11. Find the rank correlation coefficient for the following data.

X: 92 89 87 86 86 77 71 63 53 50

Y: 86 83 91 77 68 85 52 82 37 57

12. Calculate - Laspeyre's Index number, Paasche's price index number and Marshall-Edge worth index for the following data.

Commodity	1980 Price (in Rs)	1980 Qty (in kgs)	1981 Price (in Rs)	1981 Quantity (in kgs)
A	20	15	30	10
B	30	18	40	15
C	10	20	45	10
D	15	25	25	5

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B.B.A. DEGREE EXAMINATION – JANUARY, 2006.

(For AY 2004 – 05 and CY 2005 students)

First Year

BUSINESS MATHS AND STATISTICS

Time : 3 hours   Maximum marks : 75

PART A — (3 × 5 = 15 marks)

Answer any THREE questions.

Each question carries equal marks.

1. Explain what is meant by central tendency of data. What are the common measures of central tendency?

2. What amount lent at 10% p.a compound interest will fetch Rs. 630/- as interest in 2 years?

3. If $A = \begin{pmatrix} 2 & -1 & 0 & 5 \\ 3 & 2 & 6 & -4 \end{pmatrix}$

$B = \begin{pmatrix} 4 & 7 & 1 & 8 \\ -2 & 3 & 6 & 5 \end{pmatrix}$

Find $2A + 3B$ and $3A - 2B$.

4. Calculate the mean number of persons per house

No.of persons per house:	2	3	4	5	6
No.of houses	10	25	30	25	10

5. What is meant by time series? What are the various components of the time series?

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

Each question carries equal marks.

6. Explain the terms – Primary data and secondary data. State the various methods of collecting primary data.

7. (a) If A = $\begin{pmatrix} 5 & 4 & -2 \\ 4 & 5 & -2 \\ -2 & -2 & 2 \end{pmatrix}$ Show that A. Satisfies the equation (A – 10 I) (A – I) = 0 Hence find A^3.

(b) Out of a group of 50 teachers in a high school, 30 teach mathematics, 20 teach English and 25 teach science 10 teach both mathematics and science, and none teach mathematics and English.

(i) How many teach science and English?

(ii) How many teach only English.

8. (a) The difference between the compound interest and the simple interest for 3 years at 5% p.a on a certain sum of money was Rs. 610. Find the sum.

(b) A sum of Rs. 50,440 is borrowed to be paid back in three yearly equal instalments. What is the annual instalment if the rate of interest is 5% per annum compounded annually?

9. (a) If $_xy=e^{x-y}$, prove that $\dfrac{dy}{dx}=\dfrac{\log x}{(1+\log x)^2}$

(b) Find the maximum and minimum values of $2x^3 - 3x^2 - 36x + 10$.

10. (a) Find the mean, median and mode for the following data.

72 41 60 100 98 81 97 40 54 65 83 1 40 32 50

63 15 19 82 100 75 40 56 24 43 40 76 62 21 57

40 56 41 45 53 61 66 77 54 73 27 48 49 85 46

(b) Goals scored by two teams A and B in a series of football matches were observed as follows.

No. of Goals scored in a match	No. of matches Team A	Team B
0	5	4
1	7	5
2	5	5
3	3	4
4	2	3
5	3	3

Which team, A or B, may be considered as a more consistent team?