

SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.Arch

Title of the paper: Mathematics - II

Semester: II

Sub.Code: 321201

Date: 10-12-2008

Max. Marks: 80

Time: 3 Hours

Session: FN

PART – A

(8 x 4 = 32)

Answer ALL the Questions

1. Calculate the quartile deviation for the following data: 39, 75, 73, 63, 50, 51, 57, 60, 58, 62, 51, 61.
2. Discuss the terms Skewness and Kurtosis.
3. Compare Parameters with statistics.
4. Given the regression equations $8x - 10y + 66 = 0$ and $40x - 18y = 214$, and the Variance of $x = 9$.
Find (a) mean of x and y
(b) the standard deviation of y .
5. Which function given below defines a probability space on $S = (e_1, e_2, e_3)$.
(a) $P(e_1) = \frac{1}{4}$ $P(e_2) = \frac{1}{3}$ $P(e_3) = \frac{1}{2}$
(b) $P(e_1) = \frac{2}{3}$ $P(e_2) = -\frac{1}{3}$ $P(e_3) = \frac{2}{3}$
(c) $P(e_1) = 0$ $P(e_2) = \frac{1}{3}$ $P(e_3) = \frac{2}{3}$
(d) $P(e_1) = 0$ $P(e_2) = 1.0$ $P(e_3) = 0$
6. Give $P(A) = 0.4$, $P(B) = P$, $P(A \cup B) = 0.7$. Find p if
(a) A and B are mutually exclusive
(b) A and B are independent.

7. Write any four rules for network construction.
8. Discuss the objectives of Shortest Processing Time sequencing problem.

PART – B (4 x 12 = 48)

Answer ALL the Questions

9. Find the mean, median and mode of the following:

Less than	10	20	30	40	50	60	70
Frequency	7	14	28	45	60	68	70

(or)

10. Fit a Binomial distribution and test the goodness of fit for the following:

X	0	1	2	3	4	5
F	14	56	110	88	40	12

11. Two random samples of sizes 20 and are drawn form two normal populations and their means and standard deviations are observed as (123, 10) and (132, 12) respectively. Test if
 - (a) the population mean differ significantly.
 - (b) the population variances differ significantly.

(or)

12. (a) Calculate the coefficient of rank correlation form the following data:

X	48	33	40	9	16	16	65	24	16	57
Y	13	13	24	6	15	4	20	9	6	19

- (b) Fit a straight line $y = ax + b$ from the following data:

X	42	44	58	55	89	98	66
Y	56	49	53	58	65	76	58

13. (a) In a University, 30% of the students doing a course use the book authored by A1, 45% use the book authored by A2 and the rest use the book authored by A3. The proportion of students who have learnt about each of these books through their teachers are $A1 = 0.5$, $A2 = 0.3$, $A3 = 0.2$. One of the students selected at random revealed that he learnt about the book that he is using

through the teachers. Find the probabilities that he is using the book authored by

(i) A1

(ii) A3.

(b) From a lot of 10 items containing 3 defectives, a sample of 4 items is drawn at random. Let the random variable X denote the number of defective items in the sample. Answer the following when the sample is drawn without replacement.

(i) Find the probability distribution of X .

(ii) Find $P(X < 1)$

(or)

14. (a) In a certain factory turning out razor blade, there is a small chance of 0.002 for any blade to be defective. The blades are supplied in packets of 10. Calculate the approximate number of packets containing no defective, one defective and two defective blades respectively in a consignment of 10,000 packets.

(b) Fit a normal distribution and calculate the theoretical frequencies:

Length	22.5	27.5	32.5	37.5	42.5	47.5	52.5
Frequency	4	8	13	14	12	7	2

15. Solve the following minimal assignment problem:

		Job			
		1	2	3	4
Men	A	3	5	3	7
	B	6	2	5	7
	C	4	6	5	8
	D	9	5	9	2
	E	5	4	3	1
	F	8	7	1	9

(or)

16. Find the sequence that minimizes the total elapsed time required to complete the following tasks on 2 machines.

Job no.	1	2	3	4	5	6	7	8	9
Machine A(hrs)	2	5	4	9	6	8	7	5	4
Machine B(hrs)	6	8	7	4	3	9	3	8	11

