Tilak Maharashtra University

Bachelor of Computer Applications

Maths & Stat assignments

Marks: 60 (20 for Each Assignment)

Assignment No 1

20 Marks

1. Prove that $(A \cap B)' = A' \cup B'$ with DeMorgans' principles and by sets concepts.

2. Define the function $f : R \rightarrow R$ by $y = f(x) = x^2$ X€R complete the following table by using definition. What is Domain and Range of this function?

x	-4	-2	-1	0	1	2	3	4
$y = f(x) = x^2$								

3. The function if defined by

$$fx = \begin{cases} 1-x & x<0 \\ 1 & x=0 \\ x+1 & x>0 \end{cases}$$

Draw the graph of f(x).

4..Prove that $AH = G^2$. Find A.M, G.M, H.M., if two numbers are 3 & 8.

5.Find the sum of n terms of the series whose n^{th} term is n (n-3)

6. Explain the following terms with illustrations :-
   I. Attribute
   II. Variable
   III. Class limits
   IV. Class marks
   V. Class frequency

7. Construct subdivided bar diagram for the following data

Year	Import	Export
1980	25	23
1981	35	37
1982	31	30
1983	28	32
1984	32	30

Assignment No 2

20 Marks

1 If ${}^{n}C_{8} = {}^{n}C_{2}$ find ${}^{n}C_{2}$

2 Determine n if

${}^{2n}C_{2} : {}^{n}C_{2} = 12 : 1$

${}^{2n}C_{3} : {}^{n}C_{3} = 11 : 1$

3 In how many ways can the letters of the word PERMUTATIONS be arranged if the

a. Words starts with P and ends with S

b. Vowels are all together

c. There are always four letters between P and S

4 Solve the following system of equations, -

$x + y + z = 2$

$2x + 2z - 3y = -6$

$3x - 2y + 3z = -4$

5. Obtain the set of non – zero solution

$X + 2y + 3z = 0$

$2x + y - z = 0$

$3x + 3y + 2z = 0$

6. if ${}^{14}C_{5} + {}^{14}C_{6} + {}^{15}C_{7} + {}^{16}C_{8} = {}^{17}C_{r}$ find r.

7. Define Mean, Mode and Median.

Calculate Mean Mode, Median for monthly expenditure (in Rs.) of 10 families given below.

700, 750, 700, 800, 775, 800, 750, 720, 750

Assignment No 3

20 Marks

1. Find the value of k in each of the following-

$10x^2 - 29x + K + 4 = 0$

i) The sum of roots is zero.

ii) The product of roots is zero.

iii) One root is reciprocal of other.

iv) Both roots one equal.

v) Roots are complex conjugate of each other.

2 Find the modulus of following numbers .

i) $(2 + 1)(3 - 5i)$

ii) $\frac{7 + i}{1 - i}$

3 Two dice are thrown and sum of the numbers which come up on the dice is noted.

A : the sum is even

B : the sum is multiple of 3'

C : the sum is less than 4'

D : the sum is greater than 11'

Which pair of these events are mutually exclusive?

4 Let Q^+ be a set of positive Rational as. A, b € Q^+, then

i) Define binary operation $a * b = \frac{ab}{2}$

ii) Check $< Q^+, * >$ is abelian group.

5 what is composition of relations and find M_{sor} if A $\{ A,b,c \}$ = and let R and S be a relations on A whose matrices are as follows

$$Mr = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

$$Ms = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 1 & 0 & 1 \end{bmatrix}$$

6. For a group of 10 observation on X

$\sum X = 452$ and $\sum X^2 = 24270$
Find standard deviation.

7 The first four raw moments of a distribution are 1, 6, 7 and 64 respectively. Obtain the co – efficient of kurtosis and comment on it.