

**FURTHER DETAILS REGARDING MAIN TOPICS OF  
PROGRAMME NO. 04/2013 (Item No. 16 & 17)  
COMPUTER ENGINEER  
KERALA STATE CO-OPERATIVE BANK LTD  
(CATEGORY NO. 85/2010 & 86/2010)**

### **1 Theoretical Foundations**

Mathematical Logic: Propositional Logic, Predicate Logic-Relations and functions - Algebraic systems-Recurrence Relations-Formal Languages and Automata-Computability-Algorithms and Complicity

### **2 Digital Logic**

Number Systems and codes-Binary representation-Logic elements-Design of Combinational logic circuits and sequential logic circuits-logic system design using MUX, Decoders etc

### **3 Programming Fundamentals**

C programming: Data types-Data structures-Control structures-Files-Pointers Object Oriented Programming: Basics of OOP-Data abstraction-inheritance-polymorphism-overloading-program design using C++

### **4 System Software and Software Engineering**

Linkers, Loaders, Assemblers, and Device drivers-Basics of each subsystem Issues in large software projects-Software life cycle-Phases in a software project-software testing-quality measures

### **5 Compilers**

Phases of the compilation process-Lexical analysis-Syntax analysis-top down and bottom up parsers-intermediate code generation-code optimization-final code generation-run time storage management-symbol tables

### **6 Operating systems**

Functions of OS-Memory management-Process management-file management-device management-Protection-Concurrency control

### **7 Algorithms**

Algorithm efficiency-Design methods-divide and conquer-greedy approach-dynamic programming- analysis

### **8 Hardware Systems**

Building blocks of digital computers- ALU-Binary Arithmetic-Control unit-Memory systems-Peripherals-Performance measures-Advanced architecture-Parallel processing.

### **9 Networking**

Data communication fundamentals-Types of networks-Media types-Network topologies - OSI layers-Error control and flow control-Protocols-Mobile communication

### **10 Applications**

Computer graphics-Multimedia-Artificial intelligence-Database management-Data mining-Internet technologies

**NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.**