Q.3 Prove that : $\tan^{-1}\frac{2}{11}+\tan^{-1}\frac{7}{24}=\tan^{-1}\frac{1}{2}$

OR

Solve : $\tan^{-1}2a+\tan^{-1}3x=\frac{\pi}{4}$

Q.4 If a parabolic reflector is 20 cm in diameter and 5 cm deep, find its focus

OR

Find the equation of the circle which passes through the point of intersection of the lines $3x-2y-1=0$ and $4x+y-27=0$ and whose centre is $(2, -3)$.

Q.5 If the mean of the following distribution is 54. find the value of P :

Class	:	0-20	20-40	40-60	60-80	80-100
Frequency	:	7	P	10	9	13

OR

Find the mean and standard deviation of the following distribution :

Marks	:	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Students	:	3	6	13	15	14	5	4

---x---

Roll No.....

Total No. of Sections : 03

Total No. of Printed Pages : 04

Annual Online Examination - 2020

BCA - I / II / III

BRIDGE COURSES

Max.Marks : 50

Time : 3 Hrs. Min.Marks : 20

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 : (1×10=10)

Q.1 Find the value of $\begin{vmatrix} 5 & 8 \\ -2 & -3 \end{vmatrix}$

Q.2 Find the value of ${}^{9}C_{3}$

Q.3 Write the slope of straigh line $4y=9x-9$

Q.4 Find the value of $\text{Cos}\,270^{0}$.

Q.5 The following numbers of goals were scored by a team in a series of 10 matches..

2, 3, 4, 5, 0, 1,3, 3, 4, 3. Find the mean.

P.T.O.

Q.6 If $\tan\theta = 3/4$, find the value of $\sin\theta$ *and* $\cos\theta$

Q.7 $P(A) = \frac{3}{10}, P(B) = \frac{2}{5}$ *and* $P(A \cup B) = 3/5$ then, find the value of $P\left(\frac{B}{A}\right) + P\left(A/B\right)$

Q.8 Which term of G.P has first term a=5 and the common ratio r=2 ?

Q.9 Write the axis of symmetry of the porabola $y^2 = x$.

Q.10 Write the coordinate of the centre of the circle passing through $(0,0)$, $(4,0)$ *and* $(0, -6)$.

Section - 'B'

Answer the following questions : **(3×5=15)**

Q.1 The first term of an A.P. is 5, the common difference is 3 and the last term in 80, find the number of term.

OR

Find the value of determinant : $A = \begin{vmatrix} 1 & 2 & 3 \\ -2 & 1 & 2 \\ 4 & 2 & 0 \end{vmatrix}$

Q.2 Prove that : ${}^{n}C_r + {}^{n}C_{r-1} = {}^{n+1}C_r$

OR

Prove that : $1 + \frac{2}{\lfloor 2} + \frac{3}{\lfloor 3} + \frac{4}{\lfloor 4} + \text{----} = e$

Q.3 Prove that : $2\tan^{-1} x = \tan^{-1}\frac{2x}{1-x^2}$

OR

Solve : $\sin\frac{\pi}{4}.\cos\frac{\pi}{12} + \cos\frac{\pi}{4}.\sin\frac{\pi}{12}$

Q.4 Find the equation of the acute angle between the lines $3x+4y-11$ *and* $12x-5y-2=0$

OR

Find the equation of the hyperbola whose focus is (1, 2), directrix the line $x+y+1=0$ and ecentricity $3/2$

Q.5 Calculate the mean deviation about median from the following data : 340, 150, 210, 240, 300, 310, 320.

OR

Find the mean of the following frequency distribution.

Class Interval	: 0-10	10-20	20-30	30-40	40-50
No. of Worker's (f)	: 7	10	15	8	10

Section - 'C'

Answer the following questions : **(5×5=25)**

Q.1 Find the inverse of : $A = \begin{bmatrix} 2 & 3 & -1 \\ 3 & -1 & 1 \\ 3 & 2 & -2 \end{bmatrix}$

OR

Find the partial fraction of the function : $f(x) = \frac{1}{x^2-4x+3}$

Q.2 Find n if : $n \; {}^{n}P_2 + 50 = {}^{2n}P_2$

OR

By induction method prove that:

$1^2 + 3^2 + 5^2 + \text{----} + (2x-1)^2 = \frac{n(2n-1)(2n+1)}{3}$