GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

TEACHING AND EXAMINATION SCHEME

Programme	MASTER OF SCIENCE IN INFORMATION TECHNOLOGY (INFRASTRUCTURE MANAGEMENT SERVICES) – M.Sc - IT (IMS)	Branch/Spec.	Computer APPLICATIONS
Semester	III		
Effective from Academic Year	2017-18	Effective for the batch Admitted in	JAN – 2018

Subject Code	Subject Name	Teaching scheme												Examination scheme (Marks)					
		Credit						Hours (per week)						Theory			Practical		
		Lecture(DT)			Practical(Lab.)			Lecture(DT)			Practical(Lab.)			CE	SEE	Total	CE	SEE	Total
		L	TU	Total	P	TW	Total	L	TU	Total	P	TW	Total						
P43A1POV	PRINCIPLES OF VIRTUALIZATION	2	-	2	2	-	2	2	-	2	4	0	4	20	30	50	40	60	100
P43A2ISM	IT SERVICE MANAGEMENT USING ITIL	4	-	4	-	-	-	4	-	4	-	0	-	40	60	100	-	-	-
P43A3AMOS	ADVANCED MICROSOFT SERVER OPERATING SYSTEM	1	-	1	3	-	3	1	-	1	6	-	6	20	30	50	40	60	100
P43A4VWT	VOIP AND WIRELESS TECHNOLOGIES	3	0	3	1	-	1	3	0	3	2	-	2	20	30	50	40	60	100
P43A5EL4	ELECTIVE SUBJECT - 1 (ELECTIVE - III) OPEN SOURCE NETWORK ADMINISTRATION	2	0	2	2	-	2	2	0	2	4	-	4	20	30	50	40	60	100
P43A6IP3	INDUSTRIAL PROJECT-III	-	-	-	4	-	4	-	-	-	8	-	8	-	-	-	40	60	100
	Total	12	00	12	12	-	12	12	-	12	24	-	24	120	180	300	200	300	500

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FACULTY OF COMPUTER APPLICATION

Programme	MASTER OF SCIENCE IN TECHNOLOGY IN INFORMATION TECHNOLOGY INFRASTRUCTURE MANAGEMENT SERVICES	Branch/Spec.	DEPARTMENT OF COMPUTER SCIENCE
Semester	III	Version	1.0.0.0
Effective from Academic Year	2015-16	Effective for the batch Admitted in	June 2015
Subject code	P43A1POV	Subject Name	PRINCIPLES OF VIRTUALIZATION

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	-	2	-	4	Theory	20	30	50
Hours	2	-	2	-	4	Practical	40	60	100

Pre-requisites:

Student should have basic knowledge of Operating System, Virtualization

Learning Outcome:

At the end of this paper, students should be able to familiarise different types virtualization platform and able to establish their own virtual server, virtualize different application in network

Theory syllabus

Unit	Content	Hrs
1	**Introduction to Virtualization** What is Virtualization?, Why You Need Virtualization ?,Understanding Virtualization Technologies :Server Virtualization, Hardware emulation ,Storage Virtualization ,Network-attached storage ,Storage area networks ,I/O Virtualization ,Network Virtualization, Client Virtualization ,Application virtualization ,Desktop virtualization Understanding Virtualization Use Cases: Studying Server Consolidation, Development and Test Environments ,Quality of Service ,Simple failover High availability, Clustering ,Data mirroring ,Data replication, IT Operational Flexibility ,Load balancing ,Server pooling ,Helping with Disaster Recovery ,Rethinking Virtualization in Business Terms :Rethinking Infrastructure Virtualization ,Rethinking Applications and IT Operations Management ,Rethinking Client Virtualization, Benefits of Virtualization	
2	**VMWare Virtualization** Introduce virtualization, virtual machines, and vSphere components, Explain the concepts of server, network, and storage virtualization, Describe where vSphere fits into the cloud architecture, Install and use vSphere user interfaces, Create Virtual Machine VMware vCenter Server: Introduction to vCenter Server architecture and appliance , Virtual Machine Management :Deploy virtual machines using templates and cloning, Modify and manage virtual machines, Create and manage virtual machine snapshots, Perform VMware vSphere® vMotion® and Storage vMotion migrations, Create a vSpherevApp	
3	**Access and Authentication Control , Installing VMVWare components** Control user access through roles and permissions, Configure and manage the ESXi firewall, Configure ESXi lockdown mode, Integrate ESXi with Active Directory, Introduce VMware vShield Zones ,Introduce ESXi installation, Describe boot from SAN requirements, Introduce vCenter Server deployment options, Describe vCenter Server hardware, software, and database	

	requirements, Install vCenter Server (Windows based)	
4	**Implement and configure Window server 2008 Hyper V** Configure Hyper V Virtual Networking, Configure and use Hyper V remote administration, Create and configure Virtual Hard Drives, Use Virtual Machine snapshots, Describe considerations for configuring Hyper-V servers for high availability, Monitor the performance of a Hyper-V server, use existing virtual machines with Hyper-V server, understand issues with migrating existing virtual machines to Hyper-V, Understand system center Virtual Machine Manager (VMM) features and use VMM to manage virtual machines, Manage a VMM Library, Manage VMM checkpoint.	

Practical content

Text Books	
1	Microsoft Hypre V Server 2008 by : Cynthia Nottingham
2	VMWare ESX Essentials in the Virtual Data Center by David Marshall

Reference Books	

Paper Structure

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any Five out of Seven: each question must be of 03 marks) --- 15

Questions must be covered all possible section.

Q-2(Must be From topics : Introduction to Virtualization (04 marks))

Q-3(Must be From topics : VMWare Virtualization (04 marks))

Q-4(Must be From topics :Access and Authentication Control , Installing VMVWare components (03 marks))

Q-5(Must be From topics:Implement and configure Window server 2008 Hyper V (04 marks))

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FACULTY OF COMPUTER APPLICATION

Programme	M.Sc.Tech(ITIMS)	Branch/Spec.	
Semester	III	Version	1.0.0.0
Effective from Academic Year	2015-16	Effective for the batch Admitted in	June 2015
Subject code	P43A2ISM	Subject Name	IT SERVICE MANAGEMENT USING ITIL

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	4		-		4	Theory	40	60	100
Hours	4		-		4	Practical	-	-	-

Pre-requisites:

- Basic knowledge of IT services
- Basic knowledge of Management services.

Learning Outcome:

- Students will be able to Manage the IT security and management policy.

Theory syllabus

Unit	Content	Hrs
1	**ITIL Overview , Service Strategy , Service Design (26)** ITIL History, Components of the ITIL Library, IT Service Management ,Organizing for IT Service Management, Technology and Architecture , Service Strategy : Service Strategy Lifecycle Stage, Service Portfolio Management, The Demand Management Process, The IT Financial Management Process , Service Design : Service Design Lifecycle Stage, The Service Catalog Management Process, The Service Level Management Process, The Availability Management Process, The Capacity Management Process, The Information Security, Management Process, The IT Service Continuity, Management Process, The Supplier Management Process	26
2	**Service Transition , Service Operation , Continual Service Improvement (22)** Service Transition : Service Transition Lifecycle Stage, The Change Management Process, The Release and Deployment, Management Process, The Service Asset and Configuration, Management Process, Knowledge Management ,Service Operation Functions : Service Operation Lifecycle Stage, The Service Desk Function, The Technical Management Function, The Application Management Function, The IT Operations Management Function Service Operation Processes :The Event Management Process, The Incident Management Process, The Request Fulfillment Process, The Access Management Process, The Problem Management Process ,Continual Service Improvement :Continual Service Improvement, Lifecycle Stage	22

Practical content

Text Books

1	ITIL ver 3.0 Foundation with Case study- Quint

Reference Books

1	ITIL ver 3.0 Foundation complete certification Kit

Paper Structure

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

	Q-1 (Attempt any Six Out of Eight: each question must be of 05 marks) --- 30 Questions must be covered all possible section. Q-2(Must be From topics :ITIL Overview , (07 marks)) Q-3(Must be From topics : Service Strategy , Service Design (07 marks)) Q-4(Must be From topics :Service Transition (05 marks)) Q-5(Must be From topics: Service Operation (05 marks)) Q-6(Must be from topic: Continual Service Improvement (06 marks))

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Programme	M.Sc. IT(IMS)				Branch/Spec.				
Semester	III				Version	1.0.0.0			
Effective from Academic Year			2015-16		Effective for the batch Admitted in				June 2015
Subject code	P43A3AMOS		Subject Name		ADVANCED MICROSOFT SERVER OPERATING SYSTEM				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	1		3		4	Theory	20	30	50
Hours	1		6		7	Practical	40	60	100

Pre-requisites:

- Basic knowledge of server operating system
- Basic knowledge of networking device
- Basic knowledge of lan. Man wan

Learning Outcome:

- Students will be able to operate the server operating system
- Students will be able to know about the server 2016 version

Theory syllabus

Unit	Content	Hrs
1	**Deploying , Configuring Network Connectivity in Windows Server 2016 with ADDC,DNS,DHCP (12))** Hardware requirement , editions of 2016 servers , Installing windows 2016 server , Planning bit locker Deployment , Automate server deployment , Limitation of IPv4 , Planning an IPv4 to IPV6 Compatibility , IPv6 tools , administrating role separation , DNS structures , shadow copies of shared folders , DHCPv6 , subnet mask implementing IPv6 connectivity , DNS configuration and Management.	
2	**Active Directory , Group policy Management , Application Server and Services (12)** Introduction to AD , Domain and Forest functionality , Functional level , Server Roles , Trusts , Planning and managing group policy , GPMC , group policy files , troubleshooting group policies , user level and machine level GPO, Application Availability , Implement application accessibility , application deployment , SCCM , IIS	
3	**Hyper-V , Terminal Services , Server Virtualization , File and Print Servers (12)** Planning-concepts and managing NAP , NAP logging , Monitoring event logs , performance and reliability , Network monitor , introducing , managing and installing Hyper – V , File Services Server Role , FSRM , configuring quotas , File screen policy , DFSR structure , Offline data access	
4	**Management , monitoring ,DFS configuration with Backup and Recovery (12)** Admin tools of windows 2016 server , remote admin technologies , event logs , reliability and performance , delegation : policies-procedures-administrations , implementing and managing WSUS, Managing file security , sharing folders , quotas , remote backup of system , System center data protection manager , DFS overview , offline files , backup and restore files , Managing Printers	
5	**Remote & Network Access Protection , ADRMS Configuration Authentication , integrating DNS with ADDS , Domain Controllers (12)** VPN protocols and Authentication , Network policy server , Remote Access Accounting , configuring RODC , deploying RODC , administer RODC credentials caching , , wbadmin tools ,	

	remote backup of system , System centre data protection manager . Understanding AD RMS, Configuring AD RMS, Creating a Rights Policy Template, The Purpose of Firewall, The AD FS Authentication Process, Installing AD FS, Configuring & managing AD FS.	

Practical content	
Text Books	
1	
Reference Books	
1	
Paper Structure	
	Q-1 (Attempt any Five Out of Seven: each question must be of 03 marks) --- 15 Questions must be covered all possible section. Q-2(Must be From topics : Deploying , Configuring Network Connectivity in Windows Server 2016 with ADDC,DNS,DHCP, Active Directory , Group policy Management , Application Server and Services (04 marks)) Q-3(Must be From topics : Hyper-V , Terminal Services , Server Virtualization , File and Print Servers ((03 marks)) Q-4(Must be From topics : Management , monitoring ,DFS configuration with Backup and Recovery (04 marks)) Q-5(Must be From topics: Remote & Network Access Protection , ADRMS Configuration Authentication , integrating DNS with ADDS , Domain Controllers (04 marks))

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Programme	M.Sc. IT (IMS)				Branch/Spec.			
Semester	II				Version	1.0.0.0		
Effective from Academic Year		2015-16			Effective for the batch Admitted in			Jan 2016
Subject code	P43A4VWT	Subject Name			VOIP and Wireless Technologies			
Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3		1		4	Theory	20	30	50
Hours	3		2		5	Practical	40	60	100

Pre-requisites: Basic knowledge of Routing Protocols and Networking Concepts

Learning Outcome:This paper will provide the knowledge of VoIP technology and IP calling concepts.

Theory syllabus

Unit	Content	Hrs
1	**VOIP Fundamentals** Describe a dial plan, Describe the basic operation and components involved in a VoIP call , Describe VoIP call flows, RTP, RTCP, cRTP, and sRTP,H.323,MGCP,Skinny Call Control Protocol, SIP, Identify the appropriate gateway signaling protocol for a given scenario, Choose the appropriate codec for a given scenario, Describe and Configure VLANs.Implement Cisco Unified Communications Manager Express to support endpoints using CLI , Describe the appropriate software components needed to support endpoints, Configure DHCP, NTP and TFTP, Describe the differences between the different types of ephones and ephone-dns, Configure Cisco Unified Communications Manager Express endpoints	
2	**Gateway** Describe the function of gateways, Describe DSP functionality, Describe the different types of voice ports and their usage, Describe dial peers and the gateway call routing process, Describe codecs and codec complexityImplement a gateway :Configure analog voice ports, Configure digital voice ports, Configure dial-peers, Configure digit manipulation, Configure calling privileges, Verify dial-plan implementation, Implement fax support on a gatewayImplement Cisco Unified Border Element: Describe the Cisco Unified Border Element features and functionality, Configure Cisco Unified Border Element to provide address hiding, Configure Cisco Unified Border Element to provide protocol and media interworking, Configure Cisco Unified Border Element to provide call admission control, Verify Cisco Unified Border Element configuration and operation	
3	**Implementing QoS for voice and video** Describe causes of voice and video quality issues, Describe how to resolve voice and video quality issues, Describe QoS requirements for voice and video traffic Describe and configure the DiffServ QoS model: Describe the DiffServ QoS model, Describe marking based on CoS, DSCP, and IP Precedence,Configure layer 2 to layer 3 QoS mapping, Describe trust boundaries, Configure trust boundary on Cisco switches, Describe the operations of the QoS classifications and marking mechanisms, Describe Low Latency Queuing, Describe the operations of the QoS WAN LinkEfficiency mechanisms, Enable QoS mechanisms on switches using AutoQoS,	

	Configure Low Latency Queuing	
4	**WLAN fundamentals** Install a basic Cisco wireless LAN, Install Wireless Clients ,Implement basic WLAN Security, Operate basic WCS.	
Practical content		
Text Books		
1	1. Certified Wireless Network Administration Study Guide by David D. Coleman 2. CCNA Voice Study Guide by Andrew Froehlich	

List of programs on the above mentioned topics as per decided by subject faculty
Paper Structure

	Q-1 (Attempt any Five Out of Seven: each question must be of 03 marks) --- 15 Questions must be covered all possible section. Q-2(Must be From topics : VOIP Fundamentals (04 marks)) Q-3(Must be From topics : Gateway((03 marks)) Q-4(Must be From topics :Implementing QoS for voice and video(04 marks)) Q-5(Must be From topics:WLAN fundamentals (04 marks))

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FACULTY OF COMPUTER APPLICATION

Programme	MASTER OF SCIENCE IN TECHNOLOGY IN INFORMATION TECHNOLOGY INFRASTRUCTURE MANAGEMENT SERVICES	Branch/Spec.	DEPARTMENT OF COMPUTER SCIENCE
Semester	III	Version	0.0.1.0
Effective from Academic Year	2015-16	Effective for the batch Admitted in	June 2015
Subject code	P43A5EL4	Subject Name	Elective –IV (OPEN SOURCE NETWORK ADMINISTRATION)

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	-	2	-	4	Theory	20	30	50
Hours	2	-	2	-	4	Practical	40	60	100

Pre-requisites:

Student should have basic knowledge of Operating System, Networking

Learning Outcome:

At the end of this paper, students should be able to familiarise Red Hat Open Source Operating System as well as Network Administration with Red Hat Linux. Students are also able to develop service, securing service and Server.

Theory syllabus

Unit	Content	Hrs
1	**Fundamentals of Linux, Input and output Redirection** Development of Linux, Linux System in Today's Environment, Linux Distribution. Structure of Linux Operating System: Kernel, What is Shell? Logging in and general orientation : A typical terminal session , Logging In and Out , Shell-Command Interpretation , Command Line Format, Basic Commands, vi Editor. X-Window: The X-Window System, KDE, GNOME. Navigating the File System: The Tree Structure, The File System Hierarchy, Path Names, Basic File System Commands, Create and Remove Directories, Managing Files: What is a File? File Characteristics, What can we do with Files? File Permission and Access: File Permission and Access, Types of Access, Who has Access to a file? Access control List Shell Basic: What is Shell? Aliasing, File Name Completion, Command History, User Profiles, What happens at Login, Variables. Shell Advanced Features: Shell Substitution capabilities, Setting Shell Variables, Quoting Characters, and File Name Generation. Common Unix Commands, Input output and Error Redirection, Filters, Pipes. Process Control: Identifying Process. Managing Process, Background Processing. Putting Jobs in Background.Offline File Storage : Storing Files to Media Booting Process and User	20
2	**Administration of Linux OS** Installing Linux, Configuring Disk Devices, Creating and Managing File Systems, File System Backup, Kickstart Installation, Linux Boot Loaders, Linux Kernel Management, Managing user Accounts, Understanding File Listing, Ownership and Permission, Managing software using	10

	RPM, Connecting to Network, Linux Network Services, Setting up Printer.	
3	**Linux Basic Networking and NamingService** Networking in Linux: Network Connectivity, IP Address, Accessing Remote System, Transferring Files, Internet Configuration. Dynamic DNS, Apache, NIS and Network File Sharing, SAMBA. Security: Defining System Security Policies, System Authentication Services and Security, Securing Services, Securing Data and Communication	17
4	**Linux Email Servers** Mail Transfer Agents (MTA)- Linux mail Servers, links, info, postfix email server configuration, send mail, email server configuration. Mail Retrieval software: POP3, imap, etc-configuration / links / info Mail user agents(MUA) : Email client – Netscape , MUTT, etc – links/ info Mailman email list software installation , configuration and use	13
Practical content		
Text Books		
1	Red Hat Enterprise Linux Basics & Administration	
2	Open Source Network Administration by James Kretchmar	
Reference Books		
Paper Structure		
	Q-1 (Attempt any Five Out of Seven : each question must be of 03 marks) --- 15 Questions must be covered all possible section. Q-2(Must be From topics : Unit 1 (04 marks)) Q-3(Must be From topics : Unit 2((03 marks)) Q-4(Must be From topics Unit - 3(04 marks)) Q-5(Must be From topics: Unit 4 (04 marks))	

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Programme	MASTER OF SCIENCE IN INFORMATION TECHNOLOGY (INFRASTRUCTURE MANAGEMENT SERVICES) – M.Sc - IT (IMS)	Branch/Spec.	Department of Computer Science
Semester	IV	Version	1.0.0.0
Effective from Academic Year	2017-18	Effective for the batch Admitted in	JAN-2018
Subject code	P43A6IP3	Subject Name	Industrial Project- III

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	-	-	4		4	Theory	-	-	-
Hours	-		8		8	Practical	40	60	100

Pre-requisites:

Basic Knowledge of system analysis and design and database technology and also core technology the networking like Microsoft Server, Linux, Unix, Virtualization and Cisco technology also firewall technology

Learning Outcome:

Will be able to or manage network of any small and large organization

Theory syllabus

Unit	Content	Hrs
1	**Rules for the Project:** 1) The duration of the project will be semester term. The students can do their project work individually or in a group, but the work must be sufficient in order to justify the duration and role. 2) The passing standard in the project will be as per GNU standard. 3) The project work should be commencing after seeking prior approval from the institution. Generally the purpose of approval includes to submit their project titles and proposals with the name of internal and external guides to the Project Coordinator of Institution within 15 days of the commencement of the forth semester. In case, if the student proposal is rejected, the revised proposal in the same or other area, is required to submit and get it sanctioned within next 10 days. Failing to do this, His/her term will not be granted. 4) The students have to report to the internal guide as per schedule declared during the project life span with the progress report duly signed by external guide but in case the minimum 3 reporting is must. The reporting can be online but it needs prior approval with genuine grounds. Moreover they have to bring these reports with the final report at the time of final report at the time of external examination. 5) The external examiners appointed by the University will give the external marks on the basis of the heads like Presentation, Demonstration, Viva Voice, Documentation etc. The distribution of the marks to different heads may be decided at the time of evaluation of the project but it is expected to have the same distribution. 6) The Internal Guide/Project Coordinator of Institution will give the internal marks.	

	These marks may be given on the bases of regular reporting of the student to the internal guide.	
Practical content		
Text Books		
1	-	
Reference Books		
1		
2		
	Note for Examiner Project Dissertation	
	Paper Structure Project Dissertation includes Presentation and Report.	