

**FURTHER DETAILS REGARDING MAIN TOPICS OF
PROGRAMME No. 05/2019 (Item No.3)**

SYSTEM ANALYST/SENIOR PROGRAMMER

(KERALA PUBLIC SERVICE COMMISSION)

(Category No.021/2018)

PART - I

Discrete Mathematics, Probability and Statistics -

Compound Statements, Truth Tables, The Algebra of Propositions, Logical Arguments, Sets, Operations on Sets, Binary Relations, Partial Orders, Mathematical Induction, The Principle of Inclusion-Exclusion, Probability theory: Sample spaces, Events and probability, Discrete probability: Union, Intersection and Compliment of events, Conditional probability, Baye's theorem. Linear correlation coefficient, Linear regression, Non Linear regression, Multiple correlation and Multiple regression, Theory of sampling and population

Digital Electronics, Computer Organization and Operating System

Digital Logic Systems and Microprocessors: Boolean expressions, K-maps, TTL and CMOS logic families, combinational logic design, synchronous sequential system design. Microprocessors: 8086 architecture, data transfer scheme and interfaces, Addressing modes.

Computer Organization and Architecture: Von-Neumann architecture of computers. Registers and micro operations, control logic, processor addressing and bus organization. Processor input/output and DMA. Memory organization and cache coherence.

Operating Systems: CPU scheduling, Deadlocks, Memory management, file systems, disk scheduling. Process, threads and their synchronization. Real Time OS: clock synchronization and task scheduling. System initialization, booting and handling user accounts. Backup and restore, Bourne shell programming for Linux.

Data Structures and Programming in C -

Data Structures: Linked List, Stack, Queue, Priority Queues, Hashing, Binary trees, Tree traversal, AVL trees, Graphs- shortest paths, minimum spanning trees; Sorting algorithms.

Programming in C: Operators and expressions, Control statements, Storage types, Functions, Arrays, Strings, Structures, Pointers and dynamic memory management, File Handling.

Object Oriented Programming through C++/Java -

Data Abstraction, Encapsulation, classes, constructors and destructors, Classes, and dynamic memory allocation, Inheritance, Polymorphism, generic classes, exception handling and File processing.

Java applets, Java features, Byte codes, Internet classes, wrapper classes, multithreading support classes, vector, stack, interface observer, stream tokenizer, GUI classes, Java I/O, classes, The Applet class, applet architecture, applet display methods and repainting

Computer networks and Programming -

Computer networks and security: TCP/IP & OSI/ISO reference models, functions and protocols of different layers, characteristics of physical media, multiplexing, medium access protocols, introduction to 802.3, 802.4, 802.5, 802.11 LAN technology, IP protocol including routing and congestion control, TCP and UDP, DNS. Email protocols. Symmetric and asymmetric encryption including DES, AES, IDEA, RSA algorithms, key management in symmetric and asymmetric encryption, viruses and trusted systems, Kerberos.

Network Programming: Sockets Programming: TCP Programming (TELNET, HTTP). UDP Sockets: TFTP, DNS. Secure Sockets (SSL), TLS, SSH, HTTPS, Remote Method Invocation (RMI). Simple Object Access Protocol (SOAP), UDDI, and Web Services.

Software Engineering -

System modeling, system engineering process, life cycle models, design and implementation, validation, evolution, automated, process support - software requirements, SRS, feasibility studies - elicitation and analysis - validation - management - system models, context models, behavior models, data models, object models, object-oriented design, design evolution, real-time software design, critical systems specifications - critical system development, software testing.

Database Management System-

Keys, E-R Model, Normalization - 1NF to 5NF; Aggregate functions, Nested Sub queries, Views, Joined Relations, Transaction- ACID properties; Concurrency Control, triggers, stored procedures

Client Server Architectures and Web Programming -

Two and three-tier client server architectures, web servers, HTML & XML, Style Sheets, client side scripting-java script and VB script; Server Side Scripting-php, JSP and ASP.NET programming for creating dynamic web pages using database, forms and session; AJAX and SignalR

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PART - II

General Knowledge, Current Affairs & Renaissance in Kerala

Salient Features of Indian Constitution

Salient features of the Constitution - Preamble- Its significance and its place in the interpretation of the Constitution.

Fundamental Rights - Directive Principles of State Policy - Relation between Fundamental Rights and Directive Principles - Fundamental Duties.

Executive - Legislature - Judiciary - Both at Union and State Level. - Other Constitutional Authorities.

Centre-State Relations - Legislative - Administrative and Financial.

Services under the Union and the States.

Emergency Provisions.

Amendment Provisions of the Constitution.

Social Welfare Legislations and Programmes

Social Service Legislations like Right to Information Act, Prevention of atrocities against Women & Children, Food Security Act, Environmental Acts etc. and Social Welfare Programmes like Employment Guarantee Programme, Organ and Blood Donation etc.

RENAISSANCE IN KERALA

Towards A New Society

Introduction to English education - various missionary organisations and their functioning- founding of educational institutions, factories, printing press etc.

Efforts To Reform The Society

(A) Socio-Religious reform Movements

SNDP Yogam, Nair Service Society, Yogakshema Sabha, Sadhu Jana Paripalana Sangham, Vaala Samudaya Parishkarani Sabha, Samathwa Samajam, Islam Dharma Paripalana Sangham,

Prathyaksha Raksha Daiva Sabha, Sahodara Prasthanam etc.

(B) Struggles and Social Revolts

Upper cloth revolts.Channar agitation, Vaikom Sathyagraha, Guruvayoor Sathyagraha, Paliyam Sathyagraha. Kuttankulam Sathyagraha, Temple Entry Proclamation, Temple Entry Act .Malyalee Memorial, Ezhava Memorial etc.

Malabar riots, Civil Disobedience Movement, Abstention movement etc.

Role Of Press In Renaissance

Malayalee, Swadeshbhimani, Vivekodayam, Mithavadi, Swaraj, Malayala Manorama, Bhashaposhini, Mathnubhoomi, Kerala Kaumudi, Samadarsi, Kesari, AI-Ameen, Prabhatham, Yukthivadi, etc

Awakening Through Literature

Novel, Drama, Poetry, *Purogamana Sahithya Prasthanam, Nataka Prashtanam*, Library movement etc

Women And Social Change

Parvathi Nenmenimangalam, Arya Pallam, A V Kuttimalu Amma, Lalitha Prabhu.Akkamma Cheriyan, Anna Chandi, Lalithambika Antharjanam and others

Leaders Of Renaissance

Thycaud Ayya Vaikundar, Sree Narayana Guru, Ayyan Kali.Chattampi Swamikal, Brahmananda Sivayogi, Vagbhadananda, Poikayil Yohannan(Kumara Guru) Dr Palpu, Palakkunnath Abraham Malpan, Mampuram Thangal, Sahodaran Ayyappan, Pandit K P Karuppan, Pampadi John Joseph, Mannathu Padmanabhan, V T Bhattathirippad, Vakkom Abdul Khadar Maulavi, Makthi Thangal, Blessed Elias Kuriakose Chaavra, Barrister G P Pillai, TK Madhavan, Moorkoth Kumaran, C. Krishnan, K P Kesava Menon, Dr.Ayyathan Gopalan, C V Kunjuraman, Kuroor Neelakantan Namboothiripad, Velukkutty Arayan, K P Vellon, P K Chathan Master, K Kelappan, P. Krishna Pillai, A K Gopalan, T R Krishnaswami Iyer, C Kesavan. Swami Ananda Theerthan , M C Joseph, Kuttippuzha Krishnapillai and others

Literary Figures

Kodungallur Kunhikkuttan Thampuran, KeralaVarma Valiyakoyi Thampuran, Kandathil Varghese Mappila. Kumaran Asan, Vallathol Narayana Menon, Ulloor S Parameswara Iyer, G Sankara Kurup, Changampuzha Krishna Pillai, Chandu Menon, Vaikom Muhammad Basheer. Kesav Dev, Thakazhi Sivasankara Pillai, Ponkunnam Varky, S K Pottakkad and others

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