

GANPAT UNIVERSITY									
FACULTY OF COMPUTER APPLICATION									
Programme	B.Sc. (IT)				Branch/Spec.	-			
Semester	V				Version	1.0.0.1			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2017			
Subject code	U25A1WPF		Subject Name		(Elective-II) Web Programming Framework				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	2	-	5	Theory	40	60	100
Hours	2	1	4	-	7	Practical	20	30	50
Pre-requisites:									
Basic Knowledge of WAMP Server / XAMPP Server, Knowledge of CMS and Overview of E-Commerce Website									
Learning Outcome:									
Create a fully featured, attractive online store with most powerful open source solution for E-Commerce									
Theory syllabus									
Unit	Content								Hrs.
1	Introducing MAGENTO – Introduction of Ecommerce, What is Magento (1), Installing and configuring Magento (2), Customer Journey, Magento sitemap path for customers(2), Store Admin Panel(3), Store Configuration - Store Information, Local Options, State Options, Country Options, Merchant Location, Currency, Contact Us(2). Storefront Branding - Logo, Favicon, Store Demo Notice (1), Websites, Stores and Store Views (1).								12
2	Products & Marketing Product Category, Product Catalogs(1), Product Types - Simple Product, Configurable Product, Grouped Product, Virtual Product, Bundle Product, Downloadable Product (4), Product Attributes(1), Related Products, Up-Sells, and Cross-Sells(1), Managing Pricing(1), Managing Inventory (1) Marketing - Catalog Price Rules (1), Cart Price Rules - Coupon Codes(1), Wish List, Compare Products, Recently Viewed Products (1),Product Reviews (1)								13
3	Sales & Payment Basic Shipping Methods - Free Shipping, Flat Rate Shipping, Table Rates, Dimensional Weight (3), Shipping Labels(1) Payment Methods - Check / Money Order, Cash On Delivery, Bank Transfer, Purchase Order, Zero Subtotal Checkout(3), PayPal Express Checkout(1) Order Management - Orders, Invoices, Shipments, Credit Memos, Returns (3)								11
4	Customer, Reports & Design All Customers, Now Online, Customer Groups (1) Marketing Reports, Review Reports, Sales Reports, Customer Reports, Product Reports (2) Design & Themes - Page Setup, Page Layout, Themes(3) Content - Pages, Content Blocks, Widgets (3)								09

Practical content	
List of programs specified by the subject teacher based on above mentioned topics	
Text Books	
1	
Reference Books	
1	Magento Beginner's Guide, Second Edition, Robbert Ravensbergen, Sander Schoneville, Published by Packt Publishing Ltd.
2	Magento User Guide (https://docs.magento.com/m2/ce/user_guide/magento/magento-community-edition-2.1-user-guide.html)
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 Six Out of Eight: each question must be 5 marks) --- 30 Questions must be covered all possible section. Q-2 (Must be From topics: Introducing MAGENTO (8 marks)) Q-3 (Must be From topics: Products & Marketing (8 marks)) Q-4 (Must be From topics: Sales & Payment (7 marks)) Q-5 (Must be From topics: Customer, Reports & Design (7 marks))

Note:

Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme, Third Digit=Revision in Exam Scheme, Fourth Digit= Content Revision)
L=Lecture, TU=Tutorial, P= Practical/Lab., TW= Term work, DT= Direct Teaching, Lab.= Laboratory work
CE= Continuous Evaluation, SEE= Semester End Examination

GANPAT UNIVERSITY									
FACULTY OF COMPUTER APPLICATION									
Programme	B.Sc. (IT)				Branch/Spec.	Department of Computer Science			
Semester	V				Version	1.0.0.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			June 2015	
Subject code	U25A1NIN	Subject Name			(Elective - II) Internetwork Implementation				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	2	-	5	Theory	40	60	100
Hours	2	1	4	-	7	Practical	20	30	50
Pre-requisites:									
Basic Routing Protocols									
Learning Outcome:									
This paper will provide details on the Routing and Switching concepts									
Theory syllabus									
Unit	Content								Hrs
1	Network Basics Internetwork basics , OSI , Ethernet , TCP/IP , IP Addressing , Subnetting , VLSM , troubleshooting TCP/IP								8
2	Managing IOS , Routers , SDM Understanding OSPF Fundamentals, Configuring OSPF within Single Area, Cost, Understanding the differences between OSPF Network Types, Using OSPF Across Multiple Area- Features, Router Types, Link- State Advertisements, Different Types Of Areas, Propagation of LSAs, Special OSPF Area, Authentication, Wan topologies of OSPF								8
3	IP Routing Routing basics and process , types of routing , routing protocols , Protocol dependent modules , network discovery , VLSM support , Route discovery and maintenance , EIGRP- OSPF basics , configuring EIGRP , load balancing with EIGRP, verifying and Troubleshooting EIGRP,OSPF								10
4	Switching, VLAN Switching Services, STP, Configuring Catalyst Switches, CNA, VLAN Basics, Membership, VLAN Trunking Protocol, Configuration of VLAN, VTP, Configuring Inter VLAN								9
5	Security, NAT, Wireless Technology, IPV6, WAN Security, Threats, Introduction to ACL, Types of ACL, Monitoring Access lists, NAT Basics, Types of NAT, Configuring, Testing & Troubleshooting NAT, Introduction to Wireless Technology, Basics of IPv6, WAN basics, WAN connection types, WAN protocols, Frame Relay, VPN basics.								10

Practical content	
List of programs specified by the subject teacher based on above mentioned topics	
Text Books	
1	CCNA Todd Lammle- Wiley Publishing, Inc.
Reference Books	
1	
2	
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 Six Out of Eight: each question must be 5 marks) --- 30 Questions must be covered all possible section. Q-2 (Must be From topics: Network Basics (5 marks)) Q-3 (Must be From topics: Managing IOS , Routers , SDM (5 marks)) Q-4 (Must be From topics: IP Routing (7 marks)) Q-5 (Must be From topics: Switching, VLAN (6 marks)) Q-6 (Must be From topics: Security, NAT, Wireless Technology, IPV6, WAN (7 marks))

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FACULTY OF COMPUTER APPLICATION									
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Semester	V				Version	1.0.0.0			
Effective from Academic Year	2017-18				Effective for the batch Admitted in	June 2015			
Subject code	U25A2IMA		Subject Name		(Elective - III) Advance Mobile Application Development				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	2	-	5	Theory	40	60	100
Hours	2	1	4	-	7	Practical	20	30	50
Pre-requisites:									
Basic knowledge of the Android Programming, Database Concepts.									
Learning Outcome:									
To make all types of android application									
Theory syllabus									
Unit	Content								Hrs
1	Advance Layout of Android Layouts (List view, Grid Layout, Card Layout, Drawer Layout) (8) Types of Adapter. (Array, Base and custom) (4), Use of Fragments (3) , Floating Button (2).								17
2	Animation, Theme and Maps API Working with Dialogs, Working with Styles, Working with Themes (3). Drawing and Working with Animation - Drawing on the Screen, Working with Bitmaps, Working with Shapes, Working with Animation(4), Working map API (5).								12
3	Working with SQLite Database and API DDMS, Use of Sharedpreferences (2), Android Data and Storage API: Working with Files and Directories (2), SqliteOpenHelper, Content provider (2), Various operations using SQLite database (5), Sending SMS, Making and Receiving Phone Calls (4).								15
4	Webservice and parsing What is webservice? Creating webservice (4), What is XML parsing? Using XML parsing (4), Overview of Volley library, What is JSON parsing? Using JSON parsing (5)								13

Practical content	
List of programs specified by the subject teacher based on above mentioned topics	
Text Books	
1	Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education
2	http://developer.android.com/
Reference Books	
1	Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd (2011)
2	Teach.Yourself.Android.Application.Development.in.24.Hours.2nd.Edition.
Paper Structure	
<p>Q-1 (Attempt any Six Out of Eight: each question must be 5 marks) --- 30 Questions must be covered all possible section.</p> <p>Q-2 (Must be From topics: Advance Layout of Android (8 marks)) Q-3 (Must be From topics: Animation, Theme and Maps API (7 marks)) Q-4 (Must be From topics: Working with SQLite Database and API (8 marks)) Q-5 (Must be From topics: Webservice and parsing (7 marks))</p>	

GANPAT UNIVERSITY									
FACULTY OF COMPUTER APPLICATION									
Programme		B.Sc. (IT)			Branch/Spec.		Department of Computer Science		
Semester		V			Version		1.0.0.0		
Effective from Academic Year			2017-18		Effective for the batch Admitted in			June 2015	
Subject code		U25A2CMS	Subject Name		(Elective - III) CMS Project				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	2	-	5	Theory	40	60	100
Hours	2	1	4	-	7	Practical	20	30	50
Pre-requisites:									
Basic knowledge of Content Management System									
Learning Outcome:									
Student can arrange content smarter and more powerful. Because content is stored only one time no matter how many times it is used, the system can track everything that happens to it. And editors only have to handle the content one time while the changes are made globally within and across all documents.									
Unit	Content								Hrs
-	Examination Weightage								
	Internal Examination				External Examination				
	Internal Head		Weightage (60%)		External Head		Weightage (40%)		
	Presentations (3)		15 %		Final Viva Presentation (Project Analysis, Project Designing, Technical Parameters etc)		25 %		
	Project Analysis		10 %						
	Project Designing		05 %						
	Technical Parameters		10 %						
	Answer to queries		10 %						
	Project Outcomes		10 %		Report Submission		15 %		
Rules for the Project:									
(1) The duration of the project work is approximately 90 Hrs excluding the study and reporting work. 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 will be as per GNU policy.									

	<p>(3) The project can be done by seeking prior approval from the institution. Generally the purpose of approval includes submitting their project titles and proposals to the Project Coordinator of Institution within 15 days of the commencement of the fifth 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 5 working days. Failing to do this, His/her course will not be granted.</p> <p>(4) The students have to report as per schedule declared during the project life span with the progress report but in any of case the minimum 3 reporting is must. Moreover they have to bring these reports with the final report at the time of final report at the time of external examination.</p> <p>(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.</p> <p>(6) The Project Coordinator will be responsible to award the internal marks based on performance and keeping records for the same.</p>	
Practical content		
NA		
Text Books		
1	NA	
Reference Books		
1	NA	

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FACULTY OF COMPUTER APPLICATION									
Programme	B.Sc. (IT)				Branch/Spec	Department of Compute Science			
Semester	V				Version	1.0.0.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			June 2015	
Subject code	U25A2NSE		Subject Name		(Elective - III) Network Security				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	2	-	5	Theory	40	60	100
Hours	3	0	4	-	7	Practical	20	30	50
Pre-requisites:									
Basic knowledge of network									
Learning Outcome:									
Being expert in concepts of Network Security.									
Theory syllabus									
Unit	Content								Hrs
1	Introduction of Network Security, Fundamentals & Cryptography What is network Security? Network Security Concept Security attacks: threats, attacks, types of attack, passive attack, active attack, Security Services: Authentication, Access Control, Data Confidentiality, Data Integrity, Non repudiation, Availability Service, Security Mechanisms, A Model for Network Security, Symmetric cipher: Types of Attacks on Encrypted Messages, Symmetric cipher model, Cryptography: Plain text and Cipher Text, Secret key								09
2	Classical Encryption Techniques Overview of Polyalphabetic Substitution and Hill Cipher, Overview of Substitution techniques: Caesar Cipher, Monoalphabetic Cipher, Playfair, One time pad , Transposition techniques: Encryption and Decryption, Rotor machine, Symmetric and Asymmetric Key Cryptography, Steganography, Key Range and Key Size, Principles of Public Key Cryptosystems, Application for Public Key Cryptosystem, Requirements for Public Key Cryptography, Digital Signature: Generic Model for Digital Signature Process, Attacks and Forgeries, Digital Signature Requirements, Digital Signature Standard								12
3	Network and Internet Security Secure Sockets Layer (SSL) Architecture, SSL Record Protocol, Alert Protocol, Handshake Protocol, Transport Layer Security (TLS), HTTPS, SSH: Secure Shell-Protocol Stack, SSH Transport Layer Protocol Exchange, WAP: Operational Overview, Wireless Markup Language with WAP infrastructure, WAP Architecture, Electronic Mail Security: General Format of PGP message, Multipurpose Internet Mail Extensions:								12

	Overview of MIME and its Content types, Overview of S/MIME and its Functions, Internet Mail: Internet Mail Architecture and its Component (Function Modules and Standardised Protocol for the Internet), Email Threat, Domain Key Identified Key (DKIM): Deployment and Functional Flow	
4	<p>Network Attacks and IP Security</p> <p>Network Attacks: SYN Attack, Sniffer Attack, Man-in-Middle-Attack, IP address Spoofing Attack, ARP Spoofing Attack, DNS Spoofing Attack, Phishing and Farming Attack, Backdoor Attack, SQL Injection Attack, Types of Malware: Adwares, Toolbars and Hijackers, Key loggers, Computer Viruses- Types of Computer Viruses, Worms, Logic Bombs, Trojan Horses, Root Kits, IP Security: IPSec Architecture, IP Security Scenario- Application of IPSec, Benefits of IPSec, Routing Application, Security Association Database for IPSec Implementation, Overview of Encapsulation Security Payload (ESP), ESP Format,</p> <p>Firewall: What is Firewall, Characteristics of Firewall, Types of Firewall, Host base Firewall, Personal Firewall, Distributed Firewall</p>	12

Text Books	
1	Cryptography and Network Security Principles and Practice, 5 th Edition, William Stallings
Reference Books	
1	Network Security Essentials: Applications and Standard, 4 th Edition, William Stallings
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 6 marks --- 30 Marks Question must be covered all possible topics. Q-2 Must be from topic: Introduction of Network Security, Fundamentals & Cryptography --- 09 Marks Q-3 Must be from topic: Classical Encryption Techniques -- 09 marks Q-4 Must be from topic: Network and Internet Security -- 06 Marks Q-5 Must be from topic: Network Attacks and IP Security -- 06 Marks

GANPAT UNIVERSITY									
FACULTY OF COMPUTER APPLICATION									
Programme		Bachelor of Science in Information Technology			Branch/Spec.		Bachelor of Science in Information Technology		
Semester		V			Version		1.0.0.0		
Effective from Academic Year			2019-20		Effective for the batch Admitted in			June - 2019	
Subject code		U25A2IML	Subject Name		(Elective – III) Introduction to Machine Learning				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(D T)		Practical(Lab .)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	2	-	5	Theory	40	60	100
Hours	2	1	4	-	7	Practical	20	30	50
Pre-requisites:									
The basic knowledge of C and C++.									
Learning Outcome:									
Getting the knowledge of python programming.									
Theory syllabus									
Unit	Content								Hrs
1	<p>Python File & Data Handling(12) 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 (06)</p> <p>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 (06)</p>								12
2	<p>Advanced Topics : Plotting and Data Science, Data Visualization(12) 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),(8)</p> <p>Data Visualization : Bar Graph, Histogram, Creating a Pie Chart, Creating Line Graph (4)</p>								12
3.	<p>Machine Learning Introduction (10) 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 (10)</p>								10

4.	<p>ML Tools (11) I/O: retrieves data from files or data bases</p> <p>Data Manipulation: pre-processes your input data with filtering, group-by, pivoting, binning, normalization, aggregation, joining, sampling, partitioning, etc. Views: inspects the data and results with several interactive views, supporting interactive data exploration</p> <p>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 (11)</p>	11
Practical content		
List of programs specified by the subject teacher based on mentioned above topics.		
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)	
3	KNIME – Quick Guide [ebook]	
4	PowerBI – Step By Step [ebook]	
5	IBM Watson Analytics Hand Book [ebook]	
Question Paper Scheme:		
	<p>University Examination Duration: 3 Hours</p> <p>Paper Structure</p> <p>Q-1 (Attempt any Six Out of Eight: each question must be 5 marks) --- 30 Questions must be covered all possible Topics.</p> <p>Q-2 (Must be from topic:1(10 Marks)) Q-3 (Must be from topic: 2 (5 Marks)) Q-4 (Must be from topic: 3 (5 Marks)) Q-5 (Must be from topic:4 (10 Marks))</p>	

Note:

Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme, Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision)

L=Lecture, TU=Tutorial, P= Practical/Lab., TW= Term work, DT= Direct Teaching, Lab.= Laboratory work

CE= Continuous Evaluation, SEE= Semester End Examination

GANPAT UNIVERSITY									
FACULTY OF COMPUTER APPLICATION									
Programme	B.Sc. (IT)				Branch/Spec	Department of Compute Science			
Semester	V				Version	1.0.0.0			
Effective from Academic Year	2017-18				Effective for the batch Admitted in	June 2015			
Subject code	U25A3OPS		Subject Name		Operating System				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	2	-	5	Theory	40	60	100
Hours	2	1	4	-	7	Practical	20	30	50
Pre-requisites:									
Some Fundamental Knowledge of Operating System									
Learning Outcome:									
To provide the knowledge in operating system.									
Theory syllabus									
Unit	Content								Hrs
1	Introduction to OS Introduction to OS, Function of OS (2) Different types of OS: (6) <ul style="list-style-type: none"> ➤ Batch Processing Operating System ➤ Multiuser ➤ Multi Programming ➤ Time Sharing or Multi-tasking ➤ Network ➤ Real time OS Structure: (4) <ul style="list-style-type: none"> ➤ Monolithic ➤ Layered Approach: Virtual machine, Client-Server. Introduction to Process : (6) The Process Model, Process Creation, Process Termination, Process Hierarchies, Process State, Process Control Block								18
2	Memory Management Memory Management: (8) <ul style="list-style-type: none"> ➤ Basic Memory Management ➤ Swapping ➤ Contiguous Memory Allocation 								12

	<ul style="list-style-type: none"> ➤ Fragmentation ➤ Compaction ➤ Paging ➤ Page Table ➤ Segmentation <p>Virtual Memory System (4)</p> <ul style="list-style-type: none"> ➤ Demand Paging ➤ Page Replacement ➤ Allocation Frames 	
3	<p>Process Management</p> <p>Introduction to cooperating process, preemptive process (2) Process Synchronization (2) Critical Section Problem (2) Two Process Solution, Multiple Process Solution (2) Deadlock and Characterization (2)</p>	10
4	<p>(PRACTICAL BASED ON UNIX)</p> <p>Introduction: (6) Introduction to Linux System & History, Features of Linux, Introduction to File System (Only ext2fs file system), Introduction to Memory Management</p> <p>Basic Commands: (2) [Login, Logout, date (Format: %, a, A, b, B, c, d, D, H, l, j, k, l, m, M, p, S, T, w, x, y, Y), Man, who, whoami (- m, q, u, H), ls - l, r, S, t , pwd , mkdir - p, rmdir - p, Cd, Use of wild card character - ?, *, [..]], Types of FAP, use of chmod command, Environment variables.</p> <p>File and Directories Command: (5) cp - i, p, R, u, mv - i, f, u, rm - i, d, f, r, rev, file redirection - >, >>, <, grep - c, e, E, f, h, i, l, n, v, x, ., *, [], ^, \$, (pipe), () , cut - c, f, d paste - d, s, sort - b, c, f, k, m, n, o, r, t, u</p> <p>Introduction to vi editor: (3) Mode (Command, Input and Last line), Insert & append : i, a, l, A, Replace: r, R, s, S, Open a line: o, O, Saving: w, x, wq, q, ZZ, Navigation: h, j, k, l, Word navigation: b, w, e, Moving to line extremes: 0, , \$, G , Editing: d, y, x, dd Moving: p, P, Joining: J, Undoing: u, U, Searching: /, ?, n, N, s</p>	16

5	<p>Basics of Shell Scripting Programming</p> <p>Creating Shell Scripts using various commands of Linux except Filters.</p> <ul style="list-style-type: none"> ➤ Interactive shell script using read and echo ➤ Decision Statements: if then fi, if then else fi, if then elif else fi, case esac ➤ Test command ➤ Logical Operators ➤ Looping statements: for loop, while loop, until loop ➤ Break, continue command ➤ Arithmetic in Shell script using expr <p>Creating Shell Scripts to perform mathematical calculations</p>	14
Text Books		
1	Andrew S. Tanenbaum: Operating System Design & Implementation, Prentice Hall International	
Reference Books		
1	<ul style="list-style-type: none"> ✓ James Peterson and Abraham Silberschatz: Operating System Concept, Addison Wesley, Sixth Edition ✓ Linux Commands Instant Reference- Bryan Pfaffenberger. BPB Publication ✓ Advanced Linux Programming- Samual, Techmedia Publications ✓ UNIX Concepts & Application 4th Edition by Sumitabha Das ✓ Microsoft Windows Server 2008 : A Beginner's Guide - Marty Matthews,published by McGraw-Hill 	
Note for Examiner		
	<p>Q-1 Must be common from any topics from syllabus.</p> <p>Q-2 And onwards must be from specific topics and internal choice or option can be given</p>	
Paper Structure		
	<p>Q-1 (Attempt any Six Out of Eight: each question must be 5 marks) --- (30 marks)</p> <p>Questions must be covered all possible section.</p> <p>Q-2 (Must be From topics: Introduction to Operating System (8marks))</p> <p>Q-3 (Must be From topics: Memory Management & Virtual Memory (6 marks))</p> <p>Q-4 (Must be From topics: Process Management (6 marks))</p> <p>Q-5 (Must be From topics: Basic commands, File and Directory Commands, VI editor, Basics of Shell Scripting Programming (10 marks))</p>	

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FACULTY OF COMPUTER APPLICATIONS									
Programme	B.Sc. (IT)				Branch/Spec.	Department of Computer Science			
Semester	V				Version	1.0.0.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			June 2015	
Subject code	U25A4STQ	Subject Name			Software Testing & Quality Assurance				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	-	-	3	Theory	40	60	100
Hours	2	1	-	-	3	Practical	-	-	-
Pre-requisites:									
Familiarity with System design and analysis (SAD) and Software Engineering (SE).									
Learning Outcome:									
This course presents a comprehensive study of software testing and quality control concepts, principles, methodologies, management strategies and techniques. The emphasis here is on understanding software testing process, planning, strategy, criteria, and testing methods, as well as software quality assurance concepts & control process.									
Theory syllabus									
Sect ion	Content								Hrs
1	SW Testing Overview and Needs: Introduction to V&V with importance, market scenario. Career Opportunities. Why Should we test, Verification/Validation. Independent V&V. Phases of Software Testing, Testing Models, Alignment with Software Development Models, Application Testing/Product Testing								05
2	SW Testing Techniques: Static & Dynamic Testing techniques, White Box, Black Box Testing Techniques. User Interface Testing - Form Level Validation & Inter-Form dependencies, Field Level validation and Inter-Field dependencies, Error Messages Validation.								15
3	SW Testing Levels and Types: Unit Testing, Integration Testing, System Testing, User Acceptance Testing. Functional & Non Functional Testing, Regression Testing, Overview of Security Testing, Performance and Load Testing, Localization & Internationalization Testing, Usability Testing, Exploratory Testing, Compatibility Testing Role base Access Testing, Mobility testing.								08
4	SW Testing Process – Phases: Test Strategy and Planning, Requirement Understanding and Ambiguity reviews – Importance, Ambiguity types, Test case Design, Test								07

	Execution, Defect management. Tools, Test Data.	
5	SW Testing Optimization: Test Automation – automation process, benefits, tools, Overview of Selenium tool. Risk Based Testing, Orthogonal array.	05
6	SW Testing Quality and Case Study: Coverage, Defect detection efficiency, Defect Acceptance rate, Quality of Test Deliverables.	04
Practical content		
NIL		
Text Books		
1	Software Testing (A Practical Approach) Rajiv Chopra	
Reference Books		
1	The Art of Software Testing - by Glenford J Myers	
2	Software Testing – Principles and Practices - by Srinivasan Desikan&Gopalswamy Ramesh	
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.	
	<p>Paper Structure</p> <p>Q-1 (Attempt any Six Out of Eight: each question must be 5 marks) --- 30 Questions must be covered all possible section.</p> <p>Q-2 (Must be from topics: Software Testing Needs & Overview (4 marks))</p> <p>Q-3 (Must be from topics: Software Testing Techniques (10 marks))</p> <p>Q-4 (Must be from topics: SW Testing Levels and Types (8 marks))</p> <p>Q-5 (Must be from topics: SW Testing Process – Phases (5 marks))</p> <p>Q-6 (Must be from topics: SW Testing Optimizations SW Testing Quality and Case Study (3 marks))</p>	

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GANPAT UNIVERSITY									
FACULTY OF COMPUTER APPLICATIONS									
Programme	B.Sc. (IT)				Branch/Spec.	Department of Computer Science			
Semester	V				Version	1.0.0.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			June 2015	
Subject code	U25A5SAD		Subject Name		System Analysis and Design				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	-	-	3	Theory	40	60	100
Hours	2	1	-	-	3	Practical	-	-	-
Pre-requisites:									
Basic Computer system knowledge									
Learning Outcome:									
Student can analyse, design and evaluate the information system									
Theory syllabus									
Sect ion	Content								Hrs
1	Introduction to System Analysis and design <ul style="list-style-type: none"> ▪ Introduction AND Types of System ,Characteristics of System, Need for system development(2.5) ▪ Types Of User, Role of system Analyst(01) ▪ Introduction to Information System (02) <ul style="list-style-type: none"> ○ Types Of Information System ▪ System Development Strategies(03) <ul style="list-style-type: none"> ○ System Development Life Cycle ▪ Structure Analysis Strategies(07) <ul style="list-style-type: none"> ○ Physical And Logical DFD ○ Data Dictionary ▪ System Prototyping Model(01) ▪ System Investigation (02) <ul style="list-style-type: none"> ○ Fact finding Techniques ▪ Tools for Documenting And Decision(2.5) <ul style="list-style-type: none"> ○ Decision Tree ○ Decision Table ○ Structured English 								21

2	<p>System Design and CASE Tools</p> <ul style="list-style-type: none"> ▪ Code Design(1.5) <ul style="list-style-type: none"> ○ Principal of Code Design ○ Types Of Code Design ▪ Form Design(1.5) <ul style="list-style-type: none"> ○ Types Of Forms ○ Principle of form Design ○ Consideration of form Design ○ Steps for Form Design ▪ Input Design(03) <ul style="list-style-type: none"> ○ Objective of Input Design ○ Data capturing guidelines ○ Input validation ▪ Output Design(02) <ul style="list-style-type: none"> ○ Objective of Output ○ Types of Output ○ Different ways to represent Information ○ Designing Special Forms ▪ Computer Aided System Tools(02) <ul style="list-style-type: none"> ○ Benefits of Computer assisted tools ○ Categories Of automated Tools ○ CASE Tools ▪ File and Database Design(02) <ul style="list-style-type: none"> ○ Basic File Terminology ○ Types of File ○ Method of File Organisation 	12
3	<p>Testing and Quality Assurance</p> <ul style="list-style-type: none"> ▪ Testing Strategies(01) ▪ Level Of Testing(1.5) ▪ Managing Quality Assurance(1.5) ▪ Training And Conversion(01) ▪ Post Implementation Review(01) 	6
4	<p>Case Studies</p> <ul style="list-style-type: none"> ▪ Payroll System(2) ▪ Billing System(1) ▪ Library System(1) ▪ Financial Accounting System(1) ▪ Inventory Management System(1) 	6

Practical content	
N.A.	
Text Books	
1	Analysis and Design of Information Systems - James A. Senn-TMH
Reference Books	
1	System Analysis and Design, 1st Edition, - S.Parthasarthy & B.W.Khalkar, Master Academy
2	Introduction to S.A.D. by LEE VOL. 1 & 2 Galgotia Publication
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 Six Out of Eight: each question must be 5 marks: (30 Marks) Questions must be covered all possible section.	
Q-2 Must from topics: Introduction to System Analysis and design (Introduction to system and information system, type of user and role of system Analyst, SDLC): (05 marks)	
Q-3 Must from topics: Introduction to System Analysis and design (System analysis Strategy, prototype Model, system Investigation, tools for documentation and decision) (05 marks)	
Q-4 Must from topics: System Design and CASE Tools(Code design, Form design, Input design, Output design, File and Database Design): (06 marks)	
Q-5 Must from topics: Computer Aided System Tools, Testing and Quality Assurance: (07 marks)	
Q-6 Must from topics: Case Studies (07 marks)	