Total No. of Questions : 127

Test Name: Sample_Question_Paper

SITRC

SE Computer Examination , Aug 2018

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Time : 30 Min **Passing Marks : 65** **Maximum Marks : 162**

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1. **Let R be a non-empty relation on a collection of sets defined by ARB if and only if A ∩ B = Ø Then (pick the TRUE statement)** (1)

   A) R is relexive and transitive
   B) R is an equivalence relation
   C) R is symmetric and not transitive
   D) R is not relexive and not symmetric

2. How many bits string of length 4 are possible such that they contains 2 ones and 2 zeroes? (1)

   A) 4
   B) 2
   C) 5
   D) 6

3. **The converse of p → q is the proposition:** (1)

   A) ¬p → ¬q
   B) ¬q → ¬p
   C) q → p
   D) ¬q → p

4. **(p → r) ∨ (q → r) is logically equivalent to:** (1)

   A) (p ∧ q) ∨ r
   B) (p ∨ q) → r
   C) (p ∧ q) → r
   D) (p → q) → r

5. Let P, Q, R be true, false true , respectively, which of the following is true (1)

   A) P∧Q∧R
   B) P∧~Q∧~R
   C) Q->(P∧R)
   D) P->(Q∧R)

6. **The 2's complement of this string "01010100" is** (1)

A) 10101010 B) 00110100

C) 10101100 D) 10101001

7. **The contrapositive of $p \rightarrow q$ is the proposition:** (1)

A) $\neg p \rightarrow \neg q$ B) $\neg q \rightarrow \neg p$

C) $q \rightarrow p$ D) $\neg q \rightarrow p$

8. **If the truth value of $A \vee B$ is true, then truth value of $\sim A \wedge B$ can be** (1)

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

9. **$p \vee q$ is logically equivalent to:** (1)

A) $\neg q \rightarrow \neg p$ B) $q \rightarrow p$

C) $\neg p \rightarrow \neg q$ D) $\neg p \rightarrow q$

10. **Which of the following represents: ~A (negation of A) if A stands for "I like badminton but hate maths"?** (1)

A) I hate badminton and maths B) I do not like badminton or maths

C) I dislike badminton but love maths D) I hate badminton or like maths

11. The compound propositions p and q are called logically equivalent if _____ is a tautology. (1)

A) $p \leftrightarrow q$ B) $p \rightarrow q$

C) $\neg (p \vee q)$ D) $\neg p \vee \neg q$

12. **Let R (x) denote the statement "x > 2." What is the truth value of the quantification $\exists x R(x)$, having domain as real numbers?** (1)

A) True B) False

13. **Which of the following are De-Morgan's law** (1)

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) $P \vee \sim P \equiv True$, $P \wedge \sim P \equiv False$

D) None of the mentioned

14. Which of the following statement is a proposition? (1)

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

15. A theorem used to prove other theorems is known as (1)

A) Lemma

B) Corollary

C) Conjecture

D) None of the mentioned

16. **If a bit string contains {0, 1} only, having length 5 has no more than 2 ones in it. Then how many such bit strings are possible?** (1)

A) 14

B) 12

C) 15

D) 16

17. A _____ is an ordered collection of objects. (1)

A) Relation

B) Function

C) Set

D) Proposition

18. Let P, Q, R be true, false, false, respectively, which of the following is true (1)

A) $P \wedge (Q \wedge \sim R)$

B) $(P \rightarrow Q) \wedge \sim R$

C) $Q \leftrightarrow (P \wedge R)$

D) $P \leftrightarrow (Q \vee R)$

19. What is the negation of the statement A->(B v(or) C)? (1)

A) $A \wedge \sim B \wedge \sim C$

B) A->B->C

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

D) None of the mentioned

20. **$(p \rightarrow q) \wedge (p \rightarrow r)$ is logically equivalent to:** (1)

A) $p \rightarrow (q \wedge r)$ B) $p \rightarrow (q \vee r)$

C) $p \wedge (q \vee r)$ D) $p \vee (q \wedge r)$

21. What is Singleton set? (1)

A) A set having single set B) A set having single multiset

C) A set having single element D) All the above

22. Which of the following two sets are equal? (1)

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}**

23. **What are the contrapositive of the conditional statement "Medha will find a decent job when she labour hard."?** (1)

A) **"If Medha labour hard, then she will find a decent job"** B) **"If Medha will not find a decent job, then she not labour**

C) **"If Medha will find a decent job, then she labour hard"** D) **"If Medha not labour hard, then she will not find a dece**

24. What is empty set? (1)

A) A set having only element zero B) A set having no element

C) A set having multiple positive elements D) None of above

25. Which of the following can only be used in disproving the statements? (1)

A) Direct proof B) Contrapositive proofs

C) Counter Example D) Mathematical Induction

26. What is Set? (1)

A) A set is a collection of repeated objects/elements B) A set is a collection of distinct objects/elements

C) A set is a collection of multisets D) None of above

27. Which of the following statement is correct? (1)

A) $p \vee q \equiv q \vee p$

B) $\neg(p \wedge q) \equiv \neg p \vee \neg q$

C) $(p \vee q) \vee r \equiv p \vee (q \vee r)$

D) All of mentioned

28. What is the converse of the conditional statement "If it ices today, I will play ice hockey tomorrow." (1)

A) "I will play ice hockey tomorrow only if it ices today."

B) "If I do not play ice hockey tomorrow, then it will not ha

C) "If it does not ice today, then I will not play ice hockey tomorrow."

D) "I will not play ice hockey tomorrow only if it ices today.

29. What are the contrapositive of the conditional statement "I come to class whenever there is going to be a test. (1)

A) "If I come to class, then there will be a test."

B) "If I do not come to class, then there will not be a test."

C) "If there is not going to be a test, then I don't come to class."

D) "If there is going to be a test, then I don't come to clas

30. Let A : "010101" ,B=? ,If { A (Ex-or) B } is a resultant string of all ones then which of the following statement regarding B is correct (1)

A) B is negation of A

B) B is 101010

C) {A (and) B} is a resultant string having all zeroes

D) All of the mentioned

31. Let P: We give a nice overall squad performance, Q: We will win the match. (1)
Then the symbolic form of "We will win the match if and only if we give a nice overall squad performance. "is

A) P v Q

B) $Q \wedge P$

C) Q<->P

D) ~P v Q

32. Which of the following option is suitable, if A is "10110110", B is"11100000"and C is"10100000"? (1)

A) C=A or B

B) C=~A

C) C=~B

D) C=A and B

33. "Match will be played only if it is not a humid day." The negation of this statement is (1)

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.

34. Power set of empty set has exactly _____ subset. (1)

A) One B) Two

C) Zero D) Three

35. **Let A = {1, 2, 3} then total number of element in A X A is** (1)

A) 3 B) 6

C) 9 D) 8

36. **Let P(x) denote the statement "x = x + 7." What is the truth value of the quantification ∃xP(x), where the domain consists of all real numbers?** (1)

A) True B) False

37. The compound statement A-> (A->B) is false, then the truth values of A, B are respectively (1)

A) T, T B) F, T

C) T, F D) F, F

38. **Let Q(x) be the statement "x < 5." What is the truth value of the quantification ∀xQ(x), having domains as real numbers?** (1)

A) True B) False

39. **The statement (~P<->Q)∧~Q is false when** (1)

A) P:True Q: False B) P:True Q:True

C) P:False Q:True D) P :False Q:False

40. **"Everyone wants to learn cosmology." This argument may be true for which domains?** (1)

A) All students in your cosmology class B) All the cosmology learning students in the world

C) Both of the mentioned D) None of the mentioned

41. What is a finite set? (1)

A) Set having infinity number of elements
B) Set having limited number of elements
C) Both A & B
D) None of above

42. **Negation of statement $(A \wedge B) \rightarrow (B \wedge C)$** (1)

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

43. **Let R = { (1, 3), (4, 2) (2, 4), (2, 3), (3, 1) } be a relation on the set A = { 1, 2, 3, 4 }. The relation R is** (1)

A) function
B) transitive
C) not symmetric
D) reflexive

44. If A is any statement, then which of the following is not a contradiction? (1)

A) $A \vee \neg A$
B) $A \vee F$
C) $A \wedge F$

45. Which of the following satisfies commutative law? (1)

A) $\wedge$
B) v
C) <->
D) All of the mentioned

46. **The statement which is logically equivalent to $A \wedge$ (and) B is** (1)

A) A->B
B) $\sim A \wedge \sim B$
C) $A \wedge \sim B$
D) $\sim(A \rightarrow \sim B)$

47. **Which of the following statements is the negation of the statements "4 is odd or -9 is positive"?** (1)

A) 4 is even or -9 is not negative
B) 4 is odd or -9 is not negative
C) 4 is even and -9 is negative
D) 4 is odd and -9 is not negative

48. **Which of the following bits is the negation of the bits "010110"?** (1)

A) 111001 B) 001001

C) 101001 D) 111111

49. **$A \rightarrow (A \vee q)$ is a _____** (1)

A) Tautology B) Contradiction

C) Contingency D) None of the mentioned

50. **$(A \vee F) \vee (A \vee T)$ is always _____** (1)

A) True B) False

51. If A is any statement, then which of the following is a tautology? (1)

A) $A \wedge F$ B) $A \vee F$

C) $A \vee \neg A$ D) $A \wedge T$

52. **What are the converse of the conditional statement "When Raj stay up late, it is necessary that Raj sleep until noon."** (1)

A) **"If Raj stay up late, then Raj sleep until noon."** B) **"If Raj does not stay up late, then Raj does not sleep un**

C) **"If Raj does not sleep until noon, then Raj does not stay up late."** D) **"If Raj sleep until noon, then Raj stay up late."**

53. Union of two sets can be represented as (1)

A) **AUB = { x : x $\in$ A and x $\in$ B}** B) **AUB = { x : x $\in$ A or x $\in$ B}**

C) Both A & B D) None of these

54. A compound proposition that is neither a tautology nor a contradiction is called a _____ (1)

A) Contingency B) Equivalence

C) Condition D) Inference

55. **The inverse of $p \rightarrow q$ is the proposition:** (1)

A) $\neg p \rightarrow \neg q$ B) $\neg q \rightarrow \neg p$

C) $q \rightarrow p$ D) $\neg q \rightarrow p$

56. Let P: I am in Bangalore. , Q: I love cricket. ; then q -> p(q implies p) is: (1)

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

57. **A proof that $p \rightarrow q$ is true based on the fact that q is true, such proofs are known as** (1)

A) Direct proof B) Contrapositive proofs

C) Trivial proof D) Proof by cases

58. A proof covering all the possible cases, such type of proofs are known as (1)

A) Direct proof B) Proof by Contradiction

C) Vacuous proof D) Exhaustive proof

59. **If A is "001100" and B is "010101" then A (Ex-or) B is** (1)

A) 000000 B) 111111

C) 001101 D) 011001

60. Which of the following sets are null sets ? (1)

A) **{ }** B) **ø**

C) Both (a) and (b) D) **{0}**

61. **$\neg (p \leftrightarrow q)$ is logically equivalent to:** (1)

A) $p \leftrightarrow \neg q$ B) $\neg p \leftrightarrow q$

C) $\neg p \leftrightarrow \neg q$ D) $\neg q \leftrightarrow \neg p$

62. **Determine the truth value of $\exists n \exists m(n + m = 5 \wedge n - m = 2)$ if the domain for all variables consists of all integers.** (1)

A) True B) False

63. **$p \wedge q$ is logically equivalent to:** (1)

A) **$\neg (p \rightarrow \neg q)$** B) **$(p \rightarrow \neg q)$**

C) **$(\neg p \rightarrow \neg q)$** D) **$(\neg p \rightarrow q)$**

64. **$\neg (A \vee q) \wedge (A \wedge q)$ is a _____** (1)

A) Tautology B) Contradiction

C) Contingency D) None of the mentioned

65. A proof broken into distinct cases, where these cases cover all prospects, such proofs are known as (1)

A) Direct proof B) Contrapositive proofs

C) Vacuous proof D) Proof by cases

66. **$(A \vee \neg A) \vee (q \vee T)$ is a _____** (1)

A) Tautology B) Contradiction

C) Contingency D) None of the mentioned

67. **The truth value of given statement is ‘If 9 is prime then 3 is even’.** (1)

A) False B) True

68. Number of subsets of a set of order three is (1)

A) 2 B) 4

C) 6 D) 8

69. Let P: I am in Delhi. , Q: Delhi is clean. ; then q ^ p(q and p) is: (1)

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
D) Delhi is clean but I am in Mumbai

70. **The one's complement of this string "01010100" is** (1)

A) 10101010
B) 00110101
C) 10101011
D) 10101001

71. **¬ (p ↔ q) is logically equivalent to:** (1)

A) **q↔p**
B) **p↔¬q**
C) **¬p↔¬q**
D) **¬q↔¬p**

72. **Determine the truth value of statement ∃n (4n = 3n) if the domain consists of all integers.** (1)

A) True
B) False

73. **If P is always against the testimony of Q ,then the compound statement P→(P v ~Q) is a** (1)

A) Tautology
B) Contradiction
C) Contingency
D) None of the mentioned

74. Complement of set can be represented using set builder notation as follows: (1)

A) **A' = { x : x ∈ U and x ∉ A}**
B) **A' = {x :x ∈ A and x ∉ U}**
C) Both A & B
D) None of these

75. Let P and Q be statements, then P<->Q is logically equivalent to (1)

A) **P<->~Q**
B) **~P<->Q**
C) **~P<->~Q**
D) None of the mentioned

76. A compound proposition that is always _____ is called a contradiction. (1)

A) True B) False

77. A compound proposition that is always _____ is called a tautology. (1)

A) True B) False

78. **The truth value of given statement is ‘4+3=7 or 5 is not prime’.** (1)

A) False B) True

79. **$p \rightarrow q$ is logically equivalent to:** (1)

A) $\neg p \vee \neg q$ B) $p \vee \neg q$

C) $\neg p \vee q$ D) $\neg p \wedge q$

80. **What is the value of x after this statement, assuming initial value of x is 5? ‘If x equals to one then x=x+2 else x=0’.** (1)

A) 1 B) 3

C) 0 D) 2

81. **The compound statement $A \vee \sim(A \wedge B)$ is always** (1)

A) True B) False

82. **In proving $\sqrt{5}$ as irrational, we begin with assumption $\sqrt{5}$ is rational in which type of proof?** (1)

A) Direct proof B) Proof by Contradiction

C) Vacuous proof D) Mathematical Induction

83. Which of the following option is true? (1)

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

84. **If in a bits string of {0,1} ,of length 4,such that no two ones are together. Then total number of such possible strings are?** (1)

A) 1 B) 5

C) 7 D) 4

85. **Let R = { (3, 3) (6, 6) ((9, 9) (12, 12), (6, 12) (3, 9) (3, 12), (3, 6) } be a relation on the set A = { 3, 6, 9, 12 }. The relation is** (1)

A) reflexive and transitive B) reflexive only

C) an equivalence relation D) reflexive and symmetric only

86. **When to proof P→Q true, we proof P false, that type of proof is known as** (1)

A) Direct proof B) Contrapositive proofs

C) Vacuous proof D) Mathematical Induction

87. **"n/m" means that n is a factor of m, then the relation T is** (1)

A) relexive, transitive and not symmetric B) relexive, transitive and symmetric

C) transitive and symmetric D) relexive and symmetric

88. **Determine the truth value of ∀n(n + 1 > n) if the domain consists of all real numbers.** (1)

A) True B) False

89. The set of positive integers is _____ (1)

A) Infinite B) Finite

C) Subset D) Empty

90. **The binary relation S = Φ (empty set) on set A = {1, 2,3} is** (1)

A) transitive and relexive B) symmetric and relexive

C) transitive and symmetric D) neither reflexive nor symmetric

91. **~ A v ~ B is logically equivalent to** (1)

A) **~ A → ~ B**
B) **~ A ∧ ~ B**
C) **A → ~B**
D) B V A

92. **The Ex-nor of this string "01010101"with "11111111" is** (1)

A) 10101010
B) 00110100
C) 01010101
D) 10101001

93. **Let Q(x, y) denote "M + A = 0." What is the truth value of the quantifications ∃A∀M Q(M, A)** (2)

A) True
B) False

94. **The statement, "At least one of your friends is perfect". Let P (x) be "x is perfect" and let F (x) be "x is your friend" and let the domain be all people.** (2)

A) **∀x (F (x) → P (x))**
B) **∀x (F (x) ∧ P (x))**
C) **∃x (F (x) ∧ P (x))**
D) **∃x (F (x) → P (x))**

95. **Let the statement be "If n is not an odd integer then square of n is not odd.",then if P(n) is "n is not an odd integer" and Q(n) is "(square of n) is not odd." For a direct proof we should proove** (2)

A) **∀nP ((n) → Q(n))**
B) **∃ nP ((n) → Q(n))**
C) **∀n~(P ((n)) → Q(n))**
D) **∀nP ((n) → ~(Q(n)))**

96. **What is the contrapositive of the conditional statement? "The home team misses whenever it is drizzling?"** (2)

A) If it is drizzling, then home team misses
B) If the home team misses, then it is drizzling
C) If it is not drizzling, then the home team does not misses
D) If the home team wins, then it is not drizzling

97. **Identify whether each of the following set is finite or infinite** (2)
1. {Lines through origin}
2. {Lines that satiesfy the equation 3x=y}
3. {Ways to order the numbers 1 through 1000}

A) 1. Finite2. Infinite3. Finite
B) 1. Finite2. Finite3. Infinite
C) 1. Infinite2. Finite3. Finite
D) 1. Infinite2. Infinite3. Finite

98. The set O of odd positive integers less than 10 can be expressed by _____ (2)

A) {1, 2, 3}
B) {1, 3, 5, 7, 9}
C) {1, 2, 5, 9}
D) {1, 5, 7, 9, 11}

99. **What is the Cardinality of the Power set of the set {0, 1, 2}.** (2)

A) 8
B) 6
C) 7
D) 9

100. **Let the statement be "If n is not an odd integer then sum of n with some not odd number will not be odd.",then if P(n) is "n is an not an odd integer" and Q(n) is "sum of n with some not odd number will not be odd." A proof by contraposition will be** (2)

A) $\forall nP((n) \rightarrow Q(n))$
B) $\exists nP((n) \rightarrow Q(n))$
C) $\forall n{\sim}(P((n)) \rightarrow Q(n))$
D) $\forall n({\sim}Q((n)) \rightarrow {\sim}(P(n)))$

101. **The members of the set S = {x | x is the square of an integer and x < 100} is _____** (2)

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}

102. **What is the Cartesian product of A = {1, 2} and B = {a, b}?** (2)

A) {(1, a), (1, b), (2, a), (b, b)}
B) {(1, 1), (2, 2), (a, a), (b, b)}
C) {(1, a), (2, a), (1, b), (2, b)}
D) {(1, 1), (a, a), (2, a), (1, b)}

103. **$p \leftrightarrow q$ is logically equivalent to:** (2)

A) $(p \rightarrow q) \rightarrow (q \rightarrow p)$
B) $(p \rightarrow q) \vee (q \rightarrow p)$
C) $(p \rightarrow q) \wedge (q \rightarrow p)$
D) $(p \wedge q) \rightarrow (q \wedge p)$

10 4. **The statement," Every comedian is funny" where C(x) is "x is a comedian" and F (x) is "x is funny" and the domain consists of all people.** (2)

A) $\exists x(C(x) \wedge F(x))$

B) $\forall x(C(x) \wedge F(x))$

C) $\exists x(C(x) \rightarrow F(x))$

D) $\forall x(C(x) \rightarrow F(x))$

10 5. **Let Q(x, y) be the statement "x + y = x − y." If the domain for both variables consists of all integers, what is the truth value of ∃xQ(x, 4).** (2)

A) True

B) False

10 6. **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:** (2)

A) $\sim P \vee \sim Q \vee R$

B) $P \wedge \sim Q \wedge R$

C) $P \vee Q \wedge R$

D) $P \vee Q \wedge \sim R$

10 7. **Let domain of m includes all students , P (m) be the statement "m spends more than 2 hours in playing polo". Express ∀m ¬P (m) quantification in English.** (2)

A) A student is there who spends more than 2 hours in playing polo

B) There is a student who does not spend more than 2 hours in playing polo

C) All students spends more than 2 hours in playing polo

D) No student spends more than 2 hours in playing polo

10 8. **Find power set of A={(a,b),c}** (2)

A) {(a,b),c}

B) {Phi,{(a,b)},{c},{(a,b),c}}

C) {{c},{(a,b),c},{(a,b)}}

D) {a,b,c}

10 9. **Use quantifiers and predicates with more than one variable to express, "There is a pupil in this lecture who has taken at least one course in Discrete Maths."** (2)

A) **∃x∃yP (x, y), where P (x, y) is "x has taken y," and the domain for y consists of all Discrete Maths lectures.**

B) **∃x∃yP (x, y), where P (x, y) is "x has taken y," and the domain for y consists of all pupil in this lecture.**

C) **∀x∀yP(x, y), where P (x, y) is "x has taken y," and the domain for y consists of all Discrete Maths lectures.**

D) **∃x∀yP(x, y), where P (x, y) is "x has taken y," and the domain for y consists of all Discrete Maths lectures.**

110. **Let T (x, y) mean that student x likes dish y, where the domain for x consists of all students at your school and the domain for y consists of all dishes. Express ¬T (Amit, South Indian) by a simple English sentence.** (2)

A) All students does not like South Indian dishes.

B) Amit does not like South Indian people.

C) Amit does not like South Indian dishes.

D) Amit does not like some dishes.

111. **What is the dual of (A ∧ B) v (C ∧ D) ?** (2)

A) (A V B) v (C v D)

B) (A V B) ^ (C v D)

C) **(A V B) v (C ∧ D)**

D) **(A ∧ B) v (C v D)**

112. **What are the inverse of the conditional statement " A positive integer is a composite only if it has divisors other than 1 and itself."** (2)

A) **"A positive integer is a composite if it has divisors other than 1 and itself."**

B) **"If a positive integer is not composite, then it has divisors other than 1 and itself."**

C) **"If a positive integer is not composite, then it has no divisors other than 1 and itself."**

D) None of the mentioned

113. **Express, "The difference of a real number and itself is zero" using required operators.** (2)

A) **∀x(x − x! = 0)**

B) **∀x(x − x = 0)**

C) **∀x∀y(x − y = 0)**

D) **∃x(x − x = 0)**

114. **"The product of two negative real numbers is not negative." Is given by?** (2)

A) **∃x ∀y ((x < 0) ∧ (y < 0) → (xy > 0))**

B) **∃x ∃y ((x < 0) ∧ (y < 0) ∧ (xy > 0))**

C) **∀x ∃y ((x < 0) ∧ (y < 0) ∧ (xy > 0))**

D) **∀x ∀y ((x < 0) ∧ (y < 0) → (xy > 0))**

115. 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? (2)

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

116. **Let P: This is a great website, Q: You should not come back here.** (2)
Then 'This is a great website and you should come back here.' is best represented by:

A) **~P V ~Q**
B) **P ∧ ~Q**
C) P V Q
D) **P ∧ Q**

117. **Let L(x, y) be the statement "x loves y," where the domain for both x and y consists of all people in the world.** (2)
Use quantifiers to express , "Joy is loved by everyone."

A) **∀x L(x, Joy)**
B) **∀y L(Joy,y)**
C) **∃y∀x L(x, y)**
D) **∃x ¬L(Joy, x)**

118. The Cartesian Product B x A is equal to the Cartesian product A x B. Is it True or False? (2)

A) True
B) False

119. If A = {1, 2, 3}, B = {3, 4, 5}, then $(\overline{A \cap B}) \times \overline{A}$ is (2)

A) **{(1, 3), (2, 3), (3, 3)}**
B) **{(3, 1), (3, 2), (3, 3)}**
C) **{(1, 3), (3, 1), (3, 2)}**
D) None of these

120. **Find a counterexample of ∀x∀y(xy > y), where the domain for all variables consists of all integers.** (2)

A) x = -1, y = 17
B) x = -2 y = 8
C) Both a and b
D) Does not have any counter example

121. Which of the arguments is not valid in proving sum of two odd number is not odd. (2)

A) 3 + 3 = 6 ,hence true for all
B) 2n +1 + 2m +1 = 2(n+m+1) hence true for all
C) All of the mentioned
D) None of the mentioned

122. **Let P (x) denote the statement "x >7." Which of these have truth value true?** (2)

A) P (0)
B) P (4)
C) P (6)
D) P (9)

12 3. **What are the inverse of the conditional statement "If you make your notes, it will be a convenient in exams."** (2)

A) **"If you make notes, then it will be a convenient in exams."**

B) **"If you do not make notes, then it will not be a convenie**

C) **"If it will not be a convenient in exams, then you do not make your notes."**

D) **"If it will be a convenient in exams, then you make your**

12 4. What is the cardinality of the set of odd positive integers less than 10? (2)

A) 10

B) 5

C) 3

D) 20

12 5. **Consider the following statements** (2)

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->B->C

B) **B∧(C->A)**

C) **C->B∧A**

D) **B<->A∧C**

12 6. **A ∧ ¬(A ∨ (A ∧ T)) is always _____** (2)

A) True

B) False

12 7. **Translate ∀x∃y(x < y) in English, considering domain as real number for both the variable.** (2)

A) For all real number x there exists a real number y such that x is less than y

B) For every real number y there exists a real number x such that x is less than y

C) For some real number x there exists a real number y such that x is less than y

D) For each and every real number x and y such that x is less than y