SRI VENKATESWARA UNIVERSITY : TIRUPATI
STATISTICS SYLLABUS (II YEAR)
Semester – IV (CBCS Non- Maths Combination BA)
Paper – IV : Random Variables and Probability Distributions

UNIT - I
Probability : Basic Concepts of Probability, Definitions of probability: Classical, statistical and axiomatic, Addition and Multiplication theorem on Probability for two and three events only, Baye's theorem - Simple problems on these topics.

UNIT – II
Random Variable: Definition, Types of random variables and its properties. Probability function: Probability mass function and Probability density function. Distribution function: Definition, Types and properties and simple problems.

UNIT – III
Mathematical Expectation: Definition and properties, Statement and proof of Addition, Multiplication theorems on mathematical expectation for two variables only. Definitions and properties of Moment Generating Function(M.G.F), Characteristic function(C.F), Cumulant Generating Function(C.G.F) without proofs

UNIT – IV
Discrete Distributions : Definition, characteristics and applications of Bernoulli Distribution, Binomial Distribution, Poisson Distribution, Negative Binomial Distribution, Geometric Distribution,. (Derivation of Mean and variance for all distributions)

UNIT – V
Continuous Distributions : Rectangular Distribution, Exponential distribution-Definitions and properties, Derivation of Mean and Variance only , Normal Distribution- Properties and applications.

Reference Books:

1. Fundamentals of Mathematical Statistics: S.C.Guptha and V.K. Kapoor

2. An outlines of statistics, Vol. II: Goon Guptha A.M, M.K.Guptha and Das Guptha B

3 Basic statistics By B.N Aggrawal

4. Statistical methods by S.P. Gupta

5. Fundamentals of Statistics by S.C. Gupta

4. Statistical methods and inference B.A.,/B.Sc., II year statistics - Telugu Academy

5. Statistics Made Simple Do it yourself on PC By K.V.S. Sarma

6. Applied Statistics with Microsoft Excel By Gerald Keller

Practical Paper – IV : Random Variables and Probability Distributions

1. Calculation of probability for future events by using Baye's theorem

2. Fitting of Binomial distribution and calculate expected frequencies (Direct method)

3. Fitting of Binomial distribution and calculate expected frequencies
(Recurrence relation method)

4. Fitting of Poisson distribution and calculate expected frequencies (Direct method)

5. Fitting of Poisson distribution and calculate expected frequencies
(Recurrence relation method)

6. Fitting of Negative Binomial distribution and calculate expected frequencies (Direct method)

7. Fitting of Negative Binomial distribution and calculate expected frequencies
(Recurrence relation method)

8. Fitting of Geometric distribution and calculate expected frequencies (Direct method)

9. Fitting of Geometric distribution and calculate expected frequencies (Recurrence relation
method)

10. Fitting of Normal distribution and calculate expected frequencies (Ordinates method)

11. Fitting of Exponential distribution and calculate expected frequencies (Direct method)

Note : The above practical are to be done using M S Excel and SPSS Package where ever it
is possible

THREE YEAR BA DEGREE EXAMINATION
CBCS – Fourth Semester
Part – II STATISTICS (NM)
Paper IV : Random variables and Probability distributions
(New Syllabus w.e.f. 2015-16)
Model Paper

Time : 3 hours   Max. Marks :75

PART - A

Answer any FIVE questions, each question carries 5 marks   (5x5=25 Marks)

1. Define probability density function (pdf).

2   Define the following terms

   a) Random Experiment   b) Sample space   c) Equally likely events.

3   Explain types of Random variable and its properties.

4   Define Mathematical Expectation and its properties

5   Define Moment generating function and its properties

6   Define poisson distribution and give its properties

7   Define Geometric distribution and also give its properties.

8   Give the applications of Normal distribution.

PART – B

Answer any ONE question from each unit, each question carries 10 Marks

(5x10=50 Marks)

UNIT – I

9. State and prove Addition theorem on probability for three events.

(or)

10. A box contains 7 red, 3 green and 5 yellow balls, if 3 balls are drawn randomly from the box. Find the probability that drawn balls are of

   a) different colours   b) red colour

UNIT – II

11. Explain the Distribution Function and also give its properties.

(or)

12. A random variable (r.v) 'X' has the following probability function.

X:	0	1	2	3	4	5	6	7
P(X):	0	K	2k	2k	3k	K^2	$2K^2$	$7K^2+k$

   a) find 'k' value   and   b) P(x<6)

UNIT – III

13. Explain MGF and CGF and also discuss the properties.

(or)

14. Find Mean 'E(X)' and Variance 'V(X)' for the following probability distribution.

X	0	1	2	3
P(X)	$\dfrac{1}{3}$	$\dfrac{1}{2}$	$\dfrac{1}{24}$	$\dfrac{1}{8}$

UNIT – IV

15. Define Binomial distribution and deduce Mean and Variance.

(or)

16. Define Poisson distribution and give its properties, applications

UNIT – V

17. Define Exponential distribution and derive its Mean and Variance.

(or)

18. Define Normal distribution and also give its properties.

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