FY CS DISCRETE MATHEMATICS SEMESTER 1

- 1. Relation R is defined on set A. If aRb and bRa implies a = b, then relation R is
 - a) Reflexive
 - b) Symmetric
 - c) Anti symmetric
 - d) Transitive
- 2. Let $A = \{1,2,3\}$, then number of elements in A X A are
 - a) 3
 - b) 6
 - c) 9
 - d) 12
- 3. If f is a function from A to B then the set of all images of f in B is called

4,

- a) Range of f
- b) Domain of f
- c) Co domain of f
- d) Inverse of f

4. Let $A = \{1,2\}$, $B = \{a,b,c\}$ and $R = \{(1,a),(1,b),(2,c)\}$, then which of the following is true?

- a) R is a relation but not a function
- b) R is a function but not a relation
- c) R is function as well as relation
- d) R is neither function nor relation
- 5. If A is a finite set having n elements, then the number of relations which can be defined on A are
 - a) 2n
 - b) n
 - c) *n*²
 - d) 2ⁿ
- 6. A function f from R to R defines as f(x) = |x| is
 - a) Invertible
 - b) Bijective
 - c) Not one one
 - d) Not onto

7. Degree of recurrence relation $a_n = a_{n-4} + 3$

- a) 1
- b) 2
- c) 3

- d) 4
- 8. Characteristic roots of recurrence relation $a_n 4a_{n-1} + 4a_{n-2} = 0$ are
 - a) 2,2
 - b) 4,4
 - c) 2,4
 - d) 0,2
- 9. Next term of Fibonacci sequence 1,1,2,3,5,8,13, ____ is
 - a) 18
 - b) 21
 - c) 104
 - d) 169
- 10. $C_3^{10} + C_4^{10} =$

 - a) C_3^{10} b) C_4^{10} c) C_3^{11} d) C_4^{11}
- 11. What is the coefficient of ab^4 in the expansion of $(a + b)^5$?

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- a) 1
- b) 5
- c) 10
- d) 15

12. Five girls are to be seated around a round table. The number of seating arrangements possible are

10,0

- a) 4!
- b) 5!
- c) 6!
- d) 7!
- 13. Godel number of a word $w = a_3 a_0 a_2$ is
 - a) 5
 - b) 6
 - c) 100
 - d) 200

14. Grammar which has no restrictions on its productions is

- a) type 0
- b) type 1
- c) type 2
- d) type 3

- 15. Minimum how many students should be there in a class to guarantee that atleast two students have their names starting from same letter?
 - a) 25
 - b) 26
 - c) 27
 - d) 28

16. n(A) = 50, n(B) = 30, $n(A \cap B) = 10$, $n(A \cup B) = 70$, then n(only A) is

- a) 20
- b) 40
- c) 60
- d) 120

17. The regular expression does not use which of the following symbols?

- a) (
- b))
- c) *
- d) ^
- 18. A graph with n vertices and no edges is called
 - a) Multigraph
 - b) Regular graph
 - c) Trivial graph
 - d) Complete graph
- 19. A graph in which there is an edge between every pair of vertices is called

0,5

- a) Regular graph
- b) Complete graph
- c) Simple graph
- d) Trail
- 20. A walk in which no vertex is repeated more than once is called
 - a) Closed walk
 - b) Path
 - c) Trail
 - d) Circuit
- 21. Connected graph without any cycle is called
 - a) Circuit
 - b) Tree
 - c) Diagraph
 - d) Path
- 22. Which of the following indicates pre order traversal?

- a) Right subtree, left subtree, root
- b) Root, left subtree, right subtree
- c) Left subtree, right subtreeroot
- d) Right subtree, root, left subtree

23. In a binary rooted tree, , the degree of the root is

- a) 0
- b) 1
- c) 2
- d) 3

24. If number of edges is 6, then the degree of the graph is

- a) 3
- b) 6
- c) 9
- d) 12
- 25. Multigraph has
- J2
 Jultigraph has
 a) No loops, no parallel edges
 b) Parallel edges but no loops
 c) Loops but no parallel edges
 d) Loops and parallel edges