Diploma Program in

'Hardware and Networking'

Duration: 32 weeks (160 hours)

Sr. No.	Name of the Programme	Details About the Programme	Remarks
1.	**Diploma course in 'Hardware and Networking'**	**Mission of AIIITS:** The mission of AIIITS is to advance knowledge and educate students in information Technology and other areas that will best serve the nation. **Vision of AIIITS:** To position AIIITS as a premier institute responsive to emerging needs of industry. To produce high skilled graduates and contribute towards sustainable development of the industry and nation.	
		1. Introduction to the Programme: The Indian IT industry has been growing in leaps and bounds in-spite of the setbacks in the IT industry globally. Both outsourcing and off-shoring have increased as India is seen as a nation that can provide cost effective solutions. The Information Technology (IT) industry has created new economic opportunities for millions of Indians and changed the country's image globally. NASSCOM estimates put direct employment at around 10 million and indirect employment at 20 million by 2020. Even if we factor in the current global economic environment, the truth is that employment in the sector is growing. The sudden growth has created a wide gap between demand and supply of hardware and networking professionals. There is an immediate necessity of 5 lakh professionals by 2015 and the demand is likely to increase further in the coming years. This program covers the skills which can create employment opportunities for the young IT job aspirants. It covers the skills right from management and maintenance of IT infrastructure to IT security. The course aims at utilizing fully the capabilities of the free and open source software. The participants will get hands-on training. **2. Objectives of the Programme:** The key objectives of this program are for participants to be able to develop the skills of maintenance of IT infrastructure and manage it. Understand the key technologies of Networking, Server and IT security. With the completion of this program, the students will be in a position to manage enterprise level IT	

		infrastructure. Also they will learn the concepts practically as if they are working in the production environment. The course aims at imparting relevant skills in networking, managing servers and ensure IT security. Demand for candidates knowing these skills are always in demand. **<u>Objectives:</u> the objectives of the proposed course are to impart knowledge on the following:** 1. Developing concepts of Networking and become skilled to manage network in enterprise environment. 2. Developing capabilities to install, configure and manage Servers (Windows and Linux). 3. Ensure IT security for an organization. 4. Learn skills which can give a very promising career.	
		3. Target Group of Learners: Anyone who want to make career IT infrastructure management should join this program. Any students after completion of this program can get placed in industry as Desktop or network engineer and with experience they can grow in their career path. It also helps to build a promising career in every aspects.	
		4. Instructional Design: The course will consist of live lectures, videos and assignments for every modules. After every module doubt-clearing sessions will be arranged where students will be free to discuss their doubts. Sessions for Interview preparation will be covered after the completion of all the modules.	
		5. Instructional Design: **i. <u>Duration of the Programme:</u> 8** months **ii. <u>Course delivery</u>** The course will be entirely delivered ***<u>online.</u>*** There are six modules in the course which will be conducted online by expert faculties in the respective areas. Each week's menu will cover the following: 1. **<u>Interactive lectures:</u>** This online sessions will be conducted either on_Microsoft team or	

Google meet or Zoom. The session link will be shared with the students.

2. **Lecture(s):** the theoretical and applied parts of the topic will be covered in lectures.
3. **Exercises and data:** Assignments will be allocated to the participants which they need to complete and submit and assessments on any particular module will be done based on the assignments.
4. **Doubt-clearing:** There will be an interactive forum as a platform to interact with each other and with the resource persons**.** Here the participants can discuss their difficulties, can ask questions and get the doubts clarified.

6. Eligibility:

Students who have passed 10+2 from a recognized board or any graduates from any recognized universities in India or other countries.

7. Scheme and Evaluation:

There would be three types of assessment for evaluating the performance of the participants - short and long answer questions, multiple type questions and practical exercises.

Each participant will be given assignments and projects. After completion of the training, online examination will be conducted and Certificate will be jointly issued by Pinnacle Infotrain and Jain University only after completion of all the assignments, project and after qualifying the exam.

8. Procedure for admission, Curriculum transaction and evaluation:

Admission will be based on prerequisite degree of any recognized universities in India. The Course is affiliated to the Jain University.

9. Fee structure:

The fees should be paid in one installment only, before the commencement of the course*.

Rs. 58,000/-

*Installment options can be provided with additional 8% on the course fees. The students can pay it in 4 easy installments

10. Syllabus:

Topic 1: A+ -

Configure and apply BIOS settings, Differentiate between motherboard, components, their purposes & properties, Compare and contrast RAM types and features, Install and configure expansion cards, Install and configure storage devices and use appropriate media, Identify connector types and associated cables, Install and configure various peripheral devices, Properties and characteristics of TCP/IP, Compare and contrast wireless networking standards and encryption types, Install and configure laptop hardware and components, The differences between the various printer types and summarize the associated imaging process, Compare and contrast the features and requirements of various Microsoft Operating Systems, Setup and configure Windows networking on a client/desktop, Basics of client-side virtualization, Basic features of mobile operating systems, Mobile device synchronization, Troubleshooting

(Duration-3 Weeks)

Topic 2: Network+-

Compare the layers of the OSI and TCP/IP models, Classify how applications, devices, and protocols relate to the OSI model layers, Purpose and properties of IP addressing, Understanding Purpose and properties of routing and switching, Function of common networking protocols, DNS concepts and its components, Identify virtual network components, Install, configure & troubleshooting a wireless network, Concept of DHCP, Categorize WAN technology types and properties, Compare & contrast different Ethernet, technologies, Components of wiring distribution, Methods of network access security, Install and configure a basic firewall **(Duration- 3 weeks)**

Topic 3: CCNA-

Fundamentals of Networking, Basic Networking Concepts, Enterprise Network, Components of a Network

Characteristics of a Network, Types of Network, Network Topology, OSI Reference Model and TCP/IP Protocol Suite, TCP/IP Protocol Suite, Transfer Control Protocol (TCP), Different functions of TCP, Functions of Internet Layer Protocol, Routed and

		Routing Protocol, Characteristics of Internet Protocol (IP), Function of DNS and DHCP, MAC Address, Packet delivery process, Defining Unicast, Multicast and Broadcast, Exploring Packet Delivery Process, Network Security, Wireless Network Technologies, Advantages of Wireless Network Difference between LAN and WLAN, WLAN standards, Wireless LAN Security Threats And Mitigation, Association of Wireless clients with Access Point, Access Point Configuration steps, Wireless LAN issues and Troubleshooting, LAN Switching, Different Switching Modes, Switching Operation, Operating Cisco IOS, Internetwork Operating System (IOS), Accessing the Command Line Interface (CLI), User and Privileged Executive Modes, IOS Command line History, Starting up a Switch and CLI, Powering up a Switch, Ethernet Switch Configuration, Different Switch Configuration Sub-Modes, Viewing the configuration, Interface Configuration of a Switch, Configuring the Switch for Remote Access, Configuring a Switch for Telnet, Configuring a Switch for SSH, Port Security, Port Security Configuration, IP Subnetting, Subnet Masks, Subnetting Calculation, Starting a Router, Initial Setup, Logging in the Router CLI, Overview of Router Commands, Router Configuration and Verification, EIGRP, Advanced Switching Technology, Network Address Translation (NAT), IPV 6, Header Format, IP adderss Representation, IPV6 address types, Assigning IPV6, IPV6 routing, IPV6 tunneling, Advanced Wide Area Network **(Duration-4 Weeks)** **<u>Topic 4:</u> Microsoft Server-** Installing & Configuring Windows Server, Deploying and Managing Windows Server, Introduction to Active Directory Domain Services, Managing Active Directory Domain Services Objects, Automating Active Directory Domain, Services Administration, Implementing Ipv4, Implementing DHCP, Implementing DNS, Implementing Ipv6, Implementing Local Storage, Implementing File and Print Services, Implementing Group Policy, Securing Windows Servers Using Group, Policy Objects, Implementing Server Virtualization with Hyper-V, Implementing a Group Policy Infrastructure, Managing User Desktops with Group Policy, Managing User and Service Accounts, Maintaining	

		Active Directory Domain Services, Configuring and Troubleshooting DNS, Configuring and Troubleshooting Remote Access, Installing, Configuring, and Troubleshooting the Network Policy Server Role, Implementing Network Access Protection, Optimizing File Services, Configuring Encryption and Advanced Auditing, Deploying and Maintaining Server Images, Implementing Advanced Network Services, Implementing Advanced File Services, Implementing Dynamic Access Control, Implementing Network Load Balancing, Implementing Failover Clustering, Implementing Failover Clustering with Hyper-V, Implementing Disaster Recovery, Implementing Distributed Active Directory, Domain Services Deployments, Implementing Active Directory Domain, Services Sites and Replication, Implementing Active Directory Certificate Services, Implementing Active Directory Rights Management Services, Implementing Active Directory Federation Services **(Duration- 8 weeks)** **<u>Topic 5:</u> Linux Server-** Red Hat System Administration, Get Started with the GNOME Graphical Desktop, Manage Files Graphically with Nautilus, Get Help in a Graphical Environment, Configure Local Services, Manage Physical Storage I, Manage Logical Volumes, Monitor System Resources Manage System Software, Get Started with Bash, Basic job control techniques, Get Help in a Textual Environment Establish Network Connectivity, Administer Users and Groups, Manage Files from the Command Line, Secure Linux File Access, Administer Remote Systems, Configure General Services, Manage Physical Storage, Install Linux Graphically, Manage Virtual Machines, Control the Boot Process, Deploy File Sharing Services, Secure Network Services, Automated Installations of Red Hat Enterprise Linux, Accessing the Command Line, Intermediate Command Line Tools, Regular Expressions, Pipelines, and I/O Redirection, Network Configuration and Troubleshooting, Managing Simple Partitions and File systems, Managing Flexible Storage with the Logical Volume Manager (LVM), Access Network File Sharing Services; NFS and CIFS, Managing User	

		Accounts, Network User Accounts with LDAP, Controlling Access to Files, Managing SELinux, Installing and Managing Software, Managing Installed Services, Analyzing and Storing Logs, Managing Processes, Tuning and Maintaining the Kernel, System Recovery Techniques, Enhance User Security, Bash Scripting and Tools, File Security with GnuPG, Software Management, Network Monitoring, Route Network Traffic, Secure Network Traffic, NTP Server Configuration, System Monitoring and Logs, Centralized and Secure Storage, SSL encapsulated Web Services, Web Server Additional Configuration, Basic SMTP Configuration, Caching Only DNS Server, File Sharing with NFS, File Sharing with CIFS, File Sharing with FTP, Troubleshooting Boot Process **(Duration-8 weeks)** **Topic 6: CEH: Ethical Hacking-** Introduction to Ethical Hacking, Footprinting and Scanning, Enumeration, System Hacking and Trojans, Denial of Service and Sniffers, Session Hijacking and Hacking Web Servers, Web Application Vulnerabilities and Web Techniques Based Password Cracking, Injection and Hacking Wireless Networks, Viruses, Worms and Physical Security, Linux Hacking, Evading IDS and Firewalls, Buffer Overflows and Cryptography, Penetrating Testing, Exploit Writing and Reverse Engineering **(Duration- 6 weeks)** **Key Reference Books** 1. CCNA Certification Study Guide, volume 2 by Todd Lammle. 2. MCSA Windows server 2016, 3-in-1 complete study guide. 3. Red Hat Enterprise Linux 6 Administration: Real World Skills for Red Hat Administrators 4. AWS Certified Cloud Practitioner (CLF-C01) Cert Guide First Edition By Pearson Paperback – 15 August 2020 5. Ethical Hacking: A comprehensive beginner's guide to learn and master Ethical Hacking by Hein Smith and Hilary Morrison	
		11. Quality Assurance:	

		IQAC (Internal Quality Assurance Cell) is in place to oversee the Programme delivery mechanism and suggest changes specific to industry requirements. The quality of the programme will be ensured through strict monitoring by an executive committee including the Co-ordinator of the programme, the subject experts, Director. The Co-ordinator of the programme shall ensure the regular student feedback of courses, teachers and programme in the prescribed format towards the end of the semester and the same shall be analyzed to draw conclusions for effecting improvement. Periodical review meetings on the programme efficacy will be held in which the remarks of teachers on curriculum, syllabi and methods of teaching and evaluation will be given due importance. Moreover, the progress and the quality of the programme will be monitored by the Internal Quality Assurance Cell of Pinnacle Infotrain from the outcome and feedback of the learners as well as the proper documentation maintained in the Centre.	
		12. SLM: Self-Learning Material is available in English	