JECA syllabus

The papers will be based on Undergraduate Computer Application and equivalent courses followed in various Universities in India and on the following topics.

1. **C Programming**: Variables and Data types, IO Operations, Operators and Expressions, Control Flow statements, Functions, Array, Pointers, String Handling, Structures and Unions, Files Handling, Pre-Processor Directives, Command Line Arguments.
2. **Object Oriented Programming**: Data Types, If / Else If / Else, Loops, Function, Switch case, Pointer, Structure, Array, String, Function Overloading, Function templates, SCOPE of variable, Type aliases (typedef / using), Unions, Enumerated types (enum), Class, Constructors, Overloading Constructors, Member initialization in constructors, Pointers to classes, Overloading Operators, Keyword 'this', Static Members, Const Member Functions, Class Templates, Template Specialization, Namespace, Friendship (Friend Functions & Friend Classes), Inheritance, Polymorphism, Virtual Members, Abstract base class.
3. **Unix**: Following commands and its different options: Is, ps, pwd, mv, cp, touch, cat, time, cal, bc, sort, diff, wc, comm, In, du, kill, sleep, chmod, chown, chgrp, top, nice, renice, cut, paste, grep, file, whereis, which, echo, env, PATH, CLASSPATH, find.

   vi editor, shell, wildcard, shell script.
4. **Data Structure**: Searching, Sorting, Stack, Queue, Linked List, Tree, Graph.
5. **Introduction of Computers**: Bus structure, Basic I/O, Subroutines, Interrupt, DMA, RAM, ROM, pipeline, system calls.
6. **Operating System**: Process, Thread, CPU Scheduling, Deadlock, Synchronization, Memory Management, Disk Management, File Management.
7. **Computer Network**: Concepts of networking, Application areas, Classification, Reference models, Transmission environment & technologies, Routing algorithms, IP, UDP & TCP protocols, IPv4 and IPv6, Reliable data transferring methods, Application protocols, Network Security, Management systems, Perspectives of communication networks.
8. **Database Management System**: Introductions to Databases, ER diagram, Relational Algebra, Relational Calculus, SQL, Normalization, Transactions, Indexing, Query optimization.
9. **Software Engineering**: Introduction to Software Engineering, A Generic view of process, Process models, Software Requirements, Requirements engineering process, System models, Design Engineering, Testing Strategies, Product metrices, Metrices for

Process & Products, Risk management, Quality Management.

10. **Machine Learning**: Classification, Decision Tree Learning, Artificial Neural Networks, Support Vector Machines, Bayesian Learning, Clustering, Hidden Markov Models.