph ? D
- A. Euler
 - B. Hamiltonian
 - C. Tree
 - D. Path
- Q.14 Diameter of a graph is denoted by $\text{dia}(G)$ is defined by.... ? C
- A. $\max (e(v) : v \text{ belongs to } V)$
 - B. $\max(d(u,v))$
 - C. Both A and B
 - D. None of these
- Q.15 A vertex of a graph is called even or odd depending upon ? C
- A. Total number of edges in a graph is even or odd
 - B. Total number of vertices in a graph is even or odd
 - C. Its degree is even or odd
 - D. None of these
- Q.16 In preorder traversal of a binary tree the second step is..... B
- A. traverse the right subtree
 - B. traverse the left subtree
 - C. traverse right subtree and visit the root
 - D. visit the root
- Q.17 For the tree below, write the in-order traversal. A



- A. 6, 2, 5, 7, 11, 2, 5, 9, 4
- B. 6, 5, 2, 11, 7, 4, 9, 5, 2
- C. 2, 7, 2, 6, 5, 11, 5, 9, 4
- D. 2, 7, 6, 5, 11, 2, 9, 5, 4



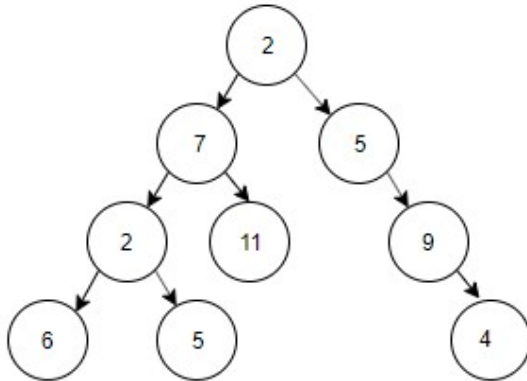
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Q.18 For the tree below, write the level-order traversal.

B



- A. 2, 7, 2, 6, 5, 11, 5, 9, 4
- B. 2, 7, 5, 2, 11, 9, 6, 5, 4
- C. 2, 5, 11, 6, 7, 4, 9, 5, 2
- D. 2, 7, 5, 6, 11, 2, 5, 4, 9

Q.19 In a binary search tree, which of the following traversals would print the numbers in the ascending order?

D

- A. Level-order traversal
- B. Pre-order traversal
- C. Post-order traversal
- D. In-order traversal

Q.20 What is a full binary tree?

A

- A. Each node has exactly zero or two children
- B. Each node has exactly two children
- C. All the leaves are at the same level
- D. Each node has exactly one or two children