



## SCHEME OF EXAMINATION

### THIRD SEMESTER

Index No.	Theory Papers	No. of papers	Time (Hrs)	Marks of Papers	Marks of C/Work	Total Marks
TT 601	Design of Experiments & Quality Control	1	3	100	50	150
TT 603	Technical Textiles	1	3	100	50	150
TT 605	Mid-term Evaluation of Project / Seminar	1			100	100
<b>FOURTH SEMESTER</b>						
TT/TC 602	Dissertation & Viva-Voce	1	2	500	-	500

### SYLLABUS – Third Semester

**TT 601          Design of Experiments & Quality Control          3(150)**

Section I ( Two questions)

Regression and Correlation:

Significance of the study of correlation, Karl Pearson's coefficient of correlation, Rank correlation coefficient, Method of least squares, Regression Lines, Regression equations of Y and X, Least square parabola, Partial correlation coefficients (Three variables only)

Multiple correlation and Regression.

Section II ( Two questions)

Statistical Quality Control:

Meaning of Statistical Quality Control, Control charts, namely, X,R,C and p charts. Benefits and limitations of SQC, acceptance sampling, selection of sampling plan. Construction of an OC curve.

Section III (4 questions)

Overview of measures of dispersion, random variates, probability distribution and testing of hypothesis.

Principles of experimental design, selecting a statistical design, analysis of variance (one way and two way clarifications) running experiments in blocks, Latin Squares, factorial design (a discussion). Use of replicates. Numericals based on Fractional design namely,  $2^3$  experiments  $3^3$  experiments. Compounding in  $2^3$  and  $3^3$  experiments. Split plot and strip plot designs.

### **Reading List**

#### Title Author

Design and analysis	Das & Giri
Fundamentals of statistics (Vol-II)	Goon, Gupta & Das Gupta
Fundamentals of statistics	Gupta & Kapoor
Business Statistics	Gupta & Gupta

### **TT 603      Technical Textiles      3 (150)**

Introduction: Definition, Textile materials in technical applications.

Fibres: Natural and Man-made fibres suitable for technical applications and their relevant properties.

Geotextiles: Mechanics of reinforcement, filtration and drainage of soils by geotextiles. Typical applications. Determination of soil particle size and pore size distribution, relations between soil particle and size and pore size distribution for hydraulic applications.

Medical textiles: Textiles in various medical applications. Absorbency of textile materials & methods of sterilization; application oriented design of typical medical textiles (e.g. porous graft or trashed tube). Materials used and design procedure for protecting wounds, cardiovascular application, Sutures etc.

Automotive Textiles: Fibres used for automotive applications-upholstery, carpeting, preformed parts, tyres, safety devices, filters and engine compartment items. Brief description for the manufacture and application of these devices or parts.

Rigid composites: Three dimensional fabrics and triaxially braided materials for composites.

Filtration: Principles and some mathematical models of wet and dry filtrations. Characteristics properties of fibres and fabrics in selective examples of filtration.

