OsmaniaUniversity B.A/B.Sc. I Year II Semester (CBCS): Statistics Syllabus (With Mathematics Combination) (Examination at the end of I Year II Semester) Paper-II: Probability Distributions (DSC-2B) (4 HPW with 4 Credits and 100 Marks)

UNIT-I

Discrete distributions – I : Uniform and Bernoulli distributions : definitions, mean, variance and simple examples. Definition and derivation of probability function of Binomial distribution, Poisson distribution definition, properties of these distributions such as median, mode, m.g.f, c.g.f., p.g.f., c.f., and moments up to fourth order, reproductive property, wherever exists, and their real life applications. Poisson approximation to Binomial distribution.

UNIT-II

Discrete distributions – II : Negative binomial, Geometric distributions : Definitions and physical condition, properties of these distributions such as m.g.f, c.g.f., p.g.f., c.f. and moments up to fourth order, reproductive property, wherever exists, lack of memory property for Geometric distribution and their real life applications. Poisson approximation to Negative binomial distribution. Hyper-geometric distribution – definition, physical conditions, derivation of probability function, mean, variance and real life applications. Binomial approximation to Hyper-geometric.

UNIT-III

Continuous distributions -I: Rectangular and Normal distributions - definition, properties such as m.g.f., c.g.f., c.f. and moments up to fourth order, reproductive property, wherever exists and their real life applications. Normal distribution as a limiting case of Binomial and Poisson distributions.

UNIT-IV

Continuous distributions – II : Exponential, Gamma : definition, properties such as m.g.f., c.g.f., c.f. and moments up to fourth order, reproductive property wherever exists and their real life applications. Beta distribution of two kinds : Definitions, mean and variance. Cauchy distribution - Definition and c.f..

Definition of convergence in Law, in probability and with probability one or almost sure convergence. Definition of Weak Law of Large Numbers (WLLN) and Strong Law of Large numbers (SLLN). Definition of Central Limit Theorem (CLT) for identically and independently distributed (i.i.d) random variables with finite variance.

List of reference books:

1. Willam Feller: Introduction to Probability theory and its applications. Volume –I, Wiley

2. V.K.Kapoor and S.C.Gupta: Fundamentals of Mathematical Statistics, Sultan Chand&Sons, New Delhi

3. GoonAM,Gupta MK,Das Gupta B : Fundamentals of Statistics , Vol-I, the World Press Pvt.Ltd., Kolakota.

4. Hoel P.G: Introduction to mathematical statistics, Asia Publishing house.

5. M.JaganMohan Rao and Papa Rao: A Text book of Statistics Paper-I.

6. Sanjay Arora and BansiLal:.New Mathematical Statistics : Satya Prakashan , New Delhi

7. Hogg.Tanis.Rao: Probability and Statistical Inference. 7th edition. Pearson

8. SambhavyataAvadhiSiddantalu—TeluguAcademy

9. Sahasambandham-VibhajanaSiddantamulu – TeluguAcademy

10. K.V.S. Sarma: Statistics Made Simple: do it yourself on PC. PHI

11. Gerald Keller: Applied Statistics with Microsoft excel. Duxbury, Thomson Learning.

12. Levine, Stephen, Krehbiel, Berenson: Statistics for Managers using Microsoft Excel

4th edition. Pearson Publication.

13. Abraham Kendall and Baker: Discrete Mathematics for Computer Science.

14. Charles M.Grinstead and Laurie Snell,J:Introduction to Probability,American Mathematical Society

B.A/B.Sc. I Year: Statistics Syllabus (With Mathematics Combination) (Examination at the end of Semester II) Practical Paper – II (with 2 HPW, Credits 1 and Marks 25)

- 1. Fitting of Binomial distribution Direct method.
- 2. Fitting of Binomial distribution Direct method using MS Excel.
- 3. Fitting of binomial distribution Recurrence relation Method.
- 4. Fitting of Poisson distribution Direct method.
- 5. Fitting of Poisson distribution Direct method using MS Excel.
- 6. Fitting of Poisson distribution Recurrence relation Method.
- 7. Fitting of Negative Binomial distribution.
- 8. Fitting of Geometric distribution.
- 9. Fitting of Normal distribution Areas method.
- 10. Fitting of Normal distribution Ordinates method.
- 11. Fitting of Exponential distribution.
- 12. Fitting of Exponential distribution using MS Excel.
- 13. Fitting of a Cauchy distribution.
- 14. Fitting of a Cauchy distribution using MS Excel.