Q.3 If the straight line touches the curve , then prove that .

OR

Investigate for what value of x, $x^5 - 5x^4 + 5x^3 - 1$ is a maximum or minimum.

Q.4 The odds against a certain event are 5 to 2 and the odds in favour of another event, independent of the former, are 6 to 5, find the odds that one at least of the events will happen.

OR

There are 3 bags and they contain 2 white and 3 black balls ; 3 white and 2 black balls, 4 white and 1 black balls respectively. The probability of selecting each bag is same. A bag is selected at random and a ball is drawn from it. Find the chance that a white ball is drawn.

Q.5 Find the mean deviation from the arthmetic mean for the following frequency distribution :

Class	:	0-6	6-12	12-18	18-24	24-30
Frequency	:	8	10	12	9	5

OR

Two judges in a beauty contest rank the ten competitors in the following order :

6	4	3	1	2	7	9	8	10	5
4	1	6	7	5	8	10	9	3	2

Do the two Judges appear agree in their standands .

----x----

Roll No.....

Total No. of Section : 03

Total No. of Printed Pages : 04

Code No. : C-192

Annual Examination - 2017

BCA-I

BCA-101

Paper - II

THEORETICAL FOUNDATION OF COMPUTER SCIENCE CALCULUS AND STATISTICAL METHODS

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.

$\frac{dy}{dx}$, $\sin\alpha\cos\alpha = p$

Section-'A'

Very short answer type questions: **(1x10=10)**

Q.1 Write the value of the limit $\frac{\tan x}{x}$ as .

Q.2 Define removable discontinuity for a function.

Q.3 Write the differential coefficient of log .

Q.4 Find when :

Q.5 Find the subtangent of the curve .

Q.6 Investigate for maxima and minima the function $y = x - \sin x$.

P.T.O.

Q.7 Define Equally likely events.

Q.8 Find the probability of throwing on even number with a die.

Q.9 Draw bar diagram to the production of wheat of a certain village :

Year :	*1979*	*1981*	*1983*	*1985*	*1987*
Production of wheat in quintals :	*200*	*300*	*450*	*550*	*700*

Q.10 Show that the coefficient of correlation is the G.M. of the coefficient of regression.

Section-'B'

Solve the following: **(3x5=15)**

Q.1 Show that :

OR

Show that the function :

$$f(x)=3x^2+2x+1$$

is continuous at .

Q.2 If for all values of x and . Also

and , then find .

OR

Differentiate the following function with respect to x.

$$y=x^x$$

Q.3 Prove that in the curve the square of subtangent is proportional to the subnormal.

OR

Find the points of inflexion of the curve $y=x^3$.

Q.4 A bag having 5 black and 11 white balls. Find the probability to draw one white ball from the bag.

OR

State Baye's theorem.

Q.5 For Poisson's distribution, prove that as 'm' tends to infinity and both approach to zero.

OR

Find the mean and standard deviation of the group from the following data :

Section-'C'

Solve the following: **(5x5=25)**

Q.1 By technique method find the value of .

OR

Test for continuity of the following function at $x=0$:

Q.2 If find $\frac{dy}{dx}$.

OR

If and

$y=a(\sin\theta-\theta\cos\theta)$ then

Prove that $\frac{dy}{dx}=\frac{x}{y}$.