Roll No. _____

SIVS 190 A-2K14

B.Sc. IVth Semester Degree Examination

Mathematical Statistics

(Distribution theory and Fortran Language)

Paper - IV

Time : 3 Hours Maximum Marks : 80

Section-A

I Answer the following questions. **(15x1=15)**

1. Let X be a discrete random variable, then $p(x)$ is called.

   a) P.d.f. b) c.g.f c) p.m.f d) m.g.f

2. In Beta distribution of second kind mean is

   a) $\frac{m}{\nu-1}$ b) $\frac{m+\nu}{\nu}$ c) $\frac{m}{m+\nu}$ d) None of these

3. If x and y are two independent random variables then Co-variance between them is

   a) 0.5 b) 0 c) 1 d) 2

4. The Mode of x^2 distribution is

   a) n-1 b) n-2 c) n-3 d) 2n

5. Mode of f-distribution is

   a) equal to unity

   b) Less than unity

   c) More than unity

   d) None of these.

6. Mean of Beta distribution of first kind is

a) $\frac{M}{\nu-1}$ b) $\frac{M+\nu}{\nu}$ c) $\frac{M}{M+\nu}$ d) None of these

7. Mean of f-distribution is

a) $\frac{n_2}{n_{2-2}}$ b) $\frac{n_2}{n_{2+2}}$ c) $\frac{n_{2-2}}{n_2}$ d) None of these

8) An integer FORTRAN constant must have at least one digit and must be written with out.

a) Exponential

b) Percentage

c) Fractional

d) Decimal point.

9) Max 75 is the valid ----------

a) Integer constant

b) Real constant

c) Integer variable name

d) Real variable name.

10) Invalid integer variable is FORTRAN is .

a) MASS

b) INDEX2

c) METER

d) COUNT.

11) X^2 distribution is always ---- Skewed.

12) In F- distribution Mode is always -------

13) SERNO is an invalid real variables name because of ------

14) FORTRAN CODIN G Sheet contains ---------- columns.

15) Mean of t-distribution is --------- .

Section - B

II Answer any **five** of the following questions. **(5x5=25)**

16) Define mathematical expectation and state and prove the multiplication theorem of expectation.

17) Deduce the formula for 2x2 contingency table i.e. $X^2 = \frac{N(ad-bc)^2}{(a+b)(a+c)(b+d)(c+d)}$

18) State and prove the additive property of X^2- distribution.

19) Define Beta variate of first kind . Find its mean.

20) Write the mathematical expression into FORTRAN expression.

i) $x^2 + y^2 + 2xy$

ii) $a\cos x + b\cos^2 x + c.\cos^2 y$

iii) $(4x+4)(2x+2y-4)$

iv) $r = \sqrt{x^2 + y^2}$

21) If the joint probability distribute on of a pair (x,y) of the random variable in given by the following table

y \ x	1	2	3
1	0.1	0.1	0.2
2	0.2	0.3	0.1

i) Find the marginal distributions x and y.

ii) The Constant of X given Y=1.

22) Discuss the Input-Output devices.

Section-C

III Answer any **four** of the following questions. **(4x10=40)**

23) Define X^2 variate. Obtain its mean and variance.

24) Define t-variate. Derive its probability density function

25) let X&Y are two random variables having P.d.f. is

$$f(x,y)=\begin{cases} K(6-x-y), 0\le x\le 2; 2\le y\le 4 \\ 0 \qquad\qquad , \text{otherwise} \end{cases}$$

Find

i) K ii) the marginal p.d.f's f x & Y.

26) Define F- variate and derive its p.d.f.

27) Discuss in detail logical IF statement and Arithmetic I F- statement.

28) Draw the flow chart and write program to find the mean and variance.
