

Vidya Vikas Mandal's  
Shree Damodar College of Commerce & Economics, Margao-Goa  
FY B.Com, Semester-I, Semester End Examination (OA-38) November 2023  
Business Mathematics-I (COM-142, NEP-2020)

**Duration: 1 hour**

**Total Marks: 20 marks**

**Instructions:**

- Start each question on a fresh page.
- Figures to the right indicate maximum marks.
- Use of non-scientific, non-programmable calculators is allowed.

**Q1. Answer each of the following:**

**(4×1=4)**

- i) Define proportion.
- ii) Recognize the method of specifying sets for the set  $A = \{x | x \text{ is a real number, } -3 \leq x < 4\}$ .
- iii) State the integral of  $a^x$ .
- iv) Define the null set.

**Q2. A) Define the Future Value of an ordinary annuity and recall it's formula.**

**(2)**

**B) State the types of operations on sets.**

**(2)**

**Q3. A) Illustrate by giving examples one-one function and one-many function.**

**(2)**

**B) Estimate the proportion after using i) invertendo ii) alternando for  $\frac{51}{89} = \frac{102}{178}$**

**(2)**

**OR**

**C) Identify the subsets of the set  $\{1,2,3,4,5\}$ .**

**(2)**

**Q4. A) Illustrate the algebra of derivatives for**

**(2)**

$\frac{d}{dx}(u - v)$  and  $\frac{d}{dx}(uv)$ , where  $u$  and  $v$  are functions of  $x$

**B) Estimate the percentage of profits over the MRP. Of Rs. 200, for the profits (i) 40 (ii) 20**

**(2)**

**OR**

**C) Differentiate between ratios and proportions.**

**(2)**

**Q5. A) Compute the derivative of  $x^3 + 2x^{\frac{3}{2}} + 5$**

**(2)**

**B) Compute the integral  $\int (x^6 + 3x^{\frac{9}{5}} + 10)dx$**

**(2)**

**OR**

**C) Calculate the definite integral:**

**(2)**

$$\int_1^2 (x^5 + 2x^3 + 3)dx$$

**THE END**