

QUESTION BANK

BASIC MATHEMATICS (K- Scheme)

BMS (311302)

UT- 1

Unit-I (ALGEBRA)

CO-I

2- marks

- 1) Prove that $\frac{1}{\log_3 6} + \frac{1}{\log_8 6} + \frac{1}{\log_9 6} = 3$.
- 2) Find the value of 'x' if $\log_3(x + 6) = 2$.
- 3) Evaluate : $\log_3 81$.
- 4) Find the value of $\log \frac{2}{3} + \log \frac{4}{5} - \log \frac{8}{15}$.
- 5) If $A = \begin{bmatrix} -2 & 0 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 \\ 3 & 5 \end{bmatrix}$, check whether the product matrix $[AB]$

is Singular or Non- Singular ?.

6) If $A = \begin{bmatrix} 2 & 4 \\ -1 & -2 \end{bmatrix}$, then prove that A^2 is a null matrix.

7) Find $3A - 2B$ if $A = \begin{bmatrix} 2 & 3 \\ -4 & 7 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 3 \\ 6 & 9 \end{bmatrix}$.

8) Find the Inverse of a matrix $A = \begin{bmatrix} -1 & 3 \\ 2 & -4 \end{bmatrix}$.

9) Resolve into Partial Fraction : $\frac{1}{x^2+4x}$.

10) Resolve into PF : $\frac{1}{x^2-9}$.

11) Find the Range & Coefficient of range for the following data :

C.I	10-19	20-29	30-39	40-49	50-59	60-69	70-79
Frequency	3	61	223	137	53	19	04

12) Find the Standard Deviation for the following data :

15, 22, 27, 11, 9, 21, 14, 9.

13) If the Coefficient of Variance for a given data is 75 % and Standard deviation is 24, then find Mean of the data.

4- marks

1) If $\log\left(\frac{a-b}{5}\right) = \frac{1}{2}(\log a - \log b)$, then prove that $a^2 + b^2 = 27ab$.

2) Find the value of "x" if $\log_{10}(x^2 + 6x + 28) = 2$.

3) Prove that the matrix $A = \frac{1}{3} \begin{bmatrix} -1 & 2 & 2 \\ 2 & -1 & 2 \\ 2 & 2 & -1 \end{bmatrix}$ is an Orthogonal matrix.

4) Solve the following equations by Matrix- Inversion Method :

$3x + y + 2z = 3$; $2x - 3y - z = 3$; $x + 2y + z = 4$.

5) Find the value of x , y & z if

$$\left\{ 3 \begin{bmatrix} 3 & 1 \\ 4 & 0 \\ 3 & -3 \end{bmatrix} - 2 \begin{bmatrix} 0 & 2 \\ -2 & 3 \\ -5 & 4 \end{bmatrix} \right\} \cdot \begin{bmatrix} -1 \\ 2 \end{bmatrix} = \begin{bmatrix} x \\ y \\ z \end{bmatrix}.$$

6) If $A = \begin{bmatrix} 2 & 4 & 4 \\ 4 & 2 & 4 \\ 4 & 4 & 2 \end{bmatrix}$, then prove that $A^2 - 8A$ is a Scalar matrix.

7) Resolve into PF : $\frac{3x+2}{(x+1)(x^2-1)}$.

8) Resolve into PF : $\frac{2x+3}{x^2-2x-3}$.

9) Resolve into PF : $\frac{x^2+1}{x.(x^2-1)}$.

10) Resolve into PF : $\frac{x^2+23x}{(x+3).(x^2+1)}$.

11) Find the Standard Deviation for the following data :

C.I.	0-10	10-20	20-30	30-40	40-50
Frequency	3	5	8	3	1

12) The runs scored by two batsman in test series is as follows :

Batsman	Average runs scored	S.D
A	44	5.1
B	54	6.31

Which batsman is more consistent ?

13) Calculate the Standard deviation & Coefficient of Variance for the following

Marks Below :	5	10	15	20	25
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No. of Students:	6	16	28	38	46
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14) Find the Mean Deviation from the Mean :

CI	0-10	10-20	20-30	30-40	40-50
Frequency	3	8	15	16	6

15) Calculate the Mean & Standard Deviation for the data :

CI	0-10	10-20	20-30	30-40	40-50
Frequency	14	23	27	21	15