

UG-317

BMS-05

**B.Sc. DEGREE EXAMINATION –
JUNE 2008.**

(AY 2005–2006, CY 2006 batches only)

Second Year

Mathematics

STATISTICS

Time : 3 hours

Maximum marks : 75

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Find the mean for the following data :

Marks :	0–10	10–20	20–30	30–40	40–50	50–60
No. of students :	5	10	25	30	20	10

2. Calculate first 2 moments about the mean.

Marks :	0–10	10–20	20–30	30–40	40–50	50–60	60–70
No. of students :	8	12	20	30	15	10	5

3. Calculate the coefficient of correlation between X and Y from the following data :

X : 1 2 3 4 5 6 7
 Y : 3 5 6 8 10 11 13

4. Explain seasonal variations in time series analysis.

5. From a bag containing 10 black and 20 white balls, a ball is drawn at random. What is the probability that it is black?

6. For the Binomial distribution if $P = 0.1$, $n = 500$ find mean and standard deviation.

7. Intelligence test on two groups of boys and girls gave the following results :

	Mean	S.D.	N
Girls	75	15	150
Boys	70	20	250

Is there a significant difference in the mean scores obtained by boys and girls?

8. In a sample of 8 observations, the sum of squared deviations of items from the mean was 84.4. In another sample of 10 observations, the value was found to be 102.6. Test whether the difference is significant at 5% level.

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE questions.

9. Calculate standard deviation of the following frequency distribution of marks :

Marks : 0–10 10–20 20–30 30–40 40–50 50–60 60–70

No. of students : 5 12 30 45 50 37 21

10. Obtain the trend values by fitting straight line for the following data :

Year : 2001 2002 2003 2004 2005 2006 2007

Production : 80 90 92 83 94 99 92

11. Obtain two regression lines for the following data :

X: 50 60 50 60 80 50 80 40 70

Y: 30 60 40 50 60 30 70 50 60

12. Use Lagrange's formula to find y when $x = 2$.

x : 6 3 5 6 8

y : 276 460 414 343 110

13. Construct index numbers of price from the following data by applying Laspeyres method :

Commodity	2006		2007	
	Price	Quantity	Price	Quantity
A	2	8	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

14. Five men in a group of 20 are graduates. If 3 men are picked out of 20 at random :

(a) what is the probability that all are graduates, and

(b) what is the probability of atleast one being graduates?

15. In a distribution exactly normal, 7%of the items are under 35 and 79% are under 63. What is the mean and standard deviation of the distribution?

16. 200 digits are chosen at random from a set of tables. The frequencies of the digits were as follows :

Digit :	0	1	2	3	4	5	6	7	8	9
Frequency :	18	19	23	21	16	25	22	20	21	15

Use χ^2 test to assess the hypothesis that the digits were distributed in equal number in the table.