

B.E. 301 - ENGINEERING MATHEMATICS II

Unit I

Fourier Series: Introduction of Fourier series , Fourier series for Discontinuous functions, Fourier series for even and odd function, Half range series Fourier Transform: Definition and properties of Fourier transform, Sine and Cosine transform.

Unit II

Laplace Transform: Introduction of Laplace Transform, Laplace Transform of elementary functions, properties of Laplace Transform, Change of scale property, second shifting property, Laplace transform of the derivative, Inverse Laplace transform & its properties, Convolution theorem, Applications of L.T. to solve the ordinary differential equations

Unit III

Second Order linear differential equation with variable coefficients : Methods one integral is known, removal of first derivative, changing of independent variable and variation of parameter, Solution by Series Method

Unit IV

Linear and Non Linear partial differential equation of first order: Formulation of partial differential equations, solution of equation by direct integration, Lagrange's Linear equation, charpit's method. Linear partial differential equation of second and higher order: Linear homogeneous and Non homogeneous partial diff. equation of nth order with constant coefficients. Separation of variable method for the solution of wave and heat equations

Unit V

Vector Calculus: Differentiation of vectors, scalar and vector point function, geometrical meaning of Gradient, unit normal vector and directional derivative, physical interpretation of divergence and Curl. Line integral, surface integral and volume integral, Green's, Stoke's and Gauss divergence theorem

References

- (i) Advanced Engineering Mathematics by Erwin Kreyszig, Wiley India
- (ii) Higher Engineering Mathematics by BS Grewal, Khanna Publication
- (iii) Advance Engineering Mathematics by D.G.Guffy
- (iv) Mathematics for Engineers by S.Arumungam, SCITECH Publication
- (v) Engineering Mathematics by S S Sastri. P.H.I.

TX- 302 Fibre Science - I

Unit I

General classification of fibres. Structure, properties and uses of cotton. Structure, properties and uses of bast fibers, Structure, properties, uses and brief description of wool and silk fibres.

Unit II

Basic concept of polymer, their classification, methods of polymerization, molecular weightits measurement, distribution and importance.

Unit III

Manufacturing process of all important man-made fibres e.g. rayon, nylon, polyester, acrylic, poly-olephins etc. with special reference to melt, dry and wet extrusion principle. Idea about the physical and chemical properties (influence of chemical constituents and different groups present) of above mentioned fibres and their uses.

Unit IV

Problems associated with man-made fibres and their methods of rectification.
Structure of fibres- basic requirements for fiber formation, concept of order and morphology, molecular packing in crystalline and amorphous regions,

Unit V

physical structure of principal natural and man-made fibers . Study of fiber structuresmethods of investigating fiber structures e.g. X-ray diffraction, optical and electron microscopy , I R absorption, thermal methods NMR.

References:

1. Shennai VA; Fibre Science.
2. Vaidya Synthetic Fibre
3. Gupta & V. K. Kothari; Manufactured Fibre Technology.
4. Morton & JWS Hearle; Physical Properties of Textile Fibre
5. Murthy HVS; Introduction to Textile Fibre.
6. Ghosh; Fibre Science and Technology; TMH
7. Moncrieff; Man made Fibres.
8. Gohl and Vilensky LD; Textile Science
9. Fried JR; Polymer Science and Technology
10. Mukhopadhyay SK; Advances in Fibre Science.
11. Mishra SP; A text book of Fibre Science & Technology
12. Jayaprakasam et.al; Fibre Science & Technology.

TX - 303 Weaving Preparation

Unit I

Object of Winding, classification of winding machines. Different types of Winding machines their uses and limitations, tensioning devices, yarn clearers Types and features classification of yarn faults, yarn traversing devices, yarn stop Motion, ribbon formation causes and method of its elimination. Passage of yarn On slow speed and high speed automatic winding machines.

Unit II

Different features of Automatic high speed winding machines, splicing- mechanism and advantages, Various parameters of package and Package build and their relationship, Related calculations.

Unit III

Weft Winding - different types, yarn guides and traverse , yarn tension control and Yarn stop motion , auto doffing, bunching, package length and diameter, package Build, winding and binding coil ratio.

Unit IV

Object of warping, classification of warping machines beam warping and sectional Warping measuring motion, stop motions, yarn tensioning, creel types and features, Leasing and beaming, Features of modern high speed warping machines.

Unit V

Drawing-in: Manual, automation, knotting and gaiting, Calculations, production, efficiency and waste related to winding and warping processes, Maintenance of the machines studied.

References:

1. Talukdar MK; Winding & Warping.
2. Ormerod A; Modern Preparation and Weaving Machinery.
3. BTRA Silver Jubilee Monograph Series; Warping & Sizing
4. BTRA Silver Jubilee Monograph Series; Winding.
5. Sengupta; Weaving Calculation.
6. Ormerod & Walter S. Sondhelm; Weaving Technology and Operations.

List of Experiments (Pl. expand it):

1. Study of cheese & cone winding m/c,
2. Winding tensions and yarn clearer gauge Levels,
3. Details study of non automatic weft winding machines.
4. Detail study of Warping, adjusting points and Drawing-in operations.

TX - 304 Yarn Manufacturing - I

Unit I

Ginning of cotton fibres, Different types of ginning, roller ginning, saw ginning and importance of the ginning to eliminate the contamination in the yarn, the scenario of Indian ginning industries.

Unit II

Blow Room, Objects of blow room. Principles of opening , cleaning and blending . Preparation of uniform lap, principal of blow room machines and blow room lines , recent developments in blow room machinery including automatic bale openers , blenders and chute feed systems, optical color material detectors, dust removal etc. Assessment of blow room performance, environmental condition, man-made fibre processing.

Unit III

Calculation of blow room production, Process parameters of different machines for different materials, Different settings and speeds, General idea of defects and remedies in blow room, Maintenance schedule and important supervisory check points at blow room.

Unit IV

Carding – Object of carding, principles of working, construction and working of different parts of the card, type of card clothing, Developments of card wires. Development of modern cards-concept of chute feed, factors influencing the design of carding machines, elements and effect of their speed on carding performance. General idea of speed, setting and their impact on both natural and man – made fibre processing. Assessment of card performance – cleaning efficiency, waste %, production, draft etc. and quality aspects of carded material. Environmental condition, Concept of coiling, General idea of defects and remedies in card.

Unit V

Characteristics of manmade fibres, blending and objectives, types of blending, processing of manmade fibres in blow room and carding and calculation related to material selection, Idea of fibre distribution yarn s, factors affecting the blend irregularity, Processing of dyed fibres, difficulties in blow room and carding.

References:

1. Text Inst; Manual of cotton Spinning Vol. I, II.
2. Khare AR; Element of Raw Cotton and Blow room.
3. Khare AR; Elements of Carding and Drawing
4. Salhotra KR; Processing of Manmade and blends on Cotton System.
5. Gilbert Merrill; Cotton opening and picking.
6. Gilbert Merrill; Cotton carding.
7. Klein; Technology of Short Staple Spinning.
8. Klein; Practical guide to opening and carding.
9. Venkatasubramani; Spun Yarn Technology, Vol. I Blow room.
10. Venkatasubramani; Spun Yarn Technology, Vol. II Carding.
11. Pattabhiram; Essentials of Practical Cotton Spinning.
12. Szaloki ZS; High Speed Carding & Continuous Card Feeding.
13. Chattopadhyay R; Technology of Carding.
14. Pattabhiram TK; Spinning Processing Methods of Man Made Fibres.

List of Experiments (Pl. expand it):

1. An elaborate study of blow room and machine.
2. Constructional details, setting & gauging
3. Controls & change places.
4. Calculations of speeds, drafts, production.

TX - 305 Fabric Manufacturing - I

Unit I

Objects of sizing, method of size preparation, details of slasher sizing and multicylinder sizing machines size ingredients detailed study of various drying systems, measuring and marking motion, drive, modification of size box, size level control, size viscosity and take-up, moisture, stretch and tension control.

Unit II

Single end sizing – features and application, Sizing of manmade, blends, continuous filaments and textured yarn. Production efficiency and other related calculations.

Unit III

Principles of weaving. Primary, Secondary and Auxiliary motions. Shedding – its various types and devices, positive and negative shedding, shedding tappets of different types, heald reversing motions, early and late shedding, shed troughing and heald staggering.

Unit IV

Pickin classification, mechanism of Over and Under pick motions, picking tappets, shuttle speed, shuttle checking devices, causes of shuttle flying and shuttle trap. Beat-up sley movement, sley eccentricity and its effect, factors affecting sley movement, double beat-up, Timing diagram of primary motions.

Unit V

Classification of take-up motion, 5 and 7 wheel take-up motion, Negative let-off motion and its related calculations, Causes of pick spacing variation. Temples-types and uses.

References:

1. Talukdar MK & Ajgaonkar D.B; Sizing- Materials, Machines & Methods.
2. Aswani; Plain Weaving Motions.
3. --; Loom Shed-BTRA Silver Jubilee Monograph Series
4. Bannerjee NN; Weaving Mechanism Vol. –1.
5. Talukdar MK; Weaving Marks & Robinson; Principles of Weaving.
6. Fox; Weaving Mechanism.
7. Paul V. Seydel; Textile Warp Sizing
8. --; Cotton Warp Sizing Hand book – E.F. Houghton & Co.
9. --; Sizing – The Key Stone for Quality Fabric; TAI Pub.
10. --; Woven Fabric Production Vol. I; NCUTE Study Material.
11. Corbman; Textiles- fiber to fabrics; TMH.

List of Experiments (Pl. expand it):

Detail study of sizing machines.

Detailed study of primary and secondary motions of a plain loom

TX – 306 Java(Computer programming)

UNIT-I

Basic Java Features - C++ Vs JAVA, JAVA virtual machine, Constant & Variables, Data Types, Class, Methods, Objects, Strings and Arrays, Type Casting, Operators, Precedence relations, Control Statements, Exception Handling, File and Streams, Visibility, Constructors, Operator and Methods Overloading, Static Members, Inheritance: Polymorphism, Abstract methods and Classes

UNIT-II

Java Collective Frame Work - Data Structures: Introduction, Type-Wrapper Classes for Primitive Types, Dynamic Memory Allocation, Linked List, Stack, Queues, Trees, Generics: Introduction, Overloading Generic Methods, Generic Classes, Collections: Interface Collection and Class Collections, Lists, Array List and Iterator, Linked List, Vector. Collections Algorithms: Algorithm sorts, Algorithm shuffle, Algorithms reverse, fill, copy, max and min Algorithm binary Search, Algorithms add All, Stack Class of Package java. Util, Class Priority Queue and Interface Queue, Maps, Properties Class, Un-modifiable Collections.

UNIT-III

Advance Java Features - Multithreading: Thread States, Priorities and Thread Scheduling, Life Cycle of a Thread, Thread Synchronization, Creating and Executing Threads, Multithreading with GUI, Monitors and Monitor Locks. Networking: Manipulating URLs, Reading a file on a Web Server, Socket programming, Security and the Network, RMI, Networking, Accessing Databases with JDBC: Relational Database, SQL, MySQL, Oracle

UNIT-IV

Advance Java Technologies - Servlets: Overview and Architecture, Setting Up the Apache Tomcat Server, Handling HTTP get Requests, Deploying a web Application, Multitier Applications, Using JDBC from a Servlet, Java Server Pages (JSP): Overview, First JSP Example, Implicit Objects, Scripting, Standard Actions, Directives, Multimedia: Applets and Application: Loading, Displaying and Scaling Images, Animating a Series of Images, Loading and playing Audio clips

UNIT-V

Advance Web/Internet Programming (Overview): J2ME, J2EE, EJB, XML.

References:

1. Deitel & Deitel, "JAVA, How to Program"; PHI, Pearson.
2. E. Balaguruswamy, "Programming In Java"; TMH Publications
3. The Complete Reference: Herbert Schildt, TMH
4. Peter Norton, "Peter Norton Guide To Java Programming", Techmedia.
5. Merlin Hughes, et al; [Java Network Programming](#) , Manning Publications/Prentice Hall

List of Program to be perform (Pl. expand it)

1. Installation of J2SDK
2. Write a program to show Concept of CLASS in JAVA
3. Write a program to show Type Casting in JAVA
4. Write a program to show How Exception Handling is in JAVA
5. Write a Program to show Inheritance and Polymorphism
6. Write a program to show Interfacing between two classes

7. Write a program to Add a Class to a Package
8. Write a program to demonstrate AWT.
9. Write a program to Hide a Class
10. Write a Program to show Data Base Connectivity Using JAVA
11. Write a Program to show "HELLO JAVA " in Explorer using Applet
12. Write a Program to show Connectivity using JDBC
13. Write a program to demonstrate multithreading using Java.
14. Write a program to demonstrate applet life cycle.

TX -307 - Self Study (Internal Assessment)

Objective of Self Study: is to induce the student to explore and read technical aspects of his area of interest / hobby or new topics suggested by faculty.

Evaluation will be done by assigned faculty based on report/seminar presentation and viva.

TX -308 Seminar / Group Discussion(Internal Assessment)

Objective of GD and seminar is to improve the MASS COMMUNICATION and CONVINCING/ understanding skills of students and it is to give student an opportunity to exercise their rights to express themselves.

Evaluation will be done by assigned faculty based on group discussion and power point presentation.