**Quiz-I**

**Discrete Mathematics (BCSC 1010)**

1. In a committee, 50 students speak Hindi, 20 speaks English and 10 speak both Hindi and English. How many speak at least one of these two languages?

A. 70

B. 60

C. 80

D. 10

2. Find the generating function for the finite sequence:

1, -4, 16, -64, 256, -1024, ………

A. 1/(1-4z)

B. 1+4z

C. 1/(1+4z)

D. 1/(z+4)

3. The Universal Set = { -4, -3, -2, -1, 0, 1, 2, 3 ,4} and A = {0}. What is the complement of A?

A. {-4, -3, -2, -1, 0, 1, 2, 3}

B. {-3, -2, -1, 1, 2, 3}

C. {-4, -3, -2, -1, 1, 2, 3, 4}

D. {-4, -3, -2, -1, 1, 2, 3}

4. What statement does the shaded region represent?



A. A or B and C

B. Not C  
C. A or B

D. B and C or A

5. A = {x: x is natural number less than 1} is an example of

A. Finite Set

B. Infinite Set

C. Null Set

D. Disjoint Set

6. A = {x : x € N and x² = 4} is

A. Finite Set

B. Infinite Set

C. Null Set

D. Singleton Set

7. If P = {0, 1, 2, 3, 4}, Q = {4, 5, 6, 7}, R = {3, 6, 9}, and S = {6, 12, 18}. Then

A. P - Q = {1, 2, 3}

B. Q U R = {3, 4, 5, 6, 7, 9}

C. S - R = {12, 18}

D. R U S = {1, 3, 6, 9, 12, 18}

8. Consider the sequence: 1, 2, 3, 4, 5, 6, ............. The generating function will be:

A. A(z) = 1/(1+z)2

B. A(z) = z/(1+z)2

C. A(z) = 1/(1-z)2

D. A(z) = z/(1-z)2

9. Set A={x : x2 - 3x + 2 = 0} is equivalent to

A. A = {1, 2}

B. A = {-1, 2}

C. A = {1, 2, 3}

D. A = {1, -2}

10. A house has 4 doors and 10 windows. In how many ways can a burglar rob the house by entering through a window and exiting through a door?

A. 14

B. 40

C. 214

D. 240

11. A relation R from {1, 2, 3, ...., 10} to {1, 2, 3, ...., 10} is defined by mRn if m2 + n2 = 10 then R is

A. {(1, 3)}

B. {(3, 1)}

C. {(1, 3), (3, 1)}

D. {(1, 3), (-1, 3), (1, -3), (-1, -3)}

12. How many different two digit positive integers can be formed from the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 when repetition is not allowed?

A. 90

B. 45

C. 99

D. 81

13. A committee of 4 is to be selected from 5 boys and 6 girls. In how many ways this can be done so as to include only one girl?

A. 30

B. 60

C. 6! x 5!

7. 6 x 5!

14. How many distinct words can be formed using the letters of "BANANA"

A. 6!

B. 6! / 3!

C. 6! / (3! \* 2!)

D. 26

15. Let f be a function from {a, b, c} to {1, 2, 3, 4} with f(a) = 3, f(b) = 4, f(c) = 1.

A. f is one-to-one

B. f is onto

C. codomain(f) = range(f)

D. f is bijective

16. What is the minimum number of students required in a discrete mathematics class to be sure that at least six will receive the same grade, if there are five grades A, B, C, D, E?

A. 30

B. 11

C. 31

D. 26

17. A bag contains 12 bulbs of which four are defective. Five bulbs are drawn at random one after the other. Find the probability that all five are non-defective.

A. 14/33

B. 14/99

C. 7/99

D. 5/48

18. What is the probability of pulling a red marble out of a jar of marbles that have 10 green marbles, 7 red marbles and 3 blue marbles?

A. 1/7

B. 7/10

C. 3/20

D. 7/20

**Answer**

1: B 2 : C 3 : C 4 : C 5 : C 6 : D 7 : C 8 : C 9 : A

10 : B 11 : C 12 : A 13 : B 14 : C 15 : A 16 : D 17 : C 18 : D