

Roll No. ....

Total No. of Sections : 3

Total No. of Printed Pages : 5

Code No. : **A.B.C-200**

**Annual Online Examination 2021**

**B.C.A. Part I/II/III**

**BRIDGE COURSE**

**Paper 101**

Time : Three Hours ]

[ Maximum Marks : 80

*Note : Section 'A', containing 10 very short answer type questions, is compulsory. Section 'B' consists of short answer type questions and Section 'C' consists of long answer type questions. Section 'A' has to be solved first.*

**Section 'A'**

*Answer the following very short answer type questions in one or two sentences. 2×10=20*

1. Write first two terms of  $a_n = n \frac{n^2 + 5}{4}$ .
2. Convert the following angle in radian measurement :  $75^\circ$ .
3. Find the coefficient of  $x^5$  in  $(x + 3)^8$ .
4. Find the distance between two parallel lines  $15x + 8y - 34 = 0$  and  $15x + 8y + 31 = 0$ .

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Or

Show that :  $\log\left(\frac{4}{3}\right) = \frac{1}{3} - \frac{1}{2} \frac{1}{3^2} + \frac{1}{3} \frac{1}{3^3} - \frac{1}{4} \frac{1}{3^4} + \dots$

3. Show that  $\frac{\sin 5x + \sin 3x}{\cos 5x + \cos 3x} = \tan 4x$ .

Or

In  $\triangle ABC$  if  $a = 18$ ,  $b = 24$ ,  $c = 30$ , find  $\cos A$  and  $\cos B$ .

4. Find the equation of line parallel to the line  $3x - 4y + 2 = 0$  and passing through  $(-2, 3)$ .

Or

Find the focus of the parabola  $y = x^2 - 2x + 3$ .

5. The mean of the 5 numbers is 27. If one of the number is excluded, the mean becomes 25. Determine excluded number.

Or

Find the median salary of the following salaries of the workers in Rs. :

56, 89, 121, 38, 98, 70, 70, 72.

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Section 'C'

Answer the following long answer type questions  
with word limit 300–350.  $8 \times 5 = 40$

1. Three numbers are in A.P., their sum is 15. If 1, 3, 9 be added to them they form a G.P. Find the numbers.

Or

Divide 24 into 4 parts which are in A.P., such that the sum of their squares is 164.

2. By principle of Mathematical Induction, show that  $3^{2n+2} - 8n - 9$  is divisible by 8.

Or

If the coefficients of 3 consecutive terms in the expansion of  $(1 + x)^n$  are in ratio 1 : 7 : 42, find  $n$ .

3. If  $\cos \theta + \sin \theta = \sqrt{2} \cdot \cos \theta$ , show that

$$\cos \theta - \sin \theta = \sqrt{2} \cdot \sin \theta.$$

Or

$$\sqrt{\frac{1 + \sin \theta}{1 - \sin \theta}} + \sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} = 2 \sec \theta.$$