

Roll No.

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**B. C. A. (Part I, II, III) Examination, 2022
(New/Old Course)
(Only for Non-Mathematical Students)
BRIDGE COURSE**

*Time : Three Hours]**[Maximum Marks : 50**[Minimum Marks : 20*

Note: All questions are compulsory. Attempt any two parts from each question. All questions carry equal marks.

Unit - I

1. (a) Which term of the Geometric progression 5, 10, 20, 40,.....is 5120?

(b) If $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$; Find A^{-1}

P.T.O.

- (c) Break the following into Partial fractions:

$$\frac{1}{(x-2)(x-3)^2}$$

Unit - II

2. (a) Find the numbers of arrangements the letters of the word INDEPENDENCE.
(b) Compute $(98)^5$ by binomial theorem.
(c) For all $n \geq 1$, prove that

$$1^2 + 2^2 + 3^2 + 4^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

Unit - III

3. (a) The angle of elevation of the top of a tower from a point on the ground, which is 30m away from the foot of the tower is 30° . Find the height of the tower.
(b) Prove that $\tan 75^\circ + \cot 75^\circ = 4$
(c) If $A + B = \frac{\pi}{4}$. prove that

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$$(1 + \tan A)(1 + \tan B) = 2$$

Unit - IV

4. (a) Find the equation of a line passing through (2,-3) and inclined at an angle of 135° with the positive direction of x - axis.
- (b) Find the obtuse angle between the lines $x - 2y + 3 = 0$ and $3x + y - 1 = 0$
- (c) Find the equation of the parabola whose focus is the point (0,0) and whose directrix is the straight line $3x - 4y + 2 = 0$.

Unit - V

5. (a) Find the mean of the following frequency distribution:

Classes:	0-20	20-40	40-60	60-80	80-100
Frequency	15	18	21	29	17

- (b) Find the variance and standard deviation for the following data:

65, 68, 58, 44, 48, 45, 60, 62, 60, 50

- (c) Compute the mode for the following frequency distribution.

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Size of items :	0-4	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36	36-40
Frequency :	5	7	9	17	12	10	6	3	1	0