

# SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.Arch

Title of the paper: Mathematics - II

Semester: II

Sub.Code: 621201(2006-07-08)

Date: 12-05-2009

Max.Marks: 80

Time: 3 Hours

Session: FN

## PART – A

(8 x 4 = 32)

Answer ALL the Questions

1. Find the arithmetic mean for the following distribution.

class	0-10	10-20	20-30	30-40	40-50
Frequency	7	8	20	10	5

2. Find the mode for the following data.

Age	0-6	6-12	12-18	18-24	24-30	30-36	36-42
Frequency	6	11	25	35	18	12	6

3. Distinguish

(a) Parameters and Statistics.

(b) Large sample tests and small sample tests.

4. In a sample of 600 men from a certain city, 450 are found smokers. In another sample of 900 men from another city, 450 are smokers. Do the data indicate that the cities are significantly different with respect to the habit of smoking among men?

5. Compute Spearman's rank correlation coefficient for the following data.

Student	A	B	C	D	E	F	G	H	I	J
Rank in Statistics	9	10	6	5	7	2	4	8	1	3
Rank in Mathematics	1	2	3	4	5	6	7	8	9	10

6. Show that the Geometric mean of the coefficients of regression is equal to the coefficient of Correlation.
7. State and prove the Law of addition of Probability.

8. Define Binomial random variable and obtain its mean and variance.

PART – B (4x 12 = 48)

Answer ALL the Questions

9. The scores of two cricketers A and B in 10 innings are given below. Find who is a better run getter and who is more consistent

Scores of A	40	25	19	80	38	8	67	121	66	76
Scores of B	28	70	31	0	14	111	66	31	25	4

(or

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10. Calculate the Karl Pearson's coefficient of skewness from the following data relating to marks obtained by students in an examination.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No.of.students	10	40	20	0	10	40	16	14

11. Two random samples gave the following results.

Sample	Size	Sample mean	Sum of square of deviations from the mean
I	10	15	90
II	12	14	108

Test whether the samples could have come from the same normal population.

(or)

12. A survey of 320 families with 5 children each revealed the following information.

No.of.Boys	5	4	3	2	1	0
No.of.Girls	0	1	2	3	4	5
No.of.Families	14	56	110	88	40	12

Is this result consistent with the hypothesis that male and female births are equally probable?

13. From the following data find the regression lines and correlation coefficient between X and Y.

X	25	28	35	32	31	36	29	38	34	32
Y	43	46	49	41	36	32	31	30	33	39

(or)

14. Explain the principle of least squares in curve fitting and use it to fit a curve of the form  $Y = a + bx + cx^2$  to the following data.

X	0	1	2	3	4	-2
Y	-5	0	9	22	39	-3

15. (a) State Baye's Theorem on probability

(b) The contents of 3 urns are

urn I : 1 white, 3 red and 2 black balls

urn II: 3 white, 1 red and 1 black balls.

Urn III: 3 white, 3 red and 3 black balls.

Two balls are chosen from a randomly selected urn. If the balls are 1 white and 1 red what is the probability that they come from urn II?

(or)

16. Assuming that one in 80 births is a case of twins, calculate the probability of 2 or more births of twins on a day when 30 births occur using.

(a) Binomial distribution

(b) Poisson distribution

