


APPENDIX-I

 <p>GANPAT UNIVERSITY ॥ विद्यया समाजोत्कर्षः ॥</p>	<h1 style="margin: 0;">GANPAT UNIVERSITY</h1>								
FACULTY OF COMPUTER APPLICATIONS									
Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14A1OST		Subject Name	OPEN SOURCE TECHNOLOGY					
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
Objective:									
To make aware the students about basic PHP programming and laravel framework.									
Pre-requisites:									
Basic Knowledge of HTML Script, Object Oriented Concept									
Learning Outcome:									
Student can develop, design PHP Programs with database connectivity, able to work in Laravel Framework									
Content:									
Unit	SECTION – I								Hrs
1	<p>Introduction Introduction to Open Source Technologies, Introduction to PHP, Advantages and disadvantages of PHP, Client-side scripting, Server-side scripting, Canonical PHP tags, including files, Syntax of PHP, Comments, Variables, Datatypes in PHP, HTTP, GET arguments, POST arguments</p> <p>Strings & Array Strings in PHP, String functions, Creating and using Arrays, Multidimensional Arrays, using iteration functions, using foreach</p> <p>Session and Cookies Sessions in PHP, Session functions, Cookies, The setcookie() function, Deleting cookies,</p>								23

	<p>Reading cookies</p> <p>E-mail Sending E-mail with PHP, Windows configuration, Linux configuration, the mail function, Sending Mail from a Form</p> <p>Object-Oriented programming with PHP Basic PHP constructs for OOP, defining classes, accessing member variables, creating instances, constructor, inheritance, overriding functions, chained subclassing, advanced OOP features, public, private, and protected members, interfaces , constants , abstract classes, simulating class functions, calling parent functions, automatic calls to parent constructors, simulating method overloading</p> <p>MySQL and PDO Introduction to MySQL, Creating MySQL databases with PHP, MySQL data types PHP Data Objects - Introduction, Installing/Configuring, Connections and Connection management, Prepared PDO statements, The PDOStatement class.</p>	
SECTION – II		
2	<p>File system and System Functions Understanding PHP file permissions, File reading and writing functions, File system and Directory functions, Date and Time Functions, Graphic (GD Library Functions)</p> <p>PHP and XML (5) Introduction to XML, working with XML, creating XML file, store data to the XML, manipulating the XML, reading data from XML, Web Services</p> <p>MVC(Laravel) Introduction to Laravel, , MVC Introduction, Laravel Installation process, Application structure, Configuration, Middleware, Controllers, Creating HTML forms and validations in Laravel, Working with database in Laravel, Understanding CRUD operations</p>	22
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Reference Books:		
1	PHP 6 and MySQL by Tim Converse and Joyce Park, Bible publication	
2	Beginning PHP6, Apache, MySql web Development, by Timothy Boronczyk, Elizabeth Naramore. wrox publication	
3	Beginning PHP and MySQL, by W. Jason Gilmore, Apress	
4	The Complete Reference PHP, by Steven Holzner, TATA McGRAW-HILL Publication	
Web Reference:		
1		
2		
Question Paper Scheme:		

University Examination Duration: 3 Hours

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION - I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks



GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14A2BPY		Subject Name	ELECTIVE-IV BASIC PYTHON					
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
Objective:									
To learn the basic syntax of Python To learn how to use OOPs Concept in Python To learn database connectivity in Python To Learn how different libraries are used to perform different type of task									
Pre-requisites:									
Programming Concepts									
Learning Outcome:									
After completing this course, students should be able to: <ul style="list-style-type: none"> ✓ Install and run the Python interpreter ✓ To develop proficiency in creating applications using Python Programming Language. ✓ Understand the concepts of file I/O, Array, Function and Database Connectivity ✓ To read data from a text file using Python ✓ Plot data using appropriate Python visualization libraries 									
Content:									
Unit	SECTION – I								Hrs
1	Introduction to Python Installation and Working with Python, Understanding Python variables, Python basic Operators, understanding python blocks, Python data types, Declaring and using Numeric data types, using								12

	string data type and string operations, Defining list and list slicing, Use of Tuple data type, Python program flow control, Conditional blocks using if, else and elif, simple for loops, For loop using ranges, string, list and dictionaries, Use of while loops, Loop manipulation using pass, continue, break and else statement, Programming using Python conditional and loops block.	
2	Python Arrays, Functions, Modules and Packages Python arrays, how to create an array, accessing array elements, looping array elements, adding and removing an array element, array methods. Creating a function, calling a function, passing parameters to function, how to define default value of parameters of a function, passing a list as a parameter, function returning a value, Recursive function, Lambda function, creating and using module, built-in modules, importing own module as well as external modules, Understanding Packages, Programming using functions, modules and external packages	11
SECTION – II		
3	Python Object Oriented Programming and Exception Handling Concept of class, object and instances, Constructor, class attributes and destructors, Inheritance, overlapping and overloading operators, Adding and retrieving dynamic attributes of classes, Programming using OOPS support, concept of Exception handling, avoiding code break using exception handling, use of try, except and finally for exception handling.	12
4	Python File operation and Python Database Interaction Reading config files in python, Writing log files in python, Understanding read functions, read(), readline() and readlines(), Understanding write functions, write() and writelines(), Manipulating file pointer using seek, SQL Database connection using python, Creating and searching tables, Reading and storing config information on database, Programming using database connections.	10
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Reference Books:		
1	John V Guttag. “Introduction to Computation and Programming Using Python”, Prentice Hall of India	
2	R. Nageswara Rao, “Core Python Programming”, dreamtech	
3	Wesley J. Chun. “Core Python Programming - Second Edition”, Prentice Hall	
4	Michael T. Goodrich, Roberto Tamassia, Michael H. Goldwasser, “Data Structures and Algorithms in Python”, Wiley	
Web Reference:		
1	https://nptel.ac.in/courses/117106113/34	
2	https://www.coursera.org/specializations/python	
Question Paper Scheme:		
	University Examination Duration: 3 Hours Note for Examiner: -	

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION - I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14A2APY		Subject Name	Advance Python					
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
Objective:									
To learn advanced concepts of OOP and database connectivity in Python.									
Pre-requisites:									
Basic knowledge of the Core Programming, Database Concepts.									
Learning Outcome:									
To develop proficiency in creating based applications using the Python Programming Language.									
Content:									
Unit	SECTION – I								Hrs
1	<p>Arrays, List, and Tuples:</p> <p>Array: Working with Arrays using numpy, Creating Arrays using array(), Creating Arrays using linspace, Creating Arrays using logspace, Creating Arrays using arrange() Function, Creating Arrays using zeros() and ones() Functions, Mathematical Operations on Arrays, Useful Mathematical Functions in numpy.</p> <p>List: Creating List using range function, Updating the elements of List, Concatenation of Two Lists, Repetition of Lists, Membership in Lists, Aliasing and Cloning Lists, Methods to Process List, Nested List, List Comprehension</p> <p>Tuple: Creating Tuple, Accessing Tuple Elements, Basic Operation on Tuples, Function to Process Tuples, Nested Tuple, Inserting, Modifying and Deleting Elements of Tuples.</p>								22

	<p>Functions</p> <p>Functions: Difference between a Function and a Method, Defining a Function, Calling a Function, Returning Results from a Function, Returning Multiple Values from a Function, Functions are First Class Objects, Pass by Object Reference, Formal and Actual Arguments, Positional Arguments, Keyword Arguments, Default Arguments, Variable Length Arguments, Local and Global Variables, The Global Keyword, Passing a Group of Elements to a Function, Recursive Functions, Anonymous Functions or Lambdas (Using Lambdas with filter() Function, Using Lambdas with map() Function, Using Lambdas with reduce() Function), Function Decorators, Generators, Structured Programming, Creating our Own Modules in Python, The Special Variable name</p>	
SECTION – II		
2	<p>OOPs in Python</p> <p>Classes: Creating a Class, The Self Variable, Constructor, Types of Variables, Namespaces, Types of Methods (Instance Methods, Class Methods, Static Methods)</p> <p>Inheritance and Polymorphism: Constructors in Inheritance, Overriding Super Class Constructors and Methods, The super() Method, Types of Inheritance, Single Inheritance, Multiple Inheritance, Method Resolution Order (MRO), Polymorphism, Duck Typing Philosophy of Python, Operator Overloading, Method Overloading, Method Overriding</p> <p>Python’s Database Connectivity</p> <p>Verifying the MySQLdb Interface Installation, Working with MySQL Database, Using MySQL from Python, Retrieving All Rows from a Table, Inserting Rows into a Table, Deleting Rows from a Table, Updating Rows in a Table, Creating Database Tables through Python</p>	23
Practical Content:		
List of programs on the above mentioned topics as per decided by subject faculty		
Reference Books:		
1	R Nageswara Rao Core Python Programming, 2nd Edition, Dreamtech Press	
2	HEAD FIRST PYTHON	
3	Robert Sedgewick, Kevin Wayne, Robert Dondero, Introduction to Programming in Python, Pearson	
4	Doug Hellmann, The python 3 standard Library by example, Pearson Education	
Web Reference:		
1		
Question Paper Scheme:		
	<p>University Examination Duration: 3 Hours</p> <p>Note for Examiner: -</p> <p>(I) Questions 1 and 4 are compulsory with no options.</p> <p>(II) Internal options should be given in questions 2, 3, 5 and 6.</p> <p>SECTION - I</p> <p>Q.1 –8 Marks</p>	

	Q.2 –11 Marks Q.3 –11 Marks SECTION - II Q.4 –8 Marks Q.5 –11 Marks Q.6 –11 Marks
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GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14B3ACS		Subject Name		Elective – V Advanced Communication Skill				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	0	-	-	2	Theory	40	60	100
Hours	2	0	-	-	2	Practical	-	-	-
Objective:									
<ul style="list-style-type: none"> To enable the students to acquire soft skills. To train the students for selection procedure which includes aptitude test, group discussion, presentation skills and personal interviews To enable the students for professional correspondence.. 									
Pre-requisites:									
<ul style="list-style-type: none"> Basic knowledge of English 									
Learning Outcome:									
<ul style="list-style-type: none"> Acquire required abilities and professionalism to appear in group discussion and personal interview. Acquire abilities for professional correspondence 									
Content:									
Unit	SECTION – I								Hrs
1	Presentation Skill Introduction to Presentation: Definition, Nature, and Importance of Oral Presentation Planning and Preparation of Presentation: Six Great Helpers in Preparing Presentation - Defining Purpose of Presentation, Analysing Audience and Locale, Organizing Content, Preparing Outline, Use of Visual Aids in Presentation, Rehearsing and Presentation, Attention Grabbers in the Delivery of Presentation, Steps of Preparing Presentation								15

	<p>Public Speaking Skill Introduction to Public Speaking, Definition and Nature, Purposes of Public Speaking, Types of Speech: extemporaneous, manuscript, impromptu and memorization. Paralinguistic Features.</p> <p>Group Discussion and Debate Definition, Nature and Importance, Characteristics of Successful Group Discussion, Group Discussion Strategies, Evaluation Components in GD as Part of a Selection Process: knowledge, communication skills, group behavior & leadership potential. Debate: Definition, Nature and Importance, Difference between Group Discussion and Debate, Practice through mock GD and Debate in the classroom.</p> <p>Interviewing Skills Definition, Objectives and Process of Interview, Types of Interviews, Strategies for Successful Job Interview, Skills and Attributes Most Employers Look For, Factors Responsible for Failure, Pre- Interview Preparation Techniques, Types of Interview Questions, Answering Strategies, Frequently Asked Interview Questions.</p>	
SECTION – II		
2	<p>Official Correspondence Correspondence with different authorities like government departments, civic authorities, office bearers of financial institutions, insurance agencies etc</p> <p>Report, Notice-Agenda & Minutes of Meeting Purpose of a Report, Types of Reports, Structure and Style of Reports, Committee Reports, Individual Reports, Drafting of Notice, Agenda and Minutes of Meeting</p> <p>Job Application & Resume Writing Significance of Resume and Job Application, Structure of Job Application and Resume, Tips for Effective Job Application, Drafting of Job Application with Resume</p>	15
Practical Content:		
N.A.		
Reference Books:		
1	Effective Technical Communication by Ash raf Rizvi M., Tata McGraw – Hill Publishing Company Limited; New Delhi; 2005	
2	Technical Communication Principles and Practice by Raman, Meenakshi & Sharma Sangeeta. OUP, New Delhi; 2008.	
3	Business Communication by Ramchandran K.K. at al. McMillan India Pvt. Ltd, New Delhi; 2007	
4	Effective English Communication by Mohan Krishna & Raman, Meenakshi. Tata McGraw – Hill Publishing Company Limited; New Delhi; 2000	
Web Reference:		
1		
2		
Question Paper Scheme:		
	University Examination Duration: 3 Hours	

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION - I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14B3CPD		Subject Name		Elective – V Career & Personality Development				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture (DT)		Practical (Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	2	0	-	-	2	Theory	40	60	100
Hours	2	0	-	-	2	Practical	-	-	-
Objective:									
Student can get knowledge regarding document and interview preparation, resume writing and improved skill in aptitude and reasoning									
Pre-requisites:									
N.A.									
Learning Outcome:									
By this curriculum students can get awareness regarding what types of preparation is required before appearing in the interview process.									
Content:									
Unit	SECTION – I								Hrs
1	Career Planning & Goal Setting What is Career Planning? Importance of Career Planning Process of Career Planning and Development Steps involved in Career Development System, Factors affecting Career Planning Goal Setting Need for goal selection, Types of Goal (Short Term & Long Term) Dream vs. Goal vs. Desire Document Preparation & Presentation Resume Assistance: Job Search & On campus Recruitment: Seeking job vacancies Drafting, Resume Preparation, Writing Cover Letters Presentation Skills: Eye to eye contact, Rehearsal, Voice Modulation								15

	<p>Keys to Effective Communication: Active Listening, Observation, Holding Conversation, Objection handling</p> <p>Types of Communication: Face-to-Face, E-mail, Video Conferencing, Telephonic, Written, Verbal, Formal , informal, legal.</p> <p>Group Discussion & Public Speaking</p> <p>Importance of Group Discussion, Commencing Group Discussion, Essential Skills to Demonstrate in GD, Role Play in GD, Characteristics of Group Discussion, Organizational Group Discussion, Common GD Topics, Evaluation Components in GD (knowledge, communication skills, Group behavior, Leadership skills)</p> <p>Preparation for a Speech; evaluating your plus and minuses as a speaker; achieving confidence in your ability to present, Use of body language and vocal deliveries; Speeches at special occasions; Speaking with confidence</p>	
SECTION – II		
2	<p>Basic Programming Skills</p> <p>Interview question for DBMS & ADBMS , Interview question for .Net Framework, Interview question for PHP, Interview question for Operating System and System Programming, Interview Question for Distributed and Parallel Databases, Interview Question for Grid and Cloud Computing Interview Question for Logic development and Programming , Interview Question for J2EE Framework , Interview question for Data Structure and Analysis Design of Algorithm</p> <p>Time Management</p> <p>How good is your time management?, Prioritizing Activities - urgency and importance Keeping a time log, Identifying your personal time wasters, Dealing with interruptions Daily/weekly Planning</p> <p>Aptitude, Reasoning and Data Interpretation</p> <p>Mathematics, Profit, Loss and discount, average and its application, Ratio, proportion and variation, Time and work, Time speed and distance, sequence and series, probability(04) Series, Classification, Coding and Decoding, Logical Venn Diagram, Alpha-numeric Sequence Puzzle, Number Ranking and Time Sequence Test, Logical Sequence of Words, Arithmetical Reasoning, Blood Relation Series, Analogy, Analytical Reasoning, Spotting out the embedded figure, Completion of incomplete pattern, Figure Matrix</p>	15
Practical Content:		
N.A.		
Reference Books:		
1	Quantitative Aptitude for CAT by Nishit Singha, Pearson Education	
2	Quantitative Aptitude by Trishna, Knowledge System.	
3	A Modern Approach to non-Verbal Reasoning by R.S.Aggarwal , S.Chand & Company Ltd	

4	Puzzles by ShakuntalaDevi
Web Reference:	
1	
2	
Question Paper Scheme:	
	<p>University Examination Duration: 3 Hours</p> <p>Note for Examiner: -</p> <p>(I) Questions 1 and 4 are compulsory with no options.</p> <p>(II) Internal options should be given in questions 2, 3, 5 and 6.</p> <p>SECTION - I</p> <p>Q.1 –8 Marks</p> <p>Q.2 –11 Marks</p> <p>Q.3 –11 Marks</p> <p>SECTION - II</p> <p>Q.4 –8 Marks</p> <p>Q.5 –11 Marks</p> <p>Q.6 –11 Marks</p>

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14A4ML2		Subject Name	ELECTIVE-VI Science for Decision Making					
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
Objective:									
To Understand different types of sampling techniques and limitations of each sampling approach.									
To Understand Research design process.									
To Understand the concept of confidence interval and confidence level.									
To Understand the importance of forecasting and its impact on the effectiveness upon overall performance of an organization									
Pre-requisites:									
Basic Knowledge of Statistics and statistical tools									
Learning Outcome:									
After completing this course, students should be able to:									
<ul style="list-style-type: none"> ✓ Students will be able to identify appropriate sampling technique and sample size for a given problem. ✓ Learn how to make Research proposal for proposed Research. ✓ Calculate confidence interval for population mean when population standard deviation is either known or unknown. ✓ Learn Auto-Regression(AR), Moving Average(MA),and Auto-Regressive Integrated Moving Average models(ARIMA) 									
Content:									
Unit	SECTION – I								Hrs
1	Unit:1 Sampling and Estimation								12
	Introduction to Sampling, Population Parameters and Sample Statistic, Sampling, Probabilistic								

	Sampling, Non-Probability Sampling, Sampling Distribution, Central Limit Theorem(CLT), Sample size estimation for mean of the Population, Estimation of Population Parameters, Method of Moments, Estimation of Parameters Using Method of Moments, Estimation of Parameters using maximum likelihood Estimation	
2	Research Design Process Research and the Scientific Method, The Research Process, Business Research Requests and Proposals, Proposing Research, Creating Request for Proposal, Structuring the Research proposal, An Overview of Research Design, Classification of Design, Exploratory Studies, Descriptive Studies, Causal Studies.	11
SECTION – II		
3	Confidence Intervals and Hypothesis Testing Introduction to Confidence Interval, Confidence Interval for Population Mean, Confidence Interval for Population Proportion, Confidence Interval for Population mean when Standard Deviation is Unknown, Confidence Interval for Population Variance, Setting up a Hypothesis Test, One-Tailed and Two-tailed Test, Type I Error, Type II Error, Hypothesis Testing for Population mean with Known Variance: Z-Test, Hypothesis Testing for Population Proportion: Z-test for Proportion, Hypothesis Test for Population mean under Unknown Population Variance: t-Test, Paired Sample t-Test, Comparing two Populations: Two sample Z- and t-Test, Hypothesis test for Difference in Population Proportion under Large Samples: Two-Sample Z-Test for Proportions, Hypothesis test for equality of Population Variances, Non-Parametric Tests, Chi-Square Tests, Analysis of Variance(ANOVA).	12
4	Forecasting Techniques Introduction to Forecasting, Time Series Data and Components of Time-Series data, Forecasting techniques and Forecasting Accuracy, Moving Average Method, Single Exponential Smoothing, Double Exponential Smoothing, Triple Exponential Smoothing, Croston’s Forecasting, Regression Model for Forecasting, Auto-Regressive(AR), Moving average(MA), and ARMA Models, Auto-Regressive Integrated Moving Average(ARIMA) Process, Power of Forecasting Model: Theil’s Coefficient.	10
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Reference Books:		
1	Kumar, U. D. (2017). <i>Business Analytics: The Science of Data-driven Decision Making</i> . Wiley India.	
2	Cooper, D. R., Schindler, P. S., & Sun, J. (2006). <i>Business research methods</i> (Vol. 9). New York: McGraw-Hill Irwin.	
3	Bordens, K. S., & Abbott, B. B. (2002). <i>Research design and methods: A process approach</i> . McGraw-Hill.	
4	Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2003). <i>Business research methods</i> 7th ed. Thomson/South-Western.	

5	Hair, B., Black, W. C., Babin, B., & Anderson, R. E. (2006). Tatham, Multivariate data analysis.
Web Reference:	
1	https://www.youtube.com/watch?v=9EqUH9wsM6c
2	https://www.youtube.com/watch?v=98K7AG32qv8
Question Paper Scheme:	
	<p>University Examination Duration: 3 Hours</p> <p>Note for Examiner: -</p> <p>(I) Questions 1 and 4 are compulsory with no options.</p> <p>(II) Internal options should be given in questions 2, 3, 5 and 6.</p> <p>SECTION - I</p> <p>Q.1 –8 Marks</p> <p>Q.2 –11 Marks</p> <p>Q.3 –11 Marks</p> <p>SECTION - II</p> <p>Q.4 –8 Marks</p> <p>Q.5 –11 Marks</p> <p>Q.6 –11 Marks</p>

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14A4BDA2		Subject Name	ELECTIVE – VI BIG DATA ANALYTICS-II					
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
Objective:									
To understand and explore concepts of Big Data management and analytics.									
Pre-requisites:									
The student should have a good working knowledge of Database & experience of Java.									
Learning Outcome:									
After completing this course, students should be able to:									
<ul style="list-style-type: none"> ✓ Build and maintain reliable, scalable, distributed systems with Apache Hadoop. ✓ Develop Map-Reduce based Applications. ✓ Apply HIVEQL, PIG to solve big data queries. ✓ Compare conventional SQL query language and NoSQL basic concepts. ✓ Design, build and query Mongo DB based big data Applications. ✓ Analyze Big Data use cases and solutions. 									
Content:									
Unit									Hrs
	SECTION – I								
1	Data Storage Component: Apache HBase : Introduction Apache HBase, Architecture of HBase, Features of HBase, HBase Pros and Cons, HBase Operations: Read and Write Operations, HBase Commands, HBase Shell, Table Management Commands in HBase, HBase MapReduce Integration								12
2	Data Access and Storage Components: Pig Introduction to Apache Pig, MapReduce vs Pig , Architecture of Hadoop Pig , Apache Pig Components : Parser, Optimizer, Compiler, Execution Engine; Job Execution Modes								10

	of Pig, Datatypes , Data Processing Operators, Pig Functions, Grunt Shell : Command ,Utility Command; Pig Latin, Comparison of Pig with Databases, User Defined Functions.	
SECTION – II		
3	Data Access and Storage Components: Apache Hive Introduction Apache Hive, Hive Architecture, Features of Apache Hive, Limitation of Apache Hive, How Does Hive Works?, Apache Hive Architecture & Components, Hive Built-In Functions, Hive DDL Commands, Hive View and Hive Index, Hive Data Model, Data Types, Hive Partitioning, Creation of Bucketed Table in Hive, Configure Hive Metastore to MySQL	12
4	NoSQL: Introduction, Types of NoSQL databases, Advantages of NoSQL, Use of NoSQL in industry, SQL vs NoSQL. Data Base for the Modern Web : Introduction to MongoDB key features, Core Server tools, MongoDB through the JavaScript’s Shell, Creating and Querying through Indexes, Document-Oriented, principles of Schema design, Constructing queries on Databases, collections and Documents, MongoDB Query Language.	11
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Reference Books:		
1	Kyle Banker,Peter Bakkum,Shaun Verch,Douglas Garrett,Tim Hawkins,“MongoDB in Action”, DreamTech Press, 2nd Edition ,2016	
2	Shashank Tiwari, “ Professional NoSQL”, Wiley India Pvt. Ltd.,2011.	
3	Programming Pig, 2nd Edition By Alan Gates, Daniel Dai	
4	Beginning Apache Pig by Balaswamy Vaddeman	
5	HBase: The Definitive Guide: Random Access to Your Planet-Size Data by Lars George	
6	Apache Hive Essentials: Essential techniques to help you process, and get unique insights from, big data, 2nd Edition by Dayong Du	
7	Programming Hive, 2nd Edition by Edward Capriolo , Dean Wampler , Jason Rutherglen	
Web Reference:		
1	http://www.mongodb.com	
2		
Question Paper Scheme:		
	University Examination Duration: 3 Hours Note for Examiner: - (I) Questions 1 and 4 are compulsory with no options. (II) Internal options should be given in questions 2, 3, 5 and 6. SECTION - I Q.1 –8 Marks Q.2 –11 Marks	

	Q.3 –11 Marks SECTION - II Q.4 –8 Marks Q.5 –11 Marks Q.6 –11 Marks
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GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications			Branch/Spec.	Master of Computer Applications				
Semester	IV			Version	1.0.0.0				
Effective from Academic Year	2019-20			Effective for the batch Admitted in	June 2018				
Subject Code	P14A4CSF2		Subject Name	CYBER SECURITY AND FORENSIC-I					
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

Objective:

To be aware of cyber security in the context of injection attacks.

Pre-requisites:

Basic Knowledge of web application, Database and SQL is essential, Hands of experience of Linux OS.

Learning Outcome:

This course provides students basic knowledge and skills in detecting and defending threat to web Application. Upon Completion of the course a student is expected to have met the following course objective

- Can detect threats to any web app
- Able to perform various Input Injection Attacks.
- Able to provide countermeasures against various input injection attacks.

Content:

Unit		Hrs
	SECTION – I	
1	<p>Hacking Web Apps and Profiling.</p> <p>Web Application Hacking: GUI web Hacking, URI Hacking, Methods Headers and Body, Resources. The Web Client and HTML, Other Protocols, How & Why Web Apps attack.</p> <p>Infrastructure Profiling: Footprinting and Scanning, Basic Banner Grabbing, Advanced HTTP Fingerprinting, Infrastructure Intermediaries.</p> <p>Application Profiling: Manual Inspection, Search Tools for Profiling, Automated Web Crawling, General Countermeasures.</p> <p>Bypassing and Attacking Web Authentication</p> <p>Web Authentication Threats: Username/password Threats, Password Guessing and its</p>	23

	<p>Countermeasures, Eavesdropping attacks and its Countermeasures, Forms-based Authentication attacks and its countermeasures. Stronger web Authentication, Web Authentication Services.</p> <p>Bypassing Authentication: Token Replay, Cross-site Request Forgery, Identity Management.</p> <p>Penetration Testing and Input Injection Attacks.</p> <p>Where to find Attack vectors, Common Input Injection Attacks: Buffer Overflow, Canonicalization and its countermeasures, Advanced Directory Traversal, Navigating Without Directory Listing, HTML Injection: XSS, Embedded scripts, Cookies and Predefined Headers, Counter countermeasures. SQL Injection: SUB Queries, UNION, Sql Injection countermeasures, XPATH Injection and its countermeasures, LDAP Injection.</p>	
SECTION – II		
2	<p>Metasploit</p> <p>Basics of Penetration Testing: The Phase of PTES, Types of Penetration Tests.</p> <p>Metasploit: Introduction</p> <p>Metasploit Basics: Terminology, Metasploit Interfaces, Metasploit Utilities.</p> <p>Intelligence Gathering: Passive Information Gathering, Active Information Gathering, Target Scanning</p> <p>Vulnerability Scanning: Basic Vulnerability Scan, Scanning with scanning tools, Using Scan Results for Autopwning.</p> <p>Attacking Users</p> <p>Defacing Content, Capturing User Input: Using Focus Event, Using Keyboard Events, Using Mouse and Pointer Events, Using Form Events, Social Engineering: Using TabNabbing, Abusing UI Expectations: Using Fake Login Prompts, Pretty Theft, Gmail Phishing.</p>	22
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Reference Books:		
1	Hacking Exposed Web Application, 3 rd Edition by Joel Scambray, Vincent Liu, Caleb Sima	
2	The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws by Dafydd Stuttard and Marcus Pinto Wiley Publication	
3	Metasploit - The Penetration Tester's Guide by David Kennedy , Jim O'gorman , Devon Kearns and Mati Aharoni – No Starch Press Publication	
4	The Browser Hacker's Handbook by Wade Alcorn, Christian Frichot and Michele Orru – Wiley Publication	
5	Web Penetration Testing with Kali Linux by Joseph Muniz, Aamir Lakhan – Packt Publication	
Question Paper Scheme:		
	<p>University Examination Duration: 3 Hours</p> <p>Note for Examiner: -</p> <p>(I) Questions 1 and 4 are compulsory with no options.</p>	

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION - I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks



GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year			2019-20		Effective for the batch Admitted in			June 2018	
Subject code	P14A4CC2		Subject Name		Virtualization in Cloud Computing				
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
Objectives									
Students can understand and hands on the concepts of Virtualization in cloud computing such as Server Virtualization, Network and Memory Virtualization, Storage virtualization, VM Management, Virtualization performance and Security.									
Pre-requisites									
Operating System Concepts, Computer Network Concepts, Programming concepts, Fundamental of Cloud Computing									
Learning Outcome									
After learning the course the students should be able to:									
Understanding Virtual machines and Implementation of virtual machines									
Understanding virtualization and various ways of using virtualization									
Implementation of private cloud platform using virtualization									

Use virtual machines of public cloud platform		
Theory syllabus		
Unit	Content	Hrs
SECTION - I		
1	File Systems Memory and Storage, File systems, Distributed file systems, Map and Reduce, Hadoop File Systems, Google File System, Big table	6
2	Introduction to Virtualization Physical and virtual machines, Traditional and virtual computing, Understanding virtualization, Need and Applications of virtualization, Limitations, Simulations and Emulations, Challenges in Virtualized environment, tools and technologies in virtualized environments.	6
3	Types of Virtualization Various forms of virtualization: Desktop, Application, Server, Hardware, Storage, Memory and I/O virtualization	4
4	Server Virtualization Server consolidation, Privileged instructions, Binary translation, Hypervisors, Types of Hypervisors, Hypervisor architecture, Full Virtualization, Para Virtualization , Hardware Assisted Virtualization, Implementation of Hardware Assisted Virtualization, Algorithms for implementation of Virtualization, Challenges	6
SECTION – II		
5	Network and Memory Virtualization IP addressing, virtual LAN, Memory addressing, Paging, Memory mapping, virtual memory, complexities and solutions of memory virtualization	6
6	VM Management VM lifecycle, Process and system level VMs, VM configurations, VM migrations, Migration types and process, VM provisioning, Scaling, VM scheduling, Load balancing: Significance, Types and Algorithms	6
7	Storage virtualization RAID, SCSI, iSCSI, Direct attached storage, Network Attached storage, Storage Area network	6
8	Case-Study	5

	Private cloud implementation using Eucalyptus, Hyper-V and VMware	
Reference Books		
1	Chris Wolf and Erick M. Halter, "Virtualization" A press; 1 edition 2005.	
2	LatifaBoursas (Editor), Mark Carlson (Editor), Wolfgang Hommel (Editor), Michelle Sibilla (Editor), KesWold (Editor), "Systems and Virtualization Management: Standards and New Technologies", October 14, 2008	
3	Massimo Cafaro (Editor), Giovanni Aloisio (Editor), "Grids, Clouds and Virtualization" Springer; edition 2011.	
4	Edward L. Haletky, "VMware ESX Server in the enterprise". Prentice Hall; 1 edition 29 Dec 2007.	
5	Gaurav Somani, "Scheduling and Isolation in Virtualization", VDM VerlagDr.Müller [ISBN: 978-3639295139], Muller Publishers, Germany, Sept. 2010	
6	Edward Haletky, "VMware ESX and ESXi in the Enterprise – Planning Deployment of Virtualization Servers" [ISBN: 978-0137058976]., Prentice Hall; 2 edition February 18, 2011.	
Question Paper Scheme:		
<p>University Examination Duration: 3 Hours</p> <p>Note for Examiner: -</p> <p>(I) Questions 1 and 4 are compulsory with no options.</p> <p>(II) Internal options should be given in questions 2, 3, 5 and 6.</p> <p>SECTION - I</p> <p>Q.1 –8 Marks</p> <p>Q.2 –11 Marks</p> <p>Q.3 –11 Marks</p> <p>SECTION - II</p> <p>Q.4 –8 Marks</p> <p>Q.5 –11 Marks</p> <p>Q.6 –11 Marks</p>		



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FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14A5ML3		Subject Name	ELECTIVE-VII Machine Learning-I					
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
Objective:									
To Understand the students how machine learning is useful in solving real world problems. To Understand how to build and evaluate Models for different classification problems. To Understand how prescriptive analytics techniques are used by organization.									
Pre-requisites:									
Basic Knowledge of Statistics and basic programming knowledge									
Learning Outcome:									
After completing this course, students should be able to:									
<ul style="list-style-type: none"> ✓ Understand types of Machine Learning algorithms and framework for building machine learning models ✓ Construct Decision Tree and generate rules using decision tree ✓ Find out optimal solution to a problem by using Prescriptive analytics 									
Content:									
Unit	SECTION – I								Hrs
1	Introduction to Machine Learning Introduction to Analytics and Machine Learning, Why Machine Learning? Framework for developing Machine Learning Models, Python Stack for Data Science, Applications of Machine learning, Classification of Machine Learning algorithms, Supervised learning, Unsupervised								10

	learning, Reinforced learning and Evolutionary learning, Python libraries suitable for Machine Learning, Supervised Learning Algorithms with applications in Predictive Analytics, building a Simple Regression Model, Model Diagnostics, Making prediction and Measuring Accuracy, Developing multiple linear regression model using Python, Making prediction on the Validation Set. , Performance measures, Confusion matrix, accuracy. Error rate, Type-I error, Type-2 error, Sensitivity, Specificity, Precision, ROC curve, AUC.	
2	Supervised Learning Algorithms with applications in Classification Problems Introduction to classical problems and different types of machine learning algorithms for Classification problems, Introduction to Binary Logistic Regression, Estimation of Parameters in Logistic Regression, Interpretation of Logistic Regression Parameters, Logistic Regression Model Diagnostics, Classification Table, Optimal Cut-Off Probability, Variable selection in Logistic Regression, Gain Chart and Lift Chart, Application of Logistic Regression. Implementation of Logistic Regression, encoding categorical features, Splitting Dataset into Training and Test Sets, Building Logistic Regression Model, Printing Model Summary, predicting on Test data, Measuring performance of the Model.	13
SECTION – II		
3	Introduction to Decision Trees Chi-Square Automatic Interaction Detection(CHAIID), Classification and Regression Tree, Cost Based Splitting Criteria, Decision tree learning, Splitting the dataset, Building Decision Tree Classifier using Gini Criteria, Measuring Test Accuracy, Displaying the tree, Understanding Gini Impurity, Building Decision Tree using Entropy criteria, Finding Optimal criteria and Max depth, Benefits of Decision Tree.	11
4	Prescriptive Analytics Introduction to Prescriptive Analytics, Linear Programming, Linear Programming(LPP) Model Building, Assumptions of Linear Programming, Sensitivity analysis in LPP, solving a Linear Programming Problem Using Graphical Method, Range of Optimality, Range of Shadow Price, Dual Linear programming, Primal-Dual Relationships, Multi-Period Models, Branch and Bound algorithms, Branching Strategies in branch and bound algorithm, Multi-Criteria Decision-Making Problems.	11
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Reference Books:		
1	Kumar, U. D. (2017). <i>Business Analytics: The Science of Data-driven Decision Making</i> . Wiley India.	
2	Kumar, U.D et al. machine Learning Using Python. Wiley India.	
3	Carbonell, J. G., Michalski, R. S., & Mitchell, T. M. (1983). An overview of machine learning. In <i>Machine learning</i> (pp. 3-23). Morgan Kaufmann.	

4	Harrington, P. (2012). <i>Machine learning in action</i> . Manning Publications Co.
Web Reference:	
1	https://www.coursera.org/learn/machine-learning
2	https://www.udacity.com/course/intro-to-machine-learning--ud120
Question Paper Scheme:	
	<p>University Examination Duration: 3 Hours</p> <p>Note for Examiner: -</p> <p>(I) Questions 1 and 4 are compulsory with no options.</p> <p>(II) Internal options should be given in questions 2, 3, 5 and 6.</p> <p>SECTION - I</p> <p>Q.1 –8 Marks</p> <p>Q.2 –11 Marks</p> <p>Q.3 –11 Marks</p> <p>SECTION - II</p> <p>Q.4 –8 Marks</p> <p>Q.5 –11 Marks</p> <p>Q.6 –11 Marks</p>



GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year			2019-20		Effective for the batch Admitted in			June 2018	
Subject Code	P14A5BDA3		Subject Name		ELECTIVE -VII BIG DATA ANALYTICS-III				
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
Objective:									
The main objective of this course student will learn how to program in R and how to use R for effective data analysis. Student will learn how to install and configure software necessary for a statistical programming environment and describe generic programming language concepts as they are implemented in a high-level statistical language.									
Pre-requisites:									
Basic mathematical background, fundamental knowledge of mathematical and statistical computations, Simulations and data analysis and data science and modeling. Hands on experience with Miktext, Latex and markdown, HTML, CSS and working of Web application.									
Learning Outcome:									
After completing this course, students should be able to:									
<ul style="list-style-type: none"> ✓ Understand the basics in R programming in terms of constructs, control statements, string functions ✓ Understand the use of R for Big Data analytics ✓ Learn to apply R programming for Text processing ✓ Able to appreciate and apply the R programming from a statistical perspective. 									
Content:									
Data Manipulation Using R									
Unit									Hrs
	SECTION – I								
1	Introduction to R & Vector: Introducing to R: R Data Structures, Help functions in R Vectors: Scalars, Declarations, Recycling, Common Vector Operations, Using all() and any(), Vectorized Operations, NA and NULL Values, Filtering, Vectorized if-then else,								12

	Vector Equality, Vector Element Names	
2	<p>Matrices, Arrays and Lists Matrices, Arrays: Creating Matrices, Matrix Operations, Applying Functions to Matrix Rows and Columns, Adding and Deleting Matrix Rows and Columns Vector/Matrix Distinction, Avoiding Dimension Reduction, Higher-Dimensional Arrays Lists: Creating Lists, General List Operations, Accessing List Components and Values, Applying Functions to Lists, Recursive Lists</p>	10
SECTION – II		
3	<p>Data Frames, Factors and Tables, R Programming Structures Data Frames: Creating Data Frames, Matrix-Like Operations in Frames, Merging Data Frames, Applying Functions to Data Frames Factors and Tables: Factors and Levels, Common Functions Used with Factors, working with Tables, Other Factor and Table-Related Functions R Programming Structures: Control Statements, Arithmetic and Boolean Operators and Values, Default Values for Arguments, Returning Boolean Values, Functions Are Objects, Environment and Scope Issues, Writing Upstairs, Recursion, Replacement Functions, Tools for Composing Function Code, Math and Simulations in R</p>	12
4	<p>Object-Oriented Programming, Input/output & String Manipulation and Graphics: Object-Oriented Programming: S3 Classes, S4 Classes, Managing Your Objects Input/Output: Accessing Keyboard and Monitor, Reading and Writing Files, Accessing The Internet String Manipulation and Graphics: Creating Graphs, Customizing Graphs, Saving Graphs To Files, Creating Three-Dimensional Plots</p>	11
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Reference Books:		
1	Norman Matloff , “The Art of R Programming: A Tour of Statistical Software Design”, NoStarch Press, 2011	
2	Jared P. Lander, “R for Everyone: Advanced Analytics and Graphics”, Addison-Wesley Data& Analytics Series, 2013	
3	Mark Gardener, “Beginning R – The Statistical Programming Language”, Wiley, 2013.	
4	Robert Knell, “Introductory R: A Beginner's Guide to Data Visualization, Statistical Analysis and Programming in R”, Amazon Digital South Asia Services Inc, 2013	
Web Reference:		
1	https://data-flair.training/blogs/object-oriented-programming-in-r/	
2	https://www.tutorialspoint.com/r/index.htm	
Question Paper Scheme:		
	<p>University Examination Duration: 3 Hours Note for Examiner: - (I) Questions 1 and 4 are compulsory with no options. (II) Internal options should be given in questions 2, 3, 5 and 6. SECTION - I</p>	

	Q.1 –8 Marks Q.2 –11 Marks Q.3 –11 Marks SECTION - II Q.4 –8 Marks Q.5 –11 Marks Q.6 –11 Marks
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FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2018			
Subject Code	P14A5CSF3		Subject Name		CYBER SECURITY AND FORENSIC-II				
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

Objective:

To become aware of different aspects of securities in the context of web applications

Pre-requisites:

Basic knowledge of Metasploit framework.

Client and Server Scripting technology.

Coding of Java Script, PHP script

Any computer programming language

Learning Outcome:

To understand different types of web application attacks.

To understand use metasploit framework for securing web.

To understand to apply several testing to check security on web application.

Content:

Unit		Hrs
	SECTION – I	
1	<p>Input Validation Testing</p> <p>Testing for Reflected Cross Site Scripting, Testing for Stored Cross Site Scripting, Testing for HTTP Verb Tampering, Testing for HTTP Parameter pollution, Testing for SQL Injection, Testing for LDAP Injection, Testing for XML Injection, Testing for Code Injection</p> <p>vulnerability scanner:</p> <p>The Basic Vulnerability Scan, Scanning with NeXpose, Scanning with Nessus, Specialty Vulnerability Scanners, Using Scan Results for Auto ping</p>	23

	<p>Exploitation: Basic Exploitation, Exploiting Your First Machine, Exploiting an Ubuntu Machine, All-Ports Payloads: Brute Forcing Ports, Resource Files, Wrapping Up</p> <p>Meterpreter: Compromising a Windows XP Virtual Machine, Dumping Usernames and Passwords, Pass the Hash, Privilege Escalation, Token Impersonation, Using ps, Pivoting onto Other Systems, Using Meterpreter Scripts, Leveraging Post Exploitation Modules, Upgrading Your Command Shell to Meterpreter, Manipulating Windows APIs with the Railgun, Wrapping Up</p>	
SECTION – II		
2	<p>Session Management Testing Testing for Bypassing Session Management Schema, Testing for Cookies attributes, Testing for Session Fixation, Testing for Exposed Session Variables, Testing for Cross Site Request Forgery (CSRF), Testing for logout functionality, Test Session Timeout.</p> <p>Client Side Testing Testing for Client Side URL Redirect, Testing for Clickjacking, Test Cross Origin Resource Sharing, Testing for Spoofable Client IP address</p>	22
Practical Content:		
List of programs specified by the subject teacher based on above mentioned topics		
Reference Books:		
1	Metasploit The Penetration Tester’s Guide - David Kennedy, Jim O’Gorman, Devon Kearns, and Mati Aharoni	
2	The Web Application Hecker’s Handbook 2 – Dafydd Stuttard , Marcus Pinto	
Question Paper Scheme:		
	<p>University Examination Duration: 3 Hours Note for Examiner: - (I) Questions 1 and 4 are compulsory with no options. (II) Internal options should be given in questions 2, 3, 5 and 6.</p> <p>SECTION - I Q.1 –8 Marks Q.2 –11 Marks Q.3 –11 Marks</p> <p>SECTION - II Q.4 –8 Marks Q.5 –11 Marks Q.6 –11 Marks</p>	



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FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications				Branch/Spec.	Master of Computer Applications			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year			2019-20		Effective for the batch Admitted in			June 2018	
Subject code	P14A5CC3		Subject Name		Amazon Web Services				
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
Objectives									
Students can understand and hands on different types of concepts and services for cloud computing using Amazon Web Services (AWS).									
Pre-requisites									
Operating System Concepts, Computer Network Concepts, Programming concepts, Cloud Computing Concepts									
Learning Outcome									
Students successfully completing this course will be able to understand terminology and concepts of AWS platform, Amazon Web Services for computer, network, storage, database, analytics, and applications.									
Theory syllabus									
Unit	Content								Hrs
SECTION – I									

1	Amazon Web Services (AWS) Basics Introduction, Basic Architecture of AWS, Management Console, Console Mobile App, Account, Identity Access Management (IAM)	6
2	Amazon Computer Services Elastic Compute Cloud EC2, Auto Scaling and Elastic Load Balancing (ELB), WorkSpaces, Lambda	6
3	Amazon Network Services Virtual Private Cloud (VPC), Route 53, Direct Connect	6
4	Amazon Storage Services Amazon S3, Elastic Block Store (EBS), Storage Gateway, CloudFront	5
SECTION – II		
5	Amazon Database Services Relational Database Service, DynamoDB, Redshift, Aurora, ElastiCache	7
6	Amazon Analytics Services Kinesis, Elastic MapReduce (EMR), Data Pipeline, Machine Learning	7
7	Amazon Application Services Simple Workflow Service, WorkMail, Simple Queue Service (SQS), Simple Notification Service (SNS), Elastic Transcoder	8
Reference Books		
1	Amazon Web Services For Dummies, by Bernard Golden, Published by: John Wiley & Sons	
2	Learning AWS Design, build, and deploy responsive applications using AWS cloud components Aurobindo Sarkar Amit Shah, Published by Packt Publishing Ltd.	
3	Amazon Web Services In Action, Michael Wittig, Andreas Wittig, Manning Publications Co.	
Web References		
1	https://aws.amazon.com/	

2	https://docs.aws.amazon.com/
3	https://www.tutorialspoint.com/amazon_web_services/
4	https://www.javatpoint.com/aws-tutorial

Question Paper Scheme:

University Examination Duration: 3 Hours

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION - I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks