

Bachelor of Vocation in Pottery & Ceramic Examination, 2019

Semester - II

Applied Science-II

Course: B.Voc-II/03

Time: Three Hours

Full Marks: 80

Questions are of equal value.

Answer **any eight** questions from the following:

$8 \times 10 = 80$

1. State the different types of Matrix with example.

2. Find the value of $\begin{vmatrix} 0 & 2 & -3 \\ 1 & 2 & 4 \\ -2 & 3 & 2 \end{vmatrix} \times \begin{vmatrix} 2 & 0 & -3 \\ 3 & 1 & 0 \\ 0 & 4 & -2 \end{vmatrix}$.

3. Find the value of $\begin{bmatrix} 2 & -3 \\ 4 & 5 \\ -6 & 0 \end{bmatrix} \times \begin{bmatrix} 3 & -2 & 0 \\ 5 & 4 & 1 \end{bmatrix}$.

4. Solve the following equation using Cramer's rule:

$$3x + y + z = 10$$

$$x + y - z = 0$$

$$5x - 9y = 1$$

5. Prove that $\operatorname{Cosec}^2 A = 1 + \cot^2 A$ and from that find the value of A, if $\operatorname{Cosec}^2 A - 1 = 1$.

6. A contractor plans to install two slides for the children to play in a park. For the children below the age of 5 years, she prefers to have a slide whose top is at a height of 1.5 m, and is inclined at an angle of 30° to the ground, whereas for elder children, she wants to have a steep slide at a height of 3m, and inclined at an angle of 60° to the ground. What should be the length of the slide in each case?

7. a) If $\cot \theta = \frac{5}{3}$, Find the value of $\sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}}$.

b) If $x \sin 45^\circ \cos 45^\circ \tan 60^\circ = \tan^2 45^\circ - \cos 60^\circ$, Find the value of x.

8. Find the Median and Standard deviation from the following data:

49, 63, 46, 59, 65, 52, 60, 54

9. The following data refer to the dividend (%) paid by two companies A and B over the last 7 years.

A: 4, 8, 4, 15, 10, 11, 9

B: 12, 8, 3, 15, 6, 4, 10

Calculate the coefficients of variation and comment.

10. Write short notes on **any two** of the following:

(a) Mode (b) Median (c) Coefficient of variation (C.V %) (d) Standard Deviation

11. What is tally mark? What is its usefulness? What are the differences between Bar diagram and Histogram?