MTH202 Quiz -3 File

By Vu Topper RM

1. **If A and B are disjoint sets then P(A | B)=……**

P(A)

2. **If B is a subset of A then P(A/B)= 1**

True

3. **$P(A^C/B)=1 - P(A/B)$**

True

4. **If A and B be events with P(A)=1/3. P(B)=1/4 and P(A intersection b)=1/6, then P(A U B) = _____.**

5/12

5. **P(A/B) = P(A n b)/P(B), where _____.**

P(B) > 0

6. **Total degree of a graph G is _____.**

2(Number of edges of G)

7. **Let $E(X^2)=6$, $u^2=2$, then standard deviation is _____.**

2

8. **If A and B be events with P(A)=1/3. P(B)=1/4 and P(A intersection b)=1/6, then P(A/B) = _____**

2/3

9. **A closed walk is the walk that starts and ends at the same vertax**

True

10. **Total degree of G is an odd number**

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False

11. **If X and Y are random variable, then E(aX) is equal to**

aE(X)

12. **A simple graph is a graph that does not have any loop.**

True

13. **Conditional probability of A given B is defined as _____.**

P(A n B) / P(B)

14. **If X and Y are independent random variables and a and b are constant, then Var(aX+bY) is equal to**

A^2 Var(X) + b^2Var(Y)

15. **A random variable is also called a**

Chance variable

16. **If the random variable X denotes the number of heads when three distict coins are tossed, then X assumes the value**

0,1,2,3

17. **If X and Y are random variables, then E (X-Y) is equal to**

E(X) - E(Y)

18. **A random variable is also called a Stochastic variable**

True

19. **Which of the followings is the probability of getting a 6 when a dice is tossed?**

1/6

20. **A random variable is also called a**

Chance variable or stochastic varaible

21. **If E(5)=5, then find arithmetic mean will be**

5

22. **Conditional probability of B given A is defined as _____.**

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P(A n B) / P(A)

23. **If A is a subset of B then P(A I B) = P(A)/P(B)**

True

24. **A graph is regular if every vertex has the _____ degree**

Same

25. **If the standard deviation of the data set is 4 then the value of the variance is**

16

26. **What is the probability of the number of one head when two fair coins are tossed?**

2/4

27. **A simple graph is a graph that does not have any loop**

True

28. **If A and B are disjoint sets then P(A/B)= _____?**

P(A)

29. **A complete graph on n vertices is a simple graph in which every is connected to every other vertex.**

True

30. **There are three bus lines between A and B, and two bus lines between B and C. Find the number of ways a person can travel round trip by bus from A to C by way of B?**

6

31. **Which of the followings is the product set A*B*C? where A= {a}, B={b}, and C={c,d}**

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

32. **In how many ways can 6 people be seated on 6 available seats?**

720

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33. Among 20 people, 15 either swim or jog or both. If 5 swim and 6 swim and jog, how many jog?

16

34. Compute C(8 , 3)

56

35. Let X={1,2,3},then 2-combinations of the 3 elements of the set X are _____?

{1,2}.{1,3}and{2,3}

36. P(A n B) = P(A). P(A/B)

False

37. If B is a subset of A then P(A/B) = 1

True

38. An expected value of a random variable is equal to its mean

True

39. If X and Y are independent random variables, then E(XY) is equal to

E(x)E(y)

40. A random variable is also called stochastic variable

True

41. If A and B are two independent events then P(A n b) =

P(A)P(B)

42. If X is a discrete random variable and f(x) is the probability of X, then the expected value of this random variable is equal to;

∑xf(x)

43. The expected value E(X) is obtained by multiplying each value of X by its probability and taking the sum.

True

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44. **P(A, A) = _____.**

1

45. **Which of the followings is the factorial form of 5 . 4?**

5!/3!

46. **The set of prime numbers is _____.**

Infinite set

47. **Let R be a relation on a set A. If R is symmetric then its compliment is _____.**

Irreflexive

48. **There are 4 bus lines between X and Y, and 5 bus lines between Y and Z, the number of ways a person can travel from X to Z?**

20

49. **To prove by mathematical induction inductive step is _____.**

If P(K) is true then P(K + 1) is true for all integers K ≥ 1

50. **Algorithm is a more general term in that the term ____ refers to a particular programming language.**

Program

51. **The sum of rational and irrational number _____.**

Is always an irrational number

52. **Basis and Inductive steps are part of proof by __.**

Mathematical induction

53. **Reductio and absurdum is another name of ___.**

Proof by contradiction

54. **If one event can occur in n_1 ways a second event can occur in n_2 ways, a third event can occur in n_2 ways, how ways all of the events can occur in the order**

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$N_1+n_2+n_3$

55. **A non zero integer d divides an integer n if and only if there exists an integer k such that_____**

N=dk

56. **The sequence 1+2+3+4 --------- +n is equal to _____.**

N(n+1)/2

57. **The sum of two integers is not an even integer when _____.**

One is even and one is odd

58. **To prove by mathematical induction for 1+2+3+…+n=(n)(n+1)/2 for all positive integers, the basis step is _____.**

1=(1)(1+1)/2

59. **To prove by mathematical induction for 1+5+9+….+(4n-3)=n(2n-1) for all positive integers, the inductive step is true for n=k is _____.**

1+5+9+…….+(4k-3)=k(2k-1)

60. **Proof by _____ uses the equivalence p -> q = ~q -> ~p**

Contraposition

61. **The predicate which describes the initial state is called the _____ of the algorithm**

Pre-condition

62. **The last step of describing algorithms formally is?**

An end statement

63. **Which of the following is not a method to prove the mathematical statements?**

Permutation

64. **GCD of (330.156) is?**

6

65. **Which of the following is not an irrational number?**

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Square root(4)

66. **The sum of a rational and irrational number ___. Is always an irrational number**
67. **If n is an odd integer then n^3+n is _____.**

Even

68. **The ___ of a predicate variable is the set of all values that may be submitted in place of the variable**

Domain

69. **For all positive real numbers a and b if a < b, then _____.**

A^2 < b^2

70. **For every prime number n, n+2 is prime. Which of the following prime number disproves the above statement.**

N=7

71. **The set of prime number is _____.**

Infinite set

72. **An integer n is _ if it can be represented as a multiple of 2**

Even

73. **In inductive property the first iteration of the loop is solved for?**

I(K)

74. **Which of the following is not a method to prove the mathematical statements?**

permutation

75. **In how many ways a student can choose a course from 2 science courses 3 literature courses and 5 art courses**

10

76. **In the Direct Proof, we show that if the statement p is true, then the statement q is _____.**

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True

77. Which of the following is true for n = 2 ?

X^n – y^n is divisible by (x – y) ^ 2

78. The sum of any rational number and any irrational number is irrational.

True

79. The set of prime numbers is _____.

Infinite set

80. The sum of two odd integers is _____--.

Even

81. How many multiples of 5 are there from 10 to 75?

14

82. A bit string is a sequence of 0's and 1's.

True

83. The method of loop invariants is used to prove _____ of a loop with respect to certain pre and post-conditions.

Correctness

84. _____ is used to determine number of ordered or unordered arrangement of objects

Counting

Counting is used to:

- **Determine number of ordered or unordered arrangement of objects.**
- **Generate all the arrangements of a specified kind which is important in computer simulations.**
- **Compute probabilities of events.**
- **Analyze the chance of winning games, lotteries etc.**
- **5) Determine the complexity of algorithms.**

85. Which of the following is not a rational number.

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7 √

86. While proofing by contradiction the equivalence _____ is used.

p →q ≡(p∧~q) →c

87. While proofing by contraposition the equivalence _____ is used

p →q≡ ~q→~p

88. Proof by contradiction is a/an ___ method of proof.

Indirect

89. Proof by contraposition is a/an ___ method of proof.

Indirect

90. If n is divisible by 5, then n^2 is divisible by 25 is the contraposition of _____.

N^2 is not divisible by 25, then n is not divisible by 5

The quantity a - d · q equals the?

Remainder

91. In inductive step of proof by mathematical induction, the assumption is made for ____.

N=k+1

92. How many 4-bit string contain at least one '1'

16

93. For all integers n>0

1+2+2^2+…..+2^n=_____

2^(n+1) – 1

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The chairs of an auditorium are to be labeled with two characters, a letter followed by a digit. Letters are a and b and numbers are 3 and 5.What is the largest number of chairs that can be labeled differently ?

15

94. To prove by mathematical induction for 1+5+9+….+(4n-3)=n(2n-1) for all positive integers, the basis step is _____.

1=1(2(1)-1)

95. The predicate describing the final state is called _____.

Post condition of the algorithm

96. The predicate describing the initial state is called _____. Pre-condition of the algorithm

97. If n is any positive integer then $2^n \geq 2(n+1)$ is true for all _____.

$N \geq 3$

98. The sum of (6 – 7 under root (2)) and (6 + 7 under root(2)) is

12

99. GCD of (8, 12) will be _____.

4

100. In division algorithm ‘r’ stands for ____

Remainder

101. If the sum of two integers is even the their difference would be _.

Even

102. Which of the following is true for n=1?

2^(2n) – 1 by 3

103. To prove by mathematical induction for 1+3+5+….+(2n-1)=n^2 for all positive integers, the basis step is _____.

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LHS=p(1)=2x1=1, RHS = 1^2=1

104. The loop is correct if the four properties are true, one of the property is?

Eventual feisty of guard

105. The statement $n^2 > n + 3$ is true when _____.

N ≥ 3

106. If 'n' is an odd integer then n^3+n is _____.

Even

107. (-1)^n=1 for n = (^standard for power)

4

108. A boy can choose from 5 train services and 3 bus service to go to his hometown, How many total options he can choose from?

8

109. The method of loop invariants is based on the people of _____.

Division algorithm

110. The statement $3^n < n!$ is true when _____.

n>6

In a city, the bus route numbers consist of a natural number less than 20, followed by one of the letters A,B,C,D,E and F. How many different bus routes are possible?

114

The word "algorithm" refers to a step-by-step method for performing some action.

True

111. If n is an odd integer then 3n+2 is _____.

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Odd

112. To prove by mathematical induction basis step is _____.

The proposition P(1) is true

113. There are 5 Chinese books and 6 English books, a student wants to select one optional book for both subject, total number of choices will be

30

114. In division algorithm the pre-condition is?

A is a nonnegative integer and d is a positive integer

115. If there are 5 different optional courses in English and 3 different optional in Maths. Choices for a student who to take one optional.

8

116. Number of combination of 3-bit string that contain exactly there '0' is _____.

8

117. The sequence $1^3+2^3+3^3+\ldots\ldots+n^3$ = _____.

N(n+1)(2n+1)/6

118. If 'r' is a perfect square, then which of the following is the correct representation of 'r'?

R=k^2 for some integer k

119. Which of the following is the representation of an odd integer 'n'?

N=2k+1 for some integer

120. If n is any positive integer then the sequence 3+6+9+……..+3n=_____.

3n(n+1)/2

121. A predicate becomes _____ when its variables are given specific values.

Sentence

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122. **The greatest common divisor (gcd) of two integers a and b is the largest integer that divides both a and b. it is called _____.**

EUCLIDEAN ALGORITHM

123. **A predicate is a sentence that contains a finite number of_____.**

Variables

124. **A proof by _____ is based on the fact that either a statement is true or it is false but not both.**

Contradiction

125. **The _____ of a predicate variable is the set of all values that may be substituted in place of the variable**

Domain

126. **Which of the following statement is true according to the division algorithm?**

17=15 x 3 + 2

127. **The division by zero is allowed in mathematics**

True

A student can choose a computer project from one of the two lists. The two lists contain 12 and 18 possible projects, respectively.How many possible projects are there to choose from ?

30

128. **For integers a,b,c if a divides b and a divides c, then a divides (a + b)**

True

129. **Suppose there are different tea flavors and 5 different biscuit brands. A guest wants to take one tea and one brand of biscuit. How many choices are there for this guest?**

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130. The sequence 1+2+3+4……+ n is equal to _____.

N(n+1)/2

131. The product of two odd integers is _____.

odd

132. A student has 3 optional courses in mathematics and 5 optional courses in physics, how many total choices for him to take one course?

8

133. If the square of an integer is even, then that integer is _____.

Even

The first step of describing algorithms formally is ?

The name of the algorithm, together with a list of input and output variables

134. Set of prime numbers is finite.

false

135. The sum of two irrational numbers in general _____.

Is always a rational number

136. Which of the following is the representation of an odd integer 'n'?

N=2k+1 for some integer 'k'

137. In how many ways can 6 people be seated on 6 available seats?

720

Algorithms formally:
1.The name of the algorithm, together with a list of input and output variables.
2.A brief description of how the algorithm works.
3.The input variable names, labeled by data type.
4.The statements that make the body of the algorithm, with explanatory comments.

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5.The output variable names, labeled by data type.
6.An end statement.

138. The product of an even and odd integer is _____.

Even

144. In the direct proof, we show that if the statement p is true then the statement q is _____.

True

145. _____ is the mathematics of counting and arranging objects

Combinatorics

146. The Contrapositive of '5n+2' is odd, then n is odd is

If n is even then 5n+2 is even

147. For All positive real numbers a and b, if a < b, then ____.

A^2 < b^2

148. The rational number '2' is the product of which of the two irrational numbers.

Under root(2), under root(2)

149. The sum of two integers is even when _____.

Both are even or both are odd

150. Proof by contraposition is based on the logical equivalence between a statement and its.
contrapositive

151. The sum of two irrational numbers must be an irrational number.

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False

152. In how many ways a student can choose a course from 2 science courses, 3 literature courses and 5 art courses.

10

GCD of (9.27) is?

9

If the guard G and the loop invariant I(k) are both true for an integer k ≥ 0 before an iteration of the loop, then I(k + 1) is?

True

False

In basis property the first iteration of the loop is solved for?

I(0)

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