

APPENDIX -V

GANPAT UNIVERSITY																			
FACULTY OF COMPUTER APPLICATIONS																			
TEACHING AND EXAMINATION SCHEME																			
Programme	BACHLOR OF SCIENCE IN INFORMATION TECHNOLOGY (INFRASTRUCTURE MANAGEMENT SERVICES) – BSC-IT (IMS)	Branch/Spec.	Computer Applications																
Semester	V																		
Effective from Academic Year			2019-20			Effective for the batch Admitted in							June – 2017-18						
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						
U45A1VT	VIRTUALIZATION TECHNOLOGIES	2	-	2	1	-	1	2	-	2	2	-	2	20	30	50	40	60	100
U45A2NFA	NETWORK FIREWALL ADMINISTRATION	2	-	2	1	-	1	2	-	2	2	-	2	20	30	50	40	60	100
U45A3IML	INTRODUCTION TO MACHINE LEARNING	2	-	2	2	-	2	2	-	2	4	-	4	20	30	50	40	60	100
U45A4FPN	FUNDAMENTALS OF PYTHON NETWORKING	3	-	3	1	-	1	3	-	3	2	-	2	20	30	50	40	60	100
U45A5AWT3	ADVANCED WEB TECHNOLOGY-III	3	-	3	1	-	1	3	-	3	2	-	2	20	30	50	40	60	100
U45A6DM	DATABASE MANAGEMENT	2	-	2	2	-	2	2	-	2	4	-	4	20	30	50	40	60	100
Total		14		14	8		8	14		14	16		16	120	180	300	240	360	600

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Programme	BACHLOR OF SCIENCE IN INFORMATION TECHNOLOGY (INFRASTRUCTURE MANAGEMENT SERVICES) – BSC-IT (IMS)				Branch/Spec.	Computer Applications			
Semester	V				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June – 2017			
Subject code	U45A1VT		Subject Name		Virtualization Technologies				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	2	-	1	-	3	Theory	20	30	50
Hours	2	-	2	-	4	Practical	40	60	100
Pre-requisites:									
Student should have basic knowledge of Active Directory in Windows Server 2008 Operating System Basic knowledge of virtualization									
Learning Outcome:									
At the end of this paper, students should be able to familiarise Virtualization technology like other virtualization technology and its usage.									
Theory syllabus									
Unit	Content								Hrs
1	Introduction to Microsoft Virtual Server What is Virtualization, Advantages of Virtualization, How Does Virtualization Work?, Virtual PC versus Virtual Server 2005, Differences between Virtual PC and Virtual Server 2005 R2, Virtual Server 2005 versus Virtual Server 2005 R2								04
2	Installing and Configuring a Virtual Server, Virtual Machines Determining the Physical Size of the Server, Installing Virtual Server 2005 R2, Administration Web Site, Virtual Server Administration, Virtual Machine Remote Console, Setting Resource Allocation, Creating the Virtual Server, Virtual Machine Configuration, Adding Hardware to the Server, Starting the Virtual Machine, Installing the Operating System, Installing Virtual Machine Additions, Virtual Machine Additions for Linux								05
3	Virtual Networks, Virtual Disks Introduction to Virtual Networks, Using the “Internal Network”, Using the Loopback Adapter, Networking and File Sharing, Creating a Virtual Network, Binding a Physical Network, Changing the Binding of a Virtual Network, Changing the Virtual Network for a Virtual Machine, Using the Virtual Server Network Services, Types of Virtual Hard Disks, Dynamically Expanding Virtual Hard Disk, Fixed-Size Virtual Hard Disk, Differencing Virtual Hard Disk								05
4	Introduction to ADS and Virtual Server Migration Tool What Components Does ADS Use?, ADS Controller Service, ADS Network Boot Service, ADS Image Distribution Service, Installing ADS, Configuring ADS, Administration Agent Installing, Adding Hardware Drivers in the Boot OS, Editing Using the Sequence Editor, Migration Toolkit onto the Virtualization Server								06

5	Managing Virtual Server, Migrating Physical Machines Configuring a Central Virtual Server Management Site, Using the Virtual Server COM API, Connecting to the Virtual Server COM Object, Accessing a Virtual Server Using Script, Creating a Virtual Machine Using Script, Creating a Virtual Network Using Script, Retrieving Guest OS Information Using Script, Changing a Virtual Machine State Using Script, Attaching Scripts to Virtual Server Events, Installing VSMT and ADS, Agent on the Virtual Server Host, Capturing the Physical Machine, Creating the Scripts, Creating Migration Scripts, Deploying the Virtual Machine on the Host OS	06
6	Troubleshooting Troubleshooting VirtualServer Administration Web Site, Troubleshooting Virtual Server Settings, Troubleshooting VirtualMachine Performance Issues, Troubleshooting Automated Deployment Services, Troubleshooting the Migration Process.	04
Practical content		
List of programs on the above-mentioned topics as per decided by subject faculty		
Text Books		
1	Virtualization with Microsoft Virtual Server by : RogierDittner	
2	Virtualization for dummies bt Bernard Golden.	
Reference Books		
1	Virtualization Essentials by Mathew portnoy .	
Paper Structure (Attempt any Three Out of Five : each question must be 5 marks) --- 15 Questions must be covered all possible section. (Must be From topics : Introduction to Microsoft Virtual Server , Installing andConfiguring a Virtual Server, Virtual Machines (4marks)) (Must be From topics : Virtual Networks, Virtual Disks(4marks)) (Must be From topics : Introduction to ADSand Virtual Server Migration Tool (4 marks)) (Must be From topics : Managing Virtual Server, Migrating Physical Machines, Troubleshooting (3marks))		

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Semester	V				Version	1.0.0.0			
Effective from Academic Year		2019-20			Effective for the batch Admitted in			June – 2017	
Subject code	U45A2NFA	Subject Name			NETWORK FIREWALL ADMINISTRATION				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	-	1	-	3	Theory	20	30	50
Hours	2	-	2	-	4	Practical	40	60	100
Pre-requisites:									
Basic knowledge of the Network & virtual machine (server) installation.									
Learning Outcome:									
Knowledge of how to arrange firewall of hardware as well as software. For Security maintenance in network.									
Theory syllabus									
Unit	Content								Hrs
1	NGX Operational changes ,SmartClients and Smart Management Smart portal features , DNS implementation , IPv6 reporting , Firewall – 1 / VPN – 1 features , cooperative Enforcement , AMT support , Internal URL Web Filtering , Internal Antivirus Scanning , Edge support for CLM , Integrity Advanced Server , New VPN features , Allowing directional VPN rules , VTIs , Route based VPN Improvement , Cluster XL , Smart Dashboard , Smart view Tracker , Smartview Monitor , SmartUpdate , SmartLSM , The SecureClient Packaging tool , management plug-ins , cpconfig								07
2	Management Portal , Advanced Authentication Smartcenter installation , Dedicated Server Installation , A tour of dashboard , VPN communities , New in smartdashboard NGX , first security policy , Useful control on dashboard , Managing Connectra and Interspect Gateways , Smartportal , Authentication overview , Users and administration , External User profile , administrator-users-LDAP groups , SmartDirectory, User Authentication, Session Authentication, Client Authentication								07
3	Advanced VPN Concepts & Tunnel Monitoring, Advanced VPN Client Installation Encryption Overview, VPN Communities, Policy Based VPN, Route Based VPN, Secure Remote-IP Pool NAT, Secure Client- Desktop Policies, Office Mode, Visitor Mode, Connection Profile, SSL Network Extender-Backup Gateways, Multipoint Entry Point VPN								05
4	SmartDefence Network Security- Denial of Service, IP& ICMP, TCP, FingerPrint Scrambling, Dshield Strom Center, Port Scan, Application Intelligent-Mail, FTP, Microsoft Networking, DNS, Web Intelligence-Connectivity Implication of Specific Protections-Malicious Code, Application Layer, Information Disclosure, HTTP Protocol Protection								05
5	High Availability & Clustering, Secure Platform, Troubleshooting ClusterXL Overview, Configuring ClusterXL, Installation of Secure Platform using NGX, Configuration Web User Interface, Command Line Configuration, Sysconfig, Configuring								06

	Network Connection, Platform Shell, SecureShell, Secure Platform Pro, NGX debugging, Packet Analysis, Log Troubleshooting, VPN Analysis, VPN client Analysis, ClusterXL Troubleshooting	
Practical content		
List of programs on the above-mentioned topics as per decided by subject faculty		
Text Books		
1	Checkpoint NGX R65 by : Ralph Bonell	
2	Firewalls for dummies, Brain Komar, Ronald Beekelaar,Joern Wettern, for Firewall Security	
Reference Books		
1	Firewall : The Complete Reference : Keith Strassberg , GrayRollie, Richard Gondek, McGraw-Hill Osborne Media; 1st edition (May 28, 2002)	
<p>(Attempt any FIVE Out of SEVEN : each question must be 3 marks) --- 15</p> <p>Questions must be covered all possible section.</p> <p>(Must be From topics : NGX Operational changes , Smart Clients and Smart Management (4 marks))</p> <p>(Must be From topics : Management Portal , Advanced Authentication (4 marks))</p> <p>(Must be From topics : Advanced VPN Concepts & Tunnel Monitoring, Advanced VPN Client Installation (4 marks))</p> <p>(Must be From topics : SmartDefence, High Availability & Clustering, Secure Platform, Troubleshooting (3 marks))</p>		

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Semester	V				Version	1.0.0.0			
Effective from Academic Year		2019-20			Effective for the batch Admitted in			June – 2017	
Subject code	U45A3IML		Subject Name		INTRODUCTION TO MACHINE LEARNING				
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	-	4	-	6	Practical	40	60	100
Pre-requisites:									
The basic knowledge of C and C++.									
Learning Outcome:									
Getting the knowledge of python programming.									
Theory syllabus									
Unit	Content								Hrs
1	PythonFile & Data Handling Files: Files, Types of Files in Python, Opening a File, Closing a File, Working with Text Files Containing Strings, Knowing Whether a File Exists or Not, Working with Binary Files. Regular Expressions REs and Python: Regular Expressions, Sequence Characters in Regular Expressions, Quantifiers in Regular Expressions, Special Characters in Regular Expressions, Using Regular Expressions on Files, Retrieving Information from a HTML File								07
2	Advanced Topics : Plotting and Data Science, Data Visualization Data Science Using Python: Data Frame (Creating Data Frame from an Excel Spreadsheet, Creating Data Frame from .csv Files, Creating Data Frame from a Python Dictionary, Creating Data from Python List of Tuples, Operations on Data Frames) Data Visualization : Bar Graph, Histogram, Creating a Pie Chart, Creating Line Graph								08
3	Machine Learning Introduction Introduction to AI, AI Features, AI Applications, Artificial Intelligence VS Machine Learning, Why Machine Learning?, Categories of ML, Applications of ML, NN Introduction, NN Architecture.								07
4	ML Tools I/O: retrieves data from files or data bases Data Manipulation: pre-processes your input data with filtering, group-by, pivoting, binning, normalization, aggregation, joining, sampling, partitioning, etc.								08

	Views: inspects the data and results with several interactive views, supporting interactive data exploration Mining: uses state-of-the-art data mining algorithms like clustering, rule induction, decision tree, association rules, naïve bayes, neural networks, support vector machines, etc. to better understand your data	
Practical content		
List of programs on the above-mentioned topics as per decided by subject faculty		
Text Books		
1	Kenneth A. Lambert, The Fundamentals of Python: First Programs, 2011, Cengage Learning, ISBN: 978-1111822705	
2	Machine Learning using Python [Print Replica] Kindle Edition by U Dinesh Kumar Manaranjan Pradhan (Author)	
Reference Books		
1	KNIME – Quick Guide [ebook]	
2	PowerBI – Step By Step [ebook]	
3	IBM Watson Analytics Hand Book [ebook]	
<p>Paper Structure (Attempt any Three Out of Five : each question must be 5 marks) --- 15 Questions must be covered all possible section. (Must be From topics : PythonFile & Data Handling (4marks)) (Must be From topics : Advanced Topics : Plotting and Data Science, Data Visualization (4marks)) Q-4 (Must be From topics : Machine Learning Introduction (4 marks)) Q-5 (Must be From topics : ML Tools (3marks))</p>		

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Semester	V			Version	1.0.0.0				
Effective from Academic Year		2019-20		Effective for the batch Admitted in			June – 2017		
Subject code	U45A4FPN	Subject Name		Fundamentals of Python Networking					
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:									
Know about the basic knowledge of network HTTP client server and TCP. Basic Programming Skill									
Learning Outcome:									
At the end o the students can get the knowledge of the python security									
Theory syllabus									
Unit	Content							Hrs	
1	Introduction to Python What is Python, Installation, Reserved Keywords naming convention, Data Types and Operations, Language Components, Collection, Function, String Operation, Class and Objects							08	
2	Network Fundamentals with Python Python Networking Environment, Client Server Networking, The Building Blocks, Application Layers, Network Conversation, Encoding and Decoding, IP Addresses and Routing, Packet Fragmentation							07	
3	Transport Protocol and Socket Port Number and Socket of UDP, Binding to Interface and Fragmentation to UDP, Socket, TCP Client and Server, Deadlock, Closed Connection and Half Connection of TCP, Hostname and Socket of DNS , Framing and Quoting, Python 3.4 Default Context, Offloading and Protocol Support for TLS, Cipher and Perfect Forward Security, Protocol Support for TLS							08	
4	Client and Server Architecture Server Architecture, Cache and Message Queues, HTTP Client and Server, The World Wide Web, Email, SMTP, POP, IMAP, Telnet and SSH, FTP and RPC, Thread Programming							07	
Text Books									
1	Foundations of Python Network Programming- Brandon Rhodes and John Georzen - Appress Publishing								
2	Learning Path Python Network Programming- Abhishek Ratan, Eric Chou, PradeebanKathiravelu and Dr. M.O. FaruqueSarker- Packt Publishing								
Reference Books									
1	Learning Python Network Programming- Dr. M.O. FaruqueSarker, Sam Washington- Packt Publishing								
2	Python Network Programming Cookbook- - Dr. M.O. FaruqueSarker, PradeebanKathiravelu								

Paper Structure

(Attempt any Five Out of Eight: each question must be 3 marks) --- 15

Questions must be covered all possible section.

(Must be From Unit 1: (4 marks)) Q-3

(Must be From Unit 2 (4 marks)) Q-4

(Must be From unit 3 (4 marks)) Q-5

(Must be From Unit 4 (3 marks))

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Semester	V					Version	1.0.0.0			
Effective from Academic Year			2019-20			Effective for the batch Admitted in			June – 2017	
Subject code		U45A5AWT3		Subject Name		ADVANCED WEB TECHNOLOGY-III				
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:										
<ol style="list-style-type: none"> 1. Basic awareness of .net framework architecture. 2. Basic awareness of ASP.Net standard controls. 3. Basic knowledge about database connectivity and web services. 										
Learning Outcome:										
<ol style="list-style-type: none"> 1. Practically implementation of Web base application development using C#advance concepts. 2. Practically implementation of the web Services. 										
Theory syllabus										
Unit	Content								Hrs	
1	Rich Controls, Master Web Pages, Custom Controls with User Controls Accepting File ,Displaying a Calendar, Displaying Different Page Views (Displaying a Tabbed Page View, Displaying a Multipart Form),Creating Master Pages, Creating Custom Controls with User Controls								11	
2	Advanced ASP.NET: Using Login Controls, Login Status, LoginName, ChangePassword, Change Password Recovery and LoginView Control, Localizing ASP.NET Application.								12	
3	Database and LINQ: LINQ to SQL, Querying a Database with LINQ, Creating LINQ to SQL Classes, Data Binding Between Controls and the LINQ to SQL Classes, Dynamically Binding Query Results, Creating the Display Query Results GUI, Coding the Display Query Results Application, Retrieving Data from Multiple Tables with LINQ. Insert, Update and Delete using LINQ To SQL Class								12	
4	Building Web Services: Introduction to Web Services, Web Services Infrastructure, Building a Web Service, Deploying and Publishing Web Services.								10	
Practical content										
List of programs on the above-mentioned topics as per decided by subject faculty										
Text Books										
1	ASP.NET 4 Unleashed, Stephen Walther, Kevin Hoffman, Nate Dudek									
Reference Books										
1	C# for Programmers Forth Edition, Paul Deitel and Harvey Deitel									

2	Pro ASP.NET 4 in C# , Matthew MacDonald, Adam Freeman and Mario Szpuszta ,Apress
3	Professional ASP.NET , Wrox
Note for Examiner	
	must be common from any topics from syllabus. and onwards must be from specific topics and internal choice or option can be given
Paper Structure	
	(Attempt any Five Out of Seven : each question must be 5 marks) --- 15 Questions must be covered all possible section. (Must be From topics : Rich Controls, Master Web Pages, Custom Controls with User Controls (04 marks)) (Must be From topics : Advanced ASP.NET: (03 marks)) Q-4 (Must be From topics : Database and LINQ:(04 marks)) Q-5 (Must be From topics : Building Web Services: (04 marks))

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Semester	V					Version	1.0.0.0		
Effective from Academic Year			2019-20			Effective for the batch Admitted in			June – 2017
Subject code	U45A6DM		Subject Name			DATABASE MANAGEMENT			
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	-	4	-	6	Practical	40	60	100
Pre-requisites:									
<ul style="list-style-type: none"> -student know about basic knowledge of other Back End tools -Student know about basic DDL, DML and DCL Command. -Students Know about different type of Constrains. 									
Learning Outcome:									
<ul style="list-style-type: none"> - Student can able to create and manage the Real Industry Data base. - Student will become DBA . 									
Theory syllabus									
UNIT	Content								Hrs
1	Introduction To Database Management Define Database and its fundamentals, Learn the oracle database 10g architecture, Learn the basic oracle database 10g data types, Work with tables, Work with stored objects, Indexes, Roles, Table space quotas, Synonyms, Users , Work with Object and System privileges , Introduction to grid.								04
2	Structured Query Language (SQL) Learn the SQL statement components , Use the basic insert and select statements, Use simple where clause , Use Basic update and delete statements, Order Data, Employ functions: String, numeric, Aggregate (No Grouping) , Use Dates and Data Functions , Employ Joins: Inner, Outer and Self , Using Group by and having clause, Grouping data in your select statement, Sub-queries, using Set Operators, Using Views .								03
3	Database Administration Learning the job of DBA, Perform day-to-day operations ,Understand the Oracle 10g Infrastructure, Operate Modes of an Oracle Database 10g, Get started with Oracle Enterprise Manager, Manage Database Objects, Manage space, Manage Users, Manage Privileges for database Users								04
4	Backup and Recovery Oracle Backup and Recovery Fundamentals, Learn about Oracle User-Managed Backup and Recovery, Write a Database Backup, Backup Archived Redo Logs, Get started with Oracle Data Pump Export, Use Traditional Export and Import, Get started with Recovery Manager								04
Practical content									
<ul style="list-style-type: none"> - List of programs on the above-mentioned topics as per decided by subject faculty. 									
Text Books									

1	Oracle 10G beginners guide by : Ian Abramson
Reference Books	
1	Oracle 10G beginners guide by : Ian Abramson
Paper Structure	
	<p>(Attempt any FIVE Out of SEVEN : each question must be 3 marks) --- 15 Questions must be covered all possible section. (Must be From topics : Introduction To Database Management (4 marks)) Q-3</p> <p>(Must be From topics : Structured Query Language (SQL) (4 marks))</p> <p>(Must be From topics : Database Administration (4 marks))</p> <p>(Must be From topics : Backup and Recovery (3 marks))</p>

