Roll No. ....

CD–2860

B. C. A. (Part I/II/III) EXAMINATION, 2020

(Old Course)
(Only for Non-Mathematical Students)

BRIDGE COURSE

Time : Three Hours

Maximum Marks : 50

Minimum Pass Marks : 20

Note : Attempt any *two* parts from each Unit. All questions carry equal marks.

Unit—I

1. (a) In an A. P. if the *m*th term is *n* and the *n*th term is *m*, where $m \neq n$; find the *p*th term.

   (b) Prove that :

   $$\begin{vmatrix} x+y & y+z & z+x \\ z & x & y \\ 1 & 1 & 1 \end{vmatrix} = 0.$$

   (c) Find X and Y, if :

   $$X + Y = \begin{bmatrix} 5 & 2 \\ 0 & 9 \end{bmatrix} \text{ and } X - Y = \begin{bmatrix} 3 & 6 \\ 0 & -1 \end{bmatrix}.$$

Unit—II

2. (a) Find *r* if :

   $$5. \, {}^{4}P_{r} = 6. \, {}^{5}P_{r-1}.$$

   (b) Using mathematical induction prove that, for every positive integer *n*; $7^{n} - 3^{n}$ is divisible by 4.

   (c) Find the value of *a* if the 17th and 18th terms of the expansion $(2 + a)^{50}$ are equal.

Unit—III

3. (a) Find the height of the tower if the angle of elevation of its top from a point 100 metres away from its foot is 60°.

   (b) Find the value of $\tan \dfrac{\pi}{8}$.

   (c) Convert $40° \ 20'$ into radian measure.

Unit—IV

4. (a) A line through the points (–2, 6) and (4, 8) is perpendicular to the line through points (8, 12) and $(\lambda, 24)$. Find the value of λ.

   (b) Find the locus of a variable point, which is always an equal distance from A (1, 2) and B (4, 3).

   (c) Find the equation of parabola which is symmetric about the *y*-axis and passes through the point (2, –3).

Unit—V

5. (a) Calculate the mean for the following distribution :

Class	Frequency
30—40	3
40—50	7
50—60	12
60—70	15
70—80	8
80—90	3
90—100	2

(b) Find the mean deviation about the median for the following data :

x	f
3	3
6	4
9	5
12	2
13	4
15	5
21	4
22	3

(c) Calculate the median for the following data :

Class	Frequency
0—10	6
10—20	7
20—30	15
30—40	16
40—50	4
50—60	2