Or

(a) Define finite and infinite sets.

(b) Out of 450 students in a school, 193 students read "Science," and 200 students read "Statesman" 80 students read neither. Illustrate these facts with the help of set theory and find out how many read both?

(c) Discuss permutation and combination.

5. (a) Find integration of $\int \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2 dx$.

(b) Find differentiation of $3x^2 + 6x + 9$

(c) Describe maxima and minima.

Or

(a) Find integration of $\int x^3 \sin x^4 dx$.

(b) Find differentiation of $\frac{sinx}{x^2}$.

(c) Critically examine use of differentiation and integration for finding solutions of business problems.

Roll No.....

BBA-201(O)

BBA (Semester-II) Examination-2014

(Old Course)

Paper: First

Business Mathematics

Time: Three Hours] [Maximum Marks: 75

Note: All questions are compulsory and carry equal marks.

1. (a) Express diagonal and identity matrix.

(b) If $A = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$, $B = \begin{pmatrix} 0 & -i \\ i & 0 \end{pmatrix}$

Show that AB= -BA and $A^2 = B^2 = 1$

(c) A manufacturing unit produces three types of television sets A, B, and C. The following matrix shows the sale of television sets in two different cities:

$$\begin{pmatrix} A & B & C \\ 400 & 300 & 200 \\ 300 & 200 & 100 \end{pmatrix}$$

If cost price of each set: A, B and C is ₹1,000, ₹2,000 and ₹3000 respectively and selling price: ₹1,500, ₹ 3,000 and ₹4,000 respectively, find the total profit using matrix algebra only.

Or

(a) Express column matrix and square matrix.

(b) Discuss relevance of use of matrix in Business Mathematical Induction.

(c) If $A = \begin{pmatrix} 0 & 2 & 3 \\ 2 & 1 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} 7 & 6 & 3 \\ 1 & 4 & 5 \end{pmatrix}$ find the value of 2A+3B.

2. (a) Find the inverse of the matrix:

$$\begin{pmatrix} 1 & 2 & -1 \\ -4 & -7 & 4 \\ -4 & -9 & 5 \end{pmatrix}$$

(b) Choose a business example of your choice and suggest solution to a system of equation by the adjoint matrix methods.

Or

(a) Describe Gaussian Elimination method and its applicability.

(b) Solve the system of equations:

$x + y + z = 7$

$x + 2y + 3z = 16$

$x + 3y + 4z = 22$

3. (a) Discuss ratio and proportion in business mathematics.

(b) Show that $\frac{a-A}{a-H} x \frac{b-A}{b-H} = \frac{A}{H}$ where A and H are the A.M. and H.M. of a and b respectively.

(c) If the sum of the three numbers in G.P. is 13 and sum of their squares is 21, find the numbers.

Or

(a) Discuss average and percentage for use of business mathematics.

(b) A man puts ₹10 at the end of every year in the saving bank at $2\frac{1}{2}$ percent compound interest. How much will his savings amount to, in 15 years?

(c) Find the interest on ₹1,000 for 10 years at 4 percent per annum, the interest being paid quarterly.

4. (a) Express notation of sets and singleton set.

(b) Let A be s set containing 9 elements and let B contains 13 elements. Find $A \cup B$ and $A \cap B$?

(c) A market research group conducted a survey of 1000 consumers and reported that 720 consumers liked product A and 450consumers liked product B. What is the least number that must have liked both products?