

# SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act,1956)

Course & Branch :B.Arch - ARCH

Title of the Paper :Mathematics II

Sub. Code :621201

Date :09/12/2009

Max. Marks :80

Time : 3 Hours

Session :FN

## PART - A

(8 x 4 = 32)

Answer ALL the Questions

1. Define Arithmetic mean and state any two properties.
2. Define Moments. Express first four central moments in terms of moments about the origin.
3. Define Type I, Type II errors, null and alternative hypothesis.
4. What is meant by (i) critical region (ii) level of significance?
5. The two lines of regression are  $x + 2y - 5 = 0$  and  $2x + 3y = 8$ . Find the mean values of  $x$  and  $y$ .
6. Fit a straight line to the data given below.

x	1	2	3	4	5
y	2	3	5	8	10
7. State Bay's theorem.
8. In a book of 520 pages, 390 typo-graphical errors occur. Assuming Poisson law for the number of errors per page, find the probability that a random sample of 5 pages will contain no errors.

## PART – B

(4 x 12 = 48)

## Answer All the Questions

9. Calculate the mean, median and mode for the following data.

x	20-30	30-40	40-50	50-60	60-70	70-80	80-90
y	3	61	132	153	140	51	2

(or)

10. Compute arithmetic mean, standard deviation and Karl Pearson coefficient of skewness for the following data.

x	130-134	135-139	140-144	145-149	150-154	155-159	160-164
y	3	12	21	28	19	12	5

11. Two random samples gave the following results:

Sample No.	Size	Mean	Variance
1	8	9.6	1.2
2	11	16.5	2.5

Can we conclude that the two samples have been drawn from the same Normal population?

(or)

12. A certain drug is claimed to be effective in curing cold. In an experiment on 500 persons with cold, half of them were given the drug and half of them were given sugar pills with the following reactions:

	Helped	Harmed	No Effect
Drug	150	30	70
Sugar pills	130	40	80

On the basis of this data, can it be concluded that the drug and sugar pills differ significantly in curing cold?

13. Fit a parabola to the following data using the method of least squares.

x	0	1	2	3	4
y	1	1.8	3.3	4.5	6.3

(or)

14. Obtain the correlation coefficient for the following heights (in inches) of fathers (X) and their sons (Y).

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

15. An urn contains 5 white and 5 black balls, 4 balls are drawn from this urn and put in to another urn. From this second urn a ball is drawn and is found to be white. What is the probability of drawing a white ball again at the next draw? (The first white ball drawn is not replaced).

(or)

16. In a distribution exactly normal, 10.03% of the items are under 25 kilogram weight and 89.97% of the items are under 70 kilogram weight. What are the mean and standard deviation of the distribution?