SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
B.Com.(PA) END SEMESTER EXAMINATIONS NOVEMBER -2023
SEMESTER - I
21UPAAT1001 - Business Mathematics

Total Duration : 2 Hrs 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. 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.
   a) How many teach Science and English?
   b) How many teach only English?
2. Given that f(x) = 2x + 3 and g (x) = 5x + m, find m so that fog = goh.
3. Find the adjoint of Matrix A = $\begin{matrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{matrix}$
4. Find the inverse of Matrix B = $\begin{matrix} 2 & 3 & 4 \\ 3 & 2 & 1 \\ 1 & -1 & -2 \end{matrix}$
5. The ratio of the prices of two houses was 16:23. Two years later, when their prices of the first has risen by 10% and that of the second by Rs.477, the ratio of their prices becomes 11:20. Find the original prices of the two houses.
6. Find the sum to n terms of the series 5 + 55 + 555 + ……...
7. A sum of money amounts to Rs.20,800 in 5 years and Rs.22,720 in 7 years. Find the Principal and the rate of simple interest.
8. The total profit y in rupees of a drug company from the manufacture and sale of x drug bottles is given by $Y = x^2/400 + 2x - 80$
   a) How many drug bottles must the company sell to achieve the maximum profit?
   b) What is the profit per drug bottle when this maximum is achieved?

Contd...

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. a) There are 5 trains from Madras to Delhi and back to Madras. In how many ways can a person go from Madras to Delhi and return in a different train?
   b) There is a letter lock with 3 rings each marked with 5 letters and do not know the keyword. How many different useless attempts may be made to open the lock?
10. Using matrices solve the equations
    $x + y + 2z = 4$
    $2x - y + 3z = 9$
    $3x - y - z = 2$
11. Divide 20 into 4 parts which are in AP such that the product of the first and fourth is to the product of the second and third in the ratio 2:3.
12. On what sum of money will the difference between the simple interest and the compound interest for 2 years at 5% per annum be equal to Rs.50?
13. Find the Maximum and Minimum values of $2x^3 - 3x^2 - 36x + 10$.

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