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Code No. : C-192

Roll No.....

Total No. of Sections : 03

Total No. of Printed Pages : 04

Q.2 If $y = (1+x^2) \tan^{-1} x$ find $\frac{dy}{dx}$.

OR

Differentiate the function with respect to when

Q.3 Find the points on the curve the tangent at which are perpendicular to x-axis.

OR

Show that has a maximum at a minimum at and neither when .

Q.4 From 12 tickets marked 1 to 12, one ticket in drawn at random. Find the chance that the number on it is a multiple of 3.

OR

Two dice are thrown, find probability that the sum of faces is (i) 7 or 8 and (ii) more than 8.

Q.5 Find the mean and standard deviation for the following frequency distribution.

Age(in years)	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	4	8	10	16	12	6	4

OR

Fit the straight line to the following data.

x :	0	5	10	15	20	25
y :	12	15	17	22	24	30

---x---

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Annual Examination - 2019

B.C.A. Part - I

BCA 101

THEORETICAL FOUNDATION OF
COMPUTER SCIENCE

Paper - II

CALCULUS AND STATISTICAL ANALYSIS.

Max.Marks : 50

Min.Marks : 20

~~Time 2 1/2 Hrs~~
Time 3 Hrs

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 limit .

Q.2 Give the definition of ordinary discontinuity.

Q.3 Find the differential coefficient of a constant.

Q.4 Find when

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- Q.5 Give the conditions of differentiability of a function.
- Q.6 Find the subtangent of a Curve .
- Q.7 If $x + y = 10$ then find the maximum value of xy .
- Q.8 Define finite sample space.
- Q.9 Draw bar diagram to represent the following figures relating to the population of India from 1931 to 1981 in each census.
- | | | | | | | |
|------------|------|------|------|------|------|------|
| Year | 1931 | 1941 | 1951 | 1961 | 1971 | 1981 |
| Population | 27.9 | 31.9 | 36.1 | 43.9 | 54.7 | 68.4 |
- (in crores)
- Q.10 The mean deviation for a series in 15. Deduce the maximum possible quartile deviation.

Section - 'B'

Solve the following questions:

(3 5=15)

- Q.1 Find the value of

OR

Test the continuity of the function $f(x) = \begin{cases} \frac{|x|}{x} & x \neq 0 \\ 0 & x = 0 \end{cases}$

- Q.2 Find the derivative of $\sqrt{\tan x}$

OR

Find of

- Q.3 Show that the subtangent at any point of the curve $x^m y^n = a^{m+n}$ varies as the abscissa.

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OR

Find points of inflexion of the curve $y = 3x^3 - 4x^2 + 1$

- Q.4 Find the probability of throwing an even number with dice.

OR

From a bag containing 5 white, 7 red and 4 black balls a man draws 3 balls randomly, find the probability of all being white.

- Q.5 Find the mean deviation from the arithmetic mean for the following frequency distribution.

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

OR

The mean and standard deviations of the variable are M and σ respectively. If deviation are small compared with value of

$$f(x) = \begin{cases} \frac{29}{x} + \frac{29}{x^2} + \frac{29}{x^3} & \text{when } x \neq 0 \\ 0 & \text{when } x = 0 \end{cases}$$

the mean then prove that Mean

Section - 'C'

Answer the following questions :

(5 5=25)

- Q.1 By technique method find the value of

OR

Show that the function is

continuous at $x=0$ but does not exist.