

DETAILED SYLLABUS FOR THE POST OF NETWORK ADMINISTRATOR IN KERALA ADMINISTRATIVE TRIBUNAL

(Cat.No.: 137/2020)

(Total Marks - 100)

Module I Computer Organization (10 Marks)

Functional units of a computer.

I/O devices – interrupts –direct memory access –bus organization –interface circuits – standard I/O interfaces (PCI Express, SCSI, USB, SATA).

Semiconductor RAMs –memory system considerations – semiconductor ROMs –flash memory –cache memory.

Processing unit - microprocessor, microcontroller.

Module II Operating Systems (10 Marks)

Basic concepts of Operating System, OS used in different computing environments.

Inter-process communication - Shared Memory, Message Passing, Pipes.

Storage Management: Disk structure – accessing disks - disk scheduling and management - swap space. RAID.

File Concepts – attributes – operations – types – structure – access methods. File system mounting.

Protection - principles. Access Matrix.

Linux basic commands - redirection, pipes, filters, job control, file permissions, links.

Shell script programming, grep, curl, wget, ftp, ssh.

Kernel configuration, compilation and installation.

Virtualisation environments.

File sharing in Windows environment.

Module III Database Management Systems (10 Marks)

Types of data and DBMS. Relational Model – concepts and languages, SQL, views, assertions and triggers. Secondary storage organization, concurrent transaction processing and recovery principles, logs, checkpoints.

Semantic web, RDF, GIS, NoSQL, Big Data.

Module IV Data Communication (10 Marks)

Transmission media. Guided transmission media: twisted pair, Coaxial cable, optical fiber. Wireless transmission, terrestrial microwave, satellite microwave.

Digital carrier system, SONET/SDH, statistical time division multiplexing, cable modem, code division multiplexing. Multiple access– CDMA.

Basic principles of switching - circuit switched networks, packet switching. Datagram networks, Virtual Circuit networks.

Module VIII Web Technologies (10 Marks)

Internet and World Wide Web. HTML and XHTML - basic text markup, images, hypertext links, lists, tables, forms, HTML5, Cascading Style Sheets. Frameworks.

World Wide Web - web browsers, web servers, Uniform Resource Locators, Hypertext Transfer Protocol. Content Management System.

JavaScript - object orientation, primitives, operations, control statements, object creation and modification, arrays, functions. JavaScript HTML DOM.

Introduction to data interchange formats. XML - syntax, XML document structure, namespaces, XML schemas. Displaying XML documents with CSS, XSLT Style Sheets, XML applications. JSON - overview, syntax, datatypes, objects, schema, comparison with XML.

Overview of PHP. Simple applications like login forms after setting up a LAMP stack

Module V Computer Networks I (10 Marks)

Network hardware – LAN –MAN – WAN, Internet – network software – protocol hierarchies – reference models – OSI – TCP/IP.

Data link layer design issues – flow control and ARQ techniques. Data link protocols – HDLC, PPP. MAC sub layer – IEEE 802 for LANs. High speed LANs - Gigabit Ethernet. Wireless LANs - 802.11 standards.

Network hardware devices (Hub, Switch, Modem, Router, Bridge, Repeaters, Firewall)

Network layer – routing – shortest path routing, distance vector routing, link state routing, RIP, OSPF.

Congestion control algorithms – QoS. Internetworking – network layer in internet. IPv4 - IP Addressing – subnetting, supernetting.

Module VI Computer Networks II (10 Marks)

Internet control protocols – ICMP, ARP, RARP, BOOTP. Internet multicasting – IGMP. Exterior routing protocols – BGP. IPv6 – addressing – issues.

Transport Layer – TCP & UDP.

Application layer –FTP, DNS, electronic mail, MIME, SNMP.

Module VII Computer Networks III (10 Marks)

Network configurations files and networking commands.

Spanning Tree Protocol.

Managing traffic with Access Lists.

Troubleshooting.

Client-Server communication using socket programming.

Configuring network services - TELNET, SSH, FTP server, web server, file server, DHCP server and DNS server.

Module IX Network Management (10 Marks)

Network Administration. Managing hardware devices & drivers, user accounts. Managing network protocols & services.

Installing & configuring Active Directory Service, managing Active Directory security solutions.

Managing desktop configurations using group policy and remote installation.

Advanced file systems.

Module X Network Security (10 Marks)

Network Security fundamentals. Security policy. Risk analysis.

Firewalls - Types of firewalls, application layer firewalls, packet filtering firewalls.

Monitoring traffic and open ports, detecting modified files, investigating and verifying detected intrusions. Recovering from, reporting and documenting intrusions.

Intrusion detection and prevention.

Types of Intrusion Prevention Systems. Setting up and managing IPS.

Virtual Private Networks, managing VPNs.

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.