SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act,1956)

Course & Branch :B.Arch - ARCH
Title of the Paper :Mathematics II   Max. Marks :80
Sub. Code :621201   Time : 3 Hours
Date :26/05/2011   Session :FN

PART - A   (8 x 4 = 32)
Answer ALL the Questions

1. Compute the quartile deviation and standard deviation for the following:

x	100-109	110-119	120-129	130-139	140-149	150-159	160-169	170-179
f	15	44	133	150	125	82	35	16

2. An analysis of monthly wages paid to the workers of two firms A and B belonging to the same industry gives the following results:

	Firm A	Firm B
Number of Workers	500	600
Average daily wage	`.186.00	`.175.00
Variance of distribution of wages	81	100

   In which firm, A or B, is there greater variability in   individual wages?

3. Two samples of sizes 9 and 8 give the sum of squares of deviations from their respective means equal to 160 inches^2 and 91 inches^2 respectively. Can these be regarded as drawn from the same normal population?

4. The mean of simple samples of sizes 1000 and 2000 are 67.5 and 68.0 cm respectively. Can the samples be regarded as drawn from the same population of standard deviation 2.5 cm?

5. In partially destroyed laboratory data, only the equations giving the two lines of regression of y on x and x on y are available and

are respectively, 7x – 16y + 9 = 0, 5y – 4x – 3 = 0. Calculate the coefficient of correlation, $\bar{x}\ and\ \bar{y}$.

6. Fit a straight line y = a + bx to the following data by the method of least squares:

X	0	1	3	6	8
Y	1	3	2	5	4

7. A and B throw alternately with a pair of dice. A wins if he throws 6 before B throws 7and B wins if he throws 7 before A throws 6. If A begins, find his chance of winning.

8. A continuous random variable X has a probability density function. $f(x) = 3x^2, 0 \le x \le 1$. Find mean and variance of X.

PART – B   (4 x 12 = 48)

Answer All the Questions

9. Calculate mean, median and mode of the following data relating to weight of 120 articles:

Weight(in gm)	0-10	10-20	20-30	30-40	40-50	50-60
Number of articles	14	17	22	26	23	18

(or)

10. Find the quartile coefficient of skewness of the two groups given below and point out which distribution is more skewed.

Marks	Group A	Group B
55-58	12	20
58-61	17	22
61-64	23	25
64-67	18	13
67-70	11	7

11. A group of 10 boys fed on diet A and another group of 8 boys fed on a different diet B, recorded the following increase in weights (in kgs):

Diet A	5	6	8	1	12	4	3	9	6	10
Diet B	2	3	6	8	10	1	2	8		

Does it show the superiority of diet A over that of B?

(or)

12. The following table gives the number of aircraft accident that occurred during the various days of the week. Find whether the accidents are uniformly distributed over the week?

Days	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
Number of accidents	14	16	8	12	11	9	14	84

13. Ten competitors in a musical test were ranked by the three judges A,B,C in the following order:

Ranks by A	1	6	5	10	3	2	4	9	7	8
Ranks by B	3	5	8	4	7	10	2	1	6	9
Ranks by C	6	4	9	8	1	2	3	10	5	7

(or)

14. Fit a parabola $y = a + bx + cx^2$ to the following data:

x	1.0	1.5	2.0	2.5	3.0	3.5	4.0
y	1.1	1.3	1.3	2.0	2.7	3.4	4.1

15. There are three bags: first containing 1 white, 2 red, 3 green balls; second 2 white, 3 red, 1 green balls and third 3 white, 1 red, 2 green balls. Two balls are drawn from a bag chosen at random. These are found to be one white and one red. Fine the probability that the balls so drawn came from the second bag.

(or)

16. In a test on 2000 electric bulbs, it was found that the life of a particular make was normally distributed with an average life of 2040 hours and standard deviation of 60 hours. Estimate the number of bulbs likely to burn for.

(a) more than 2150 hours

(b) less than 1950 hours

(c) more than 1920 hours and but less than 2160 hours.