

## Exam: End-Sem\_Exam\_DEC-2020\_CS3BS03\_Discrete Mathematics

Discrete Mathematics (T)  
0/60

1.

Not Answered

In a colony, there are 55 members. Every member posts a greeting card to all the members. How many greeting cards were posted by them?

A.	990
B.	890
<input checked="" type="radio"/> C.	2970
D.	1980

2.

Not Answered

Consider the binary relation  $R \{(x,y),(y,z),(z,x),(z,y)\}$  on the set  $\{x,y,z\}$ , which one of the following is true?

A.	R is symmetric but Not antisymmetric R is symmetric but Not antisymmetric
B.	R is not symmetric but antisymmetric
C.	R is both symmetric and antisymmetric R is both symmetric and antisymmetric
<input checked="" type="radio"/> D.	R is neither symmetric nor antisymmetric

3.

Not Answered

In how many ways a project team of 5 members can be selected from 6 men and 5 women consisting of 3 men and 2 women

A.	100
<input checked="" type="radio"/> B.	200

C.	300
D.	None

**4.**

Not Answered

If cardinality of set A is same as cardinality of set B then such type of sets are

A.	Equal set
<input checked="" type="radio"/> B.	Equivalent set
C.	Disjoint set
D.	None

**5.**

Not Answered

In Cricket League, in first round every team plays a match with every other team. 9 teams participated in the Cricket league. How many matches were played in the first round?

A.	18
B.	16
<input checked="" type="radio"/> C.	36
D.	42

**6.**

Not Answered

If A {1, 2, 3, 4, 5, 6, 7} and B {5, 6, 7, 8, 9, 10} then:  $A \cup B$

<input checked="" type="radio"/> A.	{1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
B.	{1, 3, 5, 7, 9}
C.	{2, 4, 6, 8, 10}
D.	{0}

**7.**

Not Answered

Which of the following is generating function for the numeric function  $r \cdot 3^r$  where  $r > 0$ ? Which of the following is generating function for the numeric function  $r \cdot 3^r$  where  $r > 0$ ?

A.	$1/(1-3z)$
B.	$1/(1-3z)^2$
C.	$1/(1-5z)$
<input checked="" type="radio"/> D.	$3z/(1-3z)^2$

8.

Not Answered

Cardinality of Power set of empty set is \_\_\_\_

A.	0
<input checked="" type="radio"/> B.	1
C.	2
D.	3

9.

Not Answered

Two finite sets have  $m$  and  $n$  elements respectively. The total number of subsets of first set is 56 more than the total number of subsets of the second set. The values of  $m$  and  $n$  respectively are.

A.	7, 6
B.	5, 1
<input checked="" type="radio"/> C.	6, 3
D.	8, 7

10.

Not Answered

Given that  $N = \{1, 2, 3, \dots, 100\}$ , then write the subset  $A$  of  $N$ , whose element are odd numbers.

<input checked="" type="radio"/> A.	$A = \{x \mid x \in N \text{ and } x \text{ is odd}\} = \{1, 3, 5, 7, \dots, 99\}$
B.	$A = \{x \mid x \in A \text{ and } x \text{ is odd}\} = \{1, 3, 5, 7, \dots, 99\}$

C.	$A = \{x \mid x \in \mathbb{N} \text{ and } x \text{ is odd}\} = \{1, 2, 3, 4, 5, 6, 7, \dots, 99\}$
D.	None

11.

Not Answered

A graph with single vertex is called\_\_\_\_\_.

<input checked="" type="radio"/> A.	Trivial graph
B.	Regular graph
C.	Bipartite graph
D.	None of these

12.

Not Answered

Let  $U$  be a universal set and  $A, B$  and  $C$  be subsets of  $U$  defined as follows.  $U = \{a, b, c, d, e, f\}$ ,  $A = \{a, b, c\}$ ,  $B = \{c, d, e\}$ ,  $C = \{d, e, f\}$  Find  $A \cup B \cup C$ ?

A.	$\{a, b, c\}$
<input checked="" type="radio"/> B.	$\{a, b, c, d, e, f\}$
C.	$\{d, e, f\}$
D.	$\{a, c, e\}$

13.

Not Answered

If  $A^*B = B^*A$ , (Where  $A$  and  $B$  are general matrices) then

A.	$A = B'$
B.	$B = A'$

<input checked="" type="radio"/> C.	B=A
D.	None of them

**14.**

Not Answered

If  $a, b$  are positive integers, define  $a * b = a$  where  $ab = a \pmod{7}$ , with this  $*$  operation, then inverse of 3 in group  $G(1, 2, 3, 4, 5, 6)$  is

A.	3
B.	1
<input checked="" type="radio"/> C.	5
D.	4

**15.**

Not Answered

In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?

A.	120
B.	520
<input checked="" type="radio"/> C.	720
D.	220

**16.**

Not Answered

A cyclic group can be generated by \_\_\_\_\_ element

<input checked="" type="radio"/> A.	Singular
B.	Non-Singular
C.	Inverse
D.	Multiplicative

**17.**

Not Answered

Which of the following words means that a circle cannot be flipped over when determining the number of different possible arrangements of items?

<input checked="" type="radio"/> A.	fixed
B.	fickle
C.	friendly
D.	free

**18.**

Not Answered

If a set contains n number of elements. How many possible number of reflexive relations possible?

A.	$2(n^2-n)$
B.	$2n(n+1)/2$
C.	$2n.3(n(n-1)/2$
<input checked="" type="radio"/> D.	None of These

**19.**

Not Answered

Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?

<input checked="" type="radio"/> A.	210
B.	1050
C.	220
D.	510

**20.**

Not Answered

The Generating function for sequence  $\langle 1, 2, 4, 8, 16, \dots \rangle$  is

A.	$1/(1-x)$
B.	$1/(1+x)$
<input checked="" type="radio"/> C.	$1/(1-2x)$
D.	None

**21.**

Not Answered

Converse Postorder of Binary tree is same as

A.	Reverse of postorder
<input checked="" type="radio"/> B.	Reverse of Preorder
C.	Reverse of inorder
D.	None of these

**22.**

Not Answered

A boolean lattice is a lattice which is

A.	Complemented and Modular
B.	distributed and complete
<input checked="" type="radio"/> C.	Complemented and distributive
D.	Complete and module

**23.**

Not Answered

Maximum number of color required to fill planar graph is \_\_\_\_\_

A.	2
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<input checked="" type="radio"/> B.	4
C.	3
D.	Information given is insufficient

**24.**

Not Answered

If set  $|A|=m$  &  $|B|=n$ , How many possible number of functions from set B to Set A?

A.	$n^m$
<input checked="" type="radio"/> B.	$m^n$
C.	$(mn)^n$
D.	$(mn)^m$

**25.**

Not Answered

Let  $(A, *)$  is a group where  $A = \{0, 1, 2, 3, 4, 5, 6\}$  with  $*$  =  $(a+b) \bmod 7$ . Then order of group is

A.	6
<input checked="" type="radio"/> B.	7
C.	5
D.	none

**26.**

Not Answered

How many different binary search tree possible with 4 distinct keys?

<input checked="" type="radio"/> A.	14
B.	5
C.	42
D.	None



**27.**

Not Answered

Which of the following is generating function for the numeric function  $(r+1)3^r$  where  $r > 0$ ? Which of the following is generating function for the numeric function  $(r+1)3^r$  where  $r > 0$ ?

A.	$1/(1-3z)$
<input checked="" type="radio"/> B.	$1/(1-3z)^2$
C.	$1/(1-5z)$
D.	$3z/(1-3z)^2$

**28.**

Not Answered

Number of edges in K regular graph with n vertices are \_\_\_\_.

<input checked="" type="radio"/> A.	$K*n/2$
B.	$K*n$
C.	$n(n-1)/2$
D.	Information given is insufficient

**29.**

Not Answered

Let a set  $S = \{1, 2, 3, 4, 5, 6\}$  and  $<$  be the partial order defined by  $S < R$  if a divides b. Which of the following is minimal element of Hasse Diagram?

<input checked="" type="radio"/> A.	1
B.	3
C.	5
D.	All of these

**30.**

Not Answered

Let  $A = \{a, b, c\}$ , Then power set of A with subset operation form

A.	a lattice
B.	a booleab algebra
C.	a complemented latice
<input checked="" type="radio"/> D.	all of the above

**31.**

Not Answered

An algebraic system  $(A, *)$  is said to be Semigroup if it is

A.	Groupoid
B.	$*$ is associative
<input checked="" type="radio"/> C.	Both
D.	None

**32.**

Not Answered

Given that  $E = \{2, 4, 6, 8, 10\}$ . If  $n$  represents any member of  $E$ , then, write the sets containing all numbers represented by  $n + 1$

A.	$A = \{2, 4, 6, 8\}$ .
<input checked="" type="radio"/> B.	$A = \{3, 5, 7, 9, 11\}$ .
C.	$A = \{1, 3, 5, 7\}$ .
D.	$A = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ .

**33.**

Not Answered

In how many ways can the letters of the words "ABACUS" be rearranged such that the vowels always appear together?

A.	60
B.	120
C.	30
<input checked="" type="radio"/> D.	None

**34.**

Not Answered

G be a finite size group of 128 elements. The order of largest possible proper subgroup of G is.....

<input checked="" type="radio"/> A.	64
B.	128
C.	127
D.	32

**35.**

Not Answered

The proposition  $p \wedge (\sim p \vee q)$  is

A.	a tautology
<input checked="" type="radio"/> B.	$\Leftrightarrow (p \wedge q)$
C.	$\Leftrightarrow (p \vee q)$
D.	a contradiction

**36.**

Not Answered

Acyclic Connected graph is called \_\_\_\_\_

A.	bipartite graph
B.	cyclic graph
<input checked="" type="radio"/> C.	tree
D.	forest

**37.**

Not Answered

The sequence for the generating function  $G(x) = 5/(1-x)$  is

A.	$\langle 5, 5.3, 5.3^2, 5.3^3, \dots \rangle$
<input checked="" type="radio"/> B.	$\langle 5, 5, 5, 5, 5, \dots \rangle$
C.	$\langle 1, 2, 4, 6, \dots \rangle$
D.	None

38.

Not Answered

Which of the following is/are true?

A.	set of odd number is countble infinite
B.	$A\{1, 2, 3, 4, 5\}$ is finite set
<input checked="" type="radio"/> C.	Both
D.	None

39.

Not Answered

A path in graph G, which contains every vertex of G once and only once ?

A.	Eulartour
<input checked="" type="radio"/> B.	Hamiltonian Path
C.	Eula Trail
D.	Hamiltion Tour

40.

Not Answered

The series for the generating function  $G(x) = 1/(1-x)^2$  is

<input checked="" type="radio"/> A.	$1 + 2x + 3x^2 + 4x^3 + \dots$
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B.	$1+2x+3x+4x+5x+.....$
C.	$1+x+3x+7x+....$
D.	None

41.

Not Answered

The function  $AB'C+A'BC+ABC'+A'B'C+AB'C'$  is equivalent to

A.	$AC'+AB+A'C$
<input checked="" type="radio"/> B.	$AB'+AC'+A'C$
C.	$A'B+AC'+AB'$
D.	$A'B+AC+AB'$

42.

Not Answered

Let A be a finite set of size n , the number of elements in the power set of  $A \times A$  is

A.	$2^{(2^n)}$
<input checked="" type="radio"/> B.	$2^{(n^2)}$
C.	$2^n$
D.	none

43.

Not Answered

Let  $(P, \leq)$  be a totally ordered chain or simply ordered set or a chain. Then

A.	for some $x, y \in P$ , we have $x \leq y$ or $y \leq x$ .
B.	for some $x, y \in P$ , we have $x \leq y$ and $y \leq x$ .

<input checked="" type="radio"/> C.	for every $x, y \in P$ , we have $x \leq y$ or $y \leq x$ .
D.	for every $x, y \in P$ , we have $x \leq y$ and $y \leq x$ .

44.

Not Answered

Let  $N = \{1, 2, 3, \dots\}$  be ordered by divisibility, which of the following subset is totally ordered

<input checked="" type="radio"/> A.	(2, 4, 6)
B.	(3, 5, 15)
C.	(2, 9, 16)
D.	(4, 15, 30)

45.

Not Answered

Which of the following is not a group?

A.	$(\mathbb{Z}, -)$
B.	$(\mathbb{N}, +)$
C.	$(\mathbb{W}, +)$
<input checked="" type="radio"/> D.	All of these

46.

Not Answered

Which of the following system has two operation addition and multiplication along with set?

A.	Ring
B.	Field
C.	Integral domain
<input checked="" type="radio"/> D.	All of these

47.

Not Answered

Degree of each vertex in hamiltonian cycle must be \_\_\_\_\_.

A.	3
<input checked="" type="radio"/> B.	2
C.	3
D.	Information given is insufficient

48.

Not Answered

How many unique colors will be required for proper vertex coloring of an empty graph having n vertices?

A.	0
B.	n
C.	2
<input checked="" type="radio"/> D.	1

49.

Not Answered

Let  $(A, *)$  is a group where  $A = \{0, 1, 2, 3, 4, \dots, 16\}$  with  $*$  =  $(a+b) \bmod 17$ . What is order of Largest subgroup of Group  $(A, *)$ ?

<input checked="" type="radio"/> A.	17
B.	1
C.	7
D.	None

50.

Not Answered

How many distinct binary tree possible with 4 unlabelled node?

A.	7
<input checked="" type="radio"/> B.	14
C.	5
D.	42

**51.**

Not Answered

Which of the following is not a type of graph in Discrete Mathematics?

A.	Un-Directed Graph
B.	Directed- weighted Graph
<input checked="" type="radio"/> C.	Bar Graph
D.	Un-Directed Unweighted Graph

**52.**

Not Answered

$f(A,B)=A'+B$ . Simplified exprssion for function  $f(f(x+y,y),z)$  is

A.	$x'+z$
B.	$xyz$
<input checked="" type="radio"/> C.	$xy'+z$
D.	None of this

**53.**

Not Answered

Let  $(L, \leq)$  be a lattice with  $*$  and  $\odot$  as operations meet and join respectively. Then for  $a, b, c$  on  $L$ , which of the following is true.

A.	$a*a=a$
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B.	$a \odot b = b \odot a$
C.	$(a * b) * c = a * (b * c)$
<input checked="" type="radio"/> D.	all of the above

54.

Not Answered

The Boolean function  $x'y' + xy + x'y$  is equivalent to

A.	$x' + y'$
B.	$x + y$
C.	$x + y'$
<input checked="" type="radio"/> D.	$x' + y$

55.

Not Answered

How many binary tree possible with 3 distinct labelled node?

<input checked="" type="radio"/> A.	30
B.	15
C.	5
D.	None

56.

Not Answered

Suppose  $(Z, *)$  where  $Z$  is a set of integer then  $a * b = \min(a, b)$  then  $(Z, *)$  is not.....

A.	Abelian Group
B.	Monoid
C.	Group
<input checked="" type="radio"/> D.	All of these

57.

Not Answered

The set of all real numbers under the usual multiplication operation is not a group since

A.	multiplication is not a binary operation
B.	multiplication is not associative
C.	identity element does not exist
<input checked="" type="radio"/> D.	zero has no inverse

58.

Not Answered

Which of the following is/are tautology:

A.	$(a \vee b) \rightarrow (b \wedge c)$
<input checked="" type="radio"/> B.	$(a \wedge b) \rightarrow (b \vee c)$
C.	$(a \vee b) \rightarrow (b \rightarrow c)$
D.	$(a \rightarrow b) \rightarrow (b \rightarrow c)$

59.

Not Answered

Which of the following is false?

A.	Every Abelian group is group
B.	Every group is monoid
<input checked="" type="radio"/> C.	Every Semigroup is monoid
D.	Every Semigroup is groupoid

60.

Not Answered

An algebraic system  $(R, +, \cdot)$  where  $R$  is a set with two arbitrary binary operations  $+$  and  $\cdot$ , is called a ring if it satisfies

<input checked="" type="radio"/> A.	1. $(\mathbb{R}, +)$ is an abelian group.
B.	$(\mathbb{R}, \cdot)$ is a semigroup..
C.	The multiplication operation, is distributive over the addition operation
D.	Group Property Only