Roll No. .....

DD-2860

B.C.A. (Part I/II/III) EXAMINATION, 2021

(*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) Break the following into partial fraction :

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

(b) Prove that :

$$\begin{vmatrix} 1 & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+y \end{vmatrix} = xy$$

(c) Which term of the G. P. 5, 10, 20, 40, ... is 5120 ?

UNIT—II

2. (a) If ${}^{n}P_{r} = 720$ and ${}^{n}C_{r} = 120$, then find the value of r.

(b) Expand $\left(x + \frac{1}{x}\right)^5$ by using Binomial theorem.

(c) Find the value of $\log(1 + x) - \log(1 - x)$.

UNIT—III

3. (a) Evaluate :

$$\sin\left(\frac{1}{2}\cos^{-1}\frac{4}{5}\right)$$

(b) Prove that :

$$\frac{\sin x + \sin 3x + \sin 2x}{\cos x + \cos 3x + \cos 2x} = \tan 2x$$

(c) The angle of elevation of a ladder leaning against a house is 60° and the foot of the ladder is 10 m from the house. Find the length of the ladder.

UNIT—IV

4. (a) Find a point on x-axis which is equidistant from A (2, –5) and B (–2, 9).

(b) Prove that the lines $x + 2y - 9 = 0$ and $2x + 4y + 5 = 0$ are parallel.

(c) Find the lengths of major and minor axes, the co-ordinates of foci and vertices and the eccentricity of the ellipse $16x^2 + 25y^2 = 400$.

UNIT—V

5. (a) Find the mean of the following data :

Class Interval	Frequency
0—10	7
10—20	10
20—30	15
30—40	8
40—50	10

(b) Obtain the median for the following frequency distributon :

x	f
1	8
2	10
3	11
4	16
5	20
6	25
7	15
8	9
9	6

(c) For the following grouped distribution, find the mode :

Class Interval	Frequency
3—6	2
6—9	5
9—12	10
12—15	23
15—18	21
18—21	12
21—24	3