

# Exam: End\_Sem\_Dec-2021\_CS3BS03 Discrete Mathematics

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Student Roll No:

Subject Name: Discrete Mathematics (T)  
Correct Answer: 0 Total Question: 30

Question No: 1

Not Attempted

A cyclic group can be generated by a/an \_\_\_\_\_ element.

- ☒ A. Singular
- B. Non-singular
- C. Inverse
- D. Multiplicative

Question No: 2

Not Attempted

if  $A = \{1, 2, 3, 4\}$  and  $\pi_1$  is the partition of  $A$ ,  $\pi_1 = \{\{1, 2, 3\}, 4\}$ . The number of ordered pairs of the equivalence relations induced by

- ☒ A. 10
- B. 5
- C. 15
- D. 14

Question No: 3

Not Attempted

A complete  $n$ -node graph  $K_n$  is planar if and only if \_\_\_\_\_

- A.  $n \geq 6$
- B.  $n^2 = n + 1$
- ☒ C.  $n \leq 4$
- D.  $n + 3$

Question No: 4

Not Attempted

What must be the ideal size of array if the height of tree is 'l'?

- ☒ A.  $2l-1$
- B.  $l-1$
- C.  $l$
- D. None

Question No: 5

Not Attempted

A monoid is called a group if \_\_\_\_\_

- A.  $(a*a)=a=(a+c)$
- B.  $(a*c)=(a+c)$
- C.  $(a+c)=a$
- ☒ D.  $(a*c)=(c*a)=e$

Question No: 6

Not Attempted

Every recursive algorithm must have the problem of \_\_\_\_\_

- ☒ A. overhead of repeated function calls
- B. collision of different function calls
- C. searching for all duplicate elements
- D. make only two recursive calls

Question No: 7

Not Attempted

Let  $A$  be  $\{a, b, c\}$ . Let the relation  $R$  on  $A$  & let  $R = \{(b, a), (b, c), (c, a), (c, b)\}$ . Which of the following statements about  $R$  is true?

- ☒ A.  $R$  is not reflexive, is not symmetric & is not transitive.
- B.  $R$  is reflexive, is not symmetric and is not transitive.
- C.  $R$  is not reflexive, is symmetric & is transitive.

D.	R is reflexive, is not symmetric & is transitive.	
<b>Question No: 8</b>		<b>Not Attempted</b>
The _____ of a graph G consists of all vertices and edges of G.		
A.	edge graph	
B.	line graph	
C.	path complement graph	
<input checked="" type="radio"/> D.	None of these	
<b>Question No: 9</b>		<b>Not Attempted</b>
The maximum degree of any vertex in a simple graph with n vertices is		
A.	n	
B.	(n+1)	
C.	n(n-1)	
<input checked="" type="radio"/> D.	None of these	
<b>Question No: 10</b>		<b>Not Attempted</b>
In how many ways a project team of 5 members can be selected from 6 men and 5 women consisting of 3 men and 2women		
A.	100	
<input checked="" type="radio"/> B.	200	
C.	300	
D.	none	
<b>Question No: 11</b>		<b>Not Attempted</b>
The graph given below is an example of _____		
<input checked="" type="radio"/> A.	non-lattice poset	
B.	semilattice	
C.	partial lattice	
D.	bounded lattice	
<b>Question No: 12</b>		<b>Not Attempted</b>
Which one of the following is NOT necessarily a property of a Group?		
<input checked="" type="radio"/> A.	Commutativity	
B.	Associativity	
C.	Existence of inverse for every element	
D.	Existence of identity	
<b>Question No: 13</b>		<b>Not Attempted</b>
An element $a \in A$ is called a ..... element of A if there is no element in c in A such that $a \leq c$ .		
<input checked="" type="radio"/> A.	Maximal	
B.	Minimal	
C.	Comparable	
D.	None of the above	
<b>Question No: 14</b>		<b>Not Attempted</b>
Hasse diagram is drawn for		
<input checked="" type="radio"/> A.	partial ordered set	
B.	Lattice	
C.	Boolean algebra	
D.	None of the above	
<b>Question No: 15</b>		<b>Not Attempted</b>
Let G be the graph defined as the Hasse diagram for the $\subseteq$ relation on the set $A\{1, 2,3,4\}$ . How many edges are there in G?		
A.	12	
B.	16	
<input checked="" type="radio"/> C.	32	

D.	64	
<b>Question No: 16</b> How many relation on $A=\{1,2,3,4,5\}$ contains (5,5) & are antisymmetric? A. $((2^5)-1)*3^{10}$ <input checked="" type="radio"/> B. $(2^4)*(3^{10})$ C. $((2^4)-1)*3^{10}$ D. $(2^5)*(3^5)$		Not Attempted
<b>Question No: 17</b> Which of the following degree sequence is valid? A. $\{3,3,1,3\}$ B. $\{6,6,6,6,2,2,3,3\}$ C. $\{3,0,2,0,1\}$ <input checked="" type="radio"/> D. $\{7,6,6,4,4,3,2,2\}$		Not Attempted
<b>Question No: 18</b> Let G be a planar graph with $v=10$ , $E=9$ & three are components then number of possible regions R are? A. 6 B. 5 C. 4 <input checked="" type="radio"/> D. 3		Not Attempted
<b>Question No: 19</b> Which of the following is contained in a recursive grammar? A. semantic rules <input checked="" type="radio"/> B. production rules C. recursive language D. recursive function		Not Attempted
<b>Question No: 20</b> Determine the solution for the recurrence relation $b_n=8b_{n-1}-12b_{n-2}$ with $b_0=3$ and $b_1=4$ . <input checked="" type="radio"/> A. $7/2*2^n-1/2*6^n$ B. $2/3*7^n-5*4^n$ C. $4!*6^n$ D. $2/8^n$		Not Attempted
<b>Question No: 21</b> The argument of each recursive call is the content of a field of the original output. This definite characteristic belongs to which of the following function? <input checked="" type="radio"/> A. Structurally recursive function B. Generativity recursive function C. Indirect recursive function D. General function		Not Attempted
<b>Question No: 22</b> If $a * b = a$ such that $a * (b * c) = a * b = a$ and $(a * b) * c = a * b = a$ then _____ <input checked="" type="radio"/> A. $*$ is associative B. $*$ is commutative C. $*$ is closure D. $*$ is abelian3		Not Attempted
<b>Question No: 23</b> A cyclic group is always _____ <input checked="" type="radio"/> A. abelian group		Not Attempted

B. monoid	
C. semigroup	
D. subgroup	
<b>Question No: 24</b>	<b>Not Attempted</b>
If A is any statement, then which of the following is a tautology?	
A. $A \wedge F$	
B. $A \vee F$	
<input checked="" type="radio"/> C. $A \vee \neg A$	
D. $A \wedge T$	
<b>Question No: 25</b>	<b>Not Attempted</b>
What is the solution to the recurrence relation $a_n = 5a_{n-1} + 6a_{n-2}$ ?	
A. $2n^2$	
<input checked="" type="radio"/> B. $6n$	
C. $(3/2)^n$	
D. $n! \cdot 3$	
<b>Question No: 26</b>	<b>Not Attempted</b>
The symbolization for a conjunction is...	
A. $p \rightarrow q$	
<input checked="" type="radio"/> B. $p \wedge q$	
C. $p \vee q$	
D. $\sim p$	
<b>Question No: 27</b>	<b>Not Attempted</b>
if A= set of all +ve odd integer , then A is Closed under	
<input checked="" type="radio"/> A. Multiplication	
B. Addition	
C. Both addition & Multiplication	
D. None of the above	
<b>Question No: 28</b>	<b>Not Attempted</b>
Which of the following expressions is in the sum-of-products form?	
A. $(A + B)(C + D)$	
B. $(A * B)(C * D)$	
C. $A * B * (CD)$	
<input checked="" type="radio"/> D. $A * B + C * D$	
<b>Question No: 29</b>	<b>Not Attempted</b>
According to the absorption law of Boolean algebra , which of the following is correct?	
A. $X + XY = X$	
B. $(X+Y) = XY$	
<input checked="" type="radio"/> C. $XY + Y = X$	
D. $X+Y=Y$	
<b>Question No: 30</b>	<b>Not Attempted</b>
If every two elements of a poset are comparable then the poset is called _____	
A. sub-ordered poset	
<input checked="" type="radio"/> B. totally ordered poset	
C. sub lattice	
D. semigroup	