Program: Computer Engineering
Curriculum Scheme: Rev2016
Examination: Second Year Sem - III
Course Code: CSC303 and Course Name: Discrete Mathematics

Sample Question

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For the students:- All the Questions are compulsory and carry equal marks .

Q1.	What is the Cartesian product of A = {1, 2} and B = {a, b}?
Option A:	{(1, a), (1, b), (2, a), (b, b)}
Option B:	{(1, 1), (2, 2), (a, a), (b, b)}
Option C:	{(1, a), (2, a), (1, b), (2, b)}
Option D:	{(1, 1), (a, a), (2, a), (1, b)}
Q2.	Let the set A is {1, 2, 3} and B is {2, 3, 4}. Then the set A – B is?
Option A:	{1, -4}
Option B:	{1, 2, 3}
Option C:	{1}
Option D:	{2, 3}

Q3.	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 _______
Option A:	4, 5
Option B:	6, 7
Option C:	2, 3
Option D:	None of the mentioned
Q4.	If set C is {1, 2, 3, 4} and C – D = Φ then set D can be ___________
Option A:	{1, 2, 4, 5}
Option B:	{1, 2, 3}
Option C:	{1, 2, 3, 4, 5}
Option D:	None of the mentioned
Q5.	Which of the following function f: Z X Z → Z is not onto?
Option A:	f(a, b) = a + b
Option B:	f(a, b) = a
Option C:	f(a, b) = |b|
Option D:	f(a, b) = a – b
Q6.	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 _____________
Option A:	6x + 9
Option B:	6x + 7
Option C:	6x + 6

Option D:	6x + 8
Q7.	How many binary relations are there on a set S with 9 distinct elements?
Option A:	2^{90}
Option B:	2^{100}
Option C:	2^{81}
Option D:	2^{60}
Q8.	The transitive closure of the relation {(0,1), (1,2), (2,2), (3,4), (5,3), (5,4)} on the set {1, 2, 3, 4, 5} is ________
Option A:	{(0,1), (1,2), (2,2), (3,4)}
Option B:	{(0,0), (1,1), (2,2), (3,3), (4,4), (5,5)}
Option C:	{(0,1), (1,1), (2,2), (5,3), (5,4)}
Option D:	{(0,1), (0,2), (1,2), (2,2), (3,4), (5,3), (5,4)}
Q9.	Let R_1 and R_2 be two equivalence relations on a set. Is $R_1 \cup R_2$ an equivalence relation?
Option A:	an equivalence relation
Option B:	reflexive closure of relation
Option C:	not an equivalence relation
Option D:	partial equivalence relation
Q10.	Let a set S = {2, 4, 8, 16, 32} and <= be the partial order defined by S <= R if a divides b. Number of edges in the Hasse diagram of is ______
Option A:	6
Option B:	5
Option C:	9
Option D:	4

Q11.	Suppose X = {a, b, c, d} and π_1 is the partition of X, π_1 = {{a, b, c}, d}. The number of ordered pairs of the equivalence relations induced by ___________
Option A:	15
Option B:	10
Option C:	34
Option D:	5
Q12.	The relation $\leq$ is a partial order if it is ____________
Option A:	reflexive, antisymmetric and transitive
Option B:	reflexive, symmetric
Option C:	asymmetric, transitive
Option D:	irreflexive and transitive
Q13.	A directed graph or digraph can have directed cycle in which ______
Option A:	starting node and ending node are different

Option B:	starting node and ending node are same
Option C:	minimum four vertices can be there

Option D:	ending node does not exist
Q14.	What is a complete digraph?
Option A:	connection of nodes without containing any cycle
Option B:	connecting nodes to make at least three complete cycles
Option C:	start node and end node in a graph are same having a cycle
Option D:	connection of every node with every other node including itself in a digraph
Q15.	G is an undirected graph with n vertices and 26 edges such that each vertex of G has a degree at least 4. Then the maximum possible value of n is ____________
Option A:	7
Option B:	43
Option C:	13
Option D:	10
Q16.	A Poset in which every pair of elements has both a least upper bound and a greatest lower bound is termed as ________
Option A:	sublattice
Option B:	lattice
Option C:	trail
Option D:	walk
Q17.	The maximum number of edges in a bipartite graph on 14 vertices is ____________
Option A:	56
Option B:	14
Option C:	49
Option D:	87
Q18.	Which of the following relations is the reflexive relation over the set {1, 2, 3, 4}?
Option A:	{(0,0), (1,1), (2,2), (2,3)}
Option B:	{(1,1), (1,2), (2,2), (3,3), (4,3), (4,4)}

Option C:	{,(1,1), (1,2), (2,1), (2,3), (3,4)
Option D:	{(0,1), (1,1), (2,3), (2,2), (3,4), (3,1)
Q19.	For a, b ∈ Z define a | b to mean that a divides b is a relation which does not satisfy ____________
Option A:	irreflexive and symmetric relation
Option B:	reflexive relation and symmetric relation
Option C:	transitive relation
Option D:	symmetric relation
Q20.	Let P and Q be statements, then P<->Q is logically equivalent to ___________
Option A:	P<->~Q
Option B:	~P<->Q
Option C:	~P<->~Q
Option D:	None of the mentioned
Q21.	Let P, Q, R be true, false true, respectively, which of the following is true?
Option A:	P∧Q∧R
Option B:	P∧~Q∧~R
Option C:	Q->(P∧R)
Option D:	P->(Q∧R)
Q22.	The statement (~P<->Q)∧~Q is true when?
Option A:	P: True Q: False
Option B:	P: True Q: True
Option C:	P: False Q: True
Option D:	P: False Q: False
Q23.	Which of the following is De-Morgan's law?
Option A:	P ∧ (Q v R) Ξ (P ∧ Q) v (P ∧ R)
Option B:	~(P ∧ R) Ξ ~P v ~R, ~(P v R) Ξ ~P ∧ ~R
Option C:	P v ~P Ξ True, P ∧ ~P Ξ False
Option D:	None of the mentioned
Q24.	Which of the following satisfies commutative law?
Option A:	∧
Option B:	v
Option C:	↔
Option D:	All of the mentioned

Q25.	If P is always against the testimony of Q, then the compound statement $P \rightarrow (P \vee \sim Q)$ is a ___________
Option A:	Tautology
Option B:	Contradiction
Option C:	Contingency
Option D:	None of the mentioned