



‘সমানো মন্ত্র: সমিতি: সমানী’

**UNIVERSITY OF NORTH BENGAL**  
BBA LL.B. Honours 3rd Semester Examination, 2021

**BUSINESS MATHEMATICS**

**PAPER CODE: FC07**

Time Allotted: 3 Hours

Full Marks: 100

*The figures in the margin indicate full marks.  
All symbols are of usual significance.*

***The students are advised to follow the word limit mentioned below strictly while answering questions.***

***The marks will be deducted if answers exceed word limit.***

***16-20 marks- 400 words / 10-15 marks- 300 words / 6-9 marks- 200 words / 2-5 marks- 100 words***

**Answer Question No. 7 compulsorily and any *four* questions from the rest**

1. (a) From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there in the committee. In how many ways can it be done? 10+10  
(b) In how many different ways can the letters of the word ‘CORPORATION’ be arranged so that the vowels always come together?
2. (a) Vijay borrowed a certain sum from Manish at a certain rate of simple interest for 2 years. He lent this sum to Sunil at the same rate of interest compounded annually for the same period. At the end of two years, he received Rs. 2,400 as compound interest but paid Rs. 2,000 only as simple interest. Find the rate of interest. 10+10  
(b) A sum of Rs. 7700 is to be divided among three brothers Vikas, Vijay and Viraj in such a way that simple interest on each part at 5% per annum after 1, 2 and 3 years respectively remains equal. The Share of Vikas is more than that of Viraj by?
3. (a) Present age of father is 42 years and that of his son is 14 years. Find the ratio of 10+10  
(i) Present age of father to the present age of son.  
(ii) Age of the father to the age of son, when son was 12 years old.  
(iii) Age of father after 10 years to the age of son after 10 years.  
(iv) Age of father to the age of son when father was 30 years old.  
(b) Determine if the following ratios form a proportion. Also, write the middle terms and extreme terms where the ratios form a proportion.  
(i) 25 cm : 1 m and Rs. 40 : Rs. 160  
(ii) 39 litres : 65 litres and 6 bottles : 10 bottles

(iii) 2 kg : 80 kg and 25 g : 625 g

(iv) 200 mL : 2.5 litre and Rs. 4 : Rs. 50

4. (a) Let  $A = \begin{bmatrix} 2 & -1 & 3 \\ 1 & 3 & 2 \end{bmatrix}$  :  $B = \begin{bmatrix} 3 & -2 & 1 \\ 2 & 4 & 3 \end{bmatrix}$  10+10

Find  $A'$ ,  $(A')'$ ,  $B'$ ,  $2A$ ,  $(2A)'$ ,

(b) For the matrix  $A = \begin{bmatrix} 2 & 1 & -1 \\ 1 & 0 & 3 \end{bmatrix}$  show that  $(A')' = A$

5. (a) If  $f(x) = 2x^2 + x$  then show that  $f(a+b) - f(a)/b = 4a + 2b + 1$ . 12+8

(b) Given  $f(x) = 2x^2 - 3x + 1$  ; find  $f(2)$ ,  $f(0)$ ,  $f(-3)$ ,  $f(-5)$ ,  $f(-6)$ .

6. State and explain the difference between Simple interest and Compound interest with the help of an example. 20

7. Attempt any **four** of the following questions: 5×4 = 20

(a) Properties of Multiplication of Matrices

(b) Importance of Derivatives in Economics

(c) Importance of Business mathematics in foreign trade.

(d) Find Compound interest on Rs. 1,000 for 4 years at 5% per annum.

(e) In how many ways 6 books out of 11 different books can be arranged in book shelf, so that 3 books are always together?

(f) In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women?

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