

B.Sc.-M.Sc. Integrated Program
Semester-I Examination, 2021
Paper Title: Basics of Mathematics Tutorial
Paper Code: BCH-GE-01-B (TU)

Time: 45 min

Max Marks: 18

Attempt all questions. Use only A4 sheets. All parts of a question must be attempted in continuation. Start answer of a fresh question on a new page. Cite examples and draw labelled diagrams wherever necessary.

(6X3 =18)

Question-1 If the order of matrix A is $a^{2019} \times b^{2020}$ and the order of B is $b^{2020} \times c^{2021}$. Then the order of matrix AB is?

- (A) $a^{2019} \times b^{2020}$ (B) $b^{2020} \times c^{2021}$ (C) $a^{2020} \times c^{2021}$ (D) $b^{2020} \times a^{2021}$

Question-2 Find $\frac{dy}{dx}$, if $x = a \cos \theta$, $y = a \sin \theta$

- (A) $\cot \theta$ (B) $-\cot \theta$ (C) $\tan \theta$ (D) $-\tan \theta$

Question-3 If the matrix A is both symmetric and skew symmetric, then

- (A) A is a diagonal matrix (B) A is a zero matrix (C) A is a square matrix (D) None of these

Question-4 The determinant of the matrix $A = \begin{bmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{bmatrix}$ is

- (A) abc (B) $2abc$ (C) $3abc$ (D) $4abc$

Question-5 For what values of 'x': $\begin{bmatrix} 1 & 2 & 1 \end{bmatrix} \begin{bmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{bmatrix} \begin{bmatrix} 0 \\ 2 \\ x \end{bmatrix} = 0$?

- (A) -1 (B) -3 (C) 1 (D) 3

Question-6 For what value of a such that the function defined by

$$f(x) = \begin{cases} 5, & x \leq 2 \\ x + a, & 2 < x \leq 10 \end{cases}$$

is continuous function.

- (A) 3 (B) 5 (C) 4 (D) 2
