

Roll No. 

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Total No. of Pages : 02

Total No. of Questions : 07

**B.Sc(IT) (Sem.-1)**  
**BASIC MATHEMATICS – I**  
Subject Code : BS-103  
Paper ID : [B0402]

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.

**SECTION-A****Q1) Write briefly :**

- a) If  $a, b, c$  are in A.P. then  $\frac{a}{bc}, \frac{1}{b}, \frac{1}{c}$  are in .....
  - b) Define mean and weighted mean.
  - c) Write the formula for sum of  $n$  terms for A.P. and G.P.
  - d) Define union and intersection of a set.
  - e) What is partition of a set?
  - f) Under what condition matrix multiplication is possible.
  - g) Define associative law for a set.
  - h) Write the formula of binomial theorem for positive integral index.
  - i) Define any two properties of determinant.
  - j) Write relation between co factor and minor.
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**SECTION-B**

Q2) Use properties of determinants to evaluate :

$$\text{i) } \begin{bmatrix} 2 & 3 & 4 \\ 5 & 6 & 8 \\ 6x & 9x & 12x \end{bmatrix}$$

$$\text{ii) } \begin{bmatrix} a-b & b-c & c-a \\ b-c & c-a & a-b \\ c-a & a-b & b-c \end{bmatrix}$$

Q3) Find the coefficient of  $x^5$  in the expansion of  $(1 + 2x + 3x^2 + \dots)^{3/2}$ ,  $|x| < 1$ .

Q4) Find the median of the following data :

<b>Marks</b>	Less than 40	41-50	51-60	61-70	71-80	81 and above
<b>No. of students</b>	10	20	15	25	10	20

Q5) The 3<sup>rd</sup> term of a G.P. is 54 and 7<sup>th</sup> term is reciprocal of 3<sup>rd</sup> term. Find the 5<sup>th</sup> term.

Q6) State and prove de-Morgan's law.

Q7) Find four numbers in A.P. whose sum is 20 and sum of their squares is 120.