Govt. Digvijay Autonomous PG College Rajnandgaon(CG)

SCHEME OF EXAMINATION
&
SYLLABUS

FOR

THE FOUR-YEAR UNDERGRADUATE PROGRAMME

(FYUGP)

As per provision of NEP-2020 to be implemented from Academic Year 2022 onwards

BACHELOR OF COMPUTER APPLICATION
(BCA- 5TH & 6TH) SEMESTER EXAM

UNDER

DEPARTMENT OF COMPUTER APPLICATION

SESSION – 2024-25

(APPROVED BY BOARD OF STUDIES)

Govt. Digvijay Autonomous PG College , Rajnandgaon(CG)

Department of Computer Application

Session – 2024 -25

List of Members of Board of Studies(BOS)

S.No	Name of Member	Nominee Type	Signature
1	Mrs. Hempushpa	Chairman	
2	Dr. Durga Prasad Rao	VC Nominee	
3	Prof. Gulame Mustafa Ansari	Principal Nominee	
4	Prof. Shailendra Arya	Principal Nominee	25/9/24
5	Mr. Anshu Ramteke	Adviser Member	
6	Ms. Nadini sahu	Ex-Student	

Session – 2024-25

BCA- V Semester

S. No	Course Type	Course-code	Subject	Periods			Credit	Theory Marks	Interna Marks	Total Marks	
				L	T	P				Max	Min
1	DSC-XIII	UBCCT501	Dot net technology	3	0	0	3	80	20	100	40
		UBCCL501	Lab Dot net technology	0	0	1	1	40	10	50	17
2	DSC-XIV	UBCCT502	Software Engineering	3	1	0	4	80	20	100	40
3	DSC-XV	UBCCT503	Statistical Analysis	3	1	0	4	80	20	100	40
4	DSE-III	UBCG504	Mobile & wireless communication	3	1	0	4	80	20	100	40
5	GE- III	UBCGT504	E-commerce and Application	3	1	0	4	80	20	100	40
6	SEC-V	UBSEC512	Choose one from pool of SEC	2	0	0	2	40	10	50	17
TOTAL				18	2	2	22	-	-	600	-

BCA- VI Semester

S. No	Course Type	Course-code	Subject	Periods			Credit	Theory Marks	Interna Marks	Total Marks	
				L	T	P				Max	Min
1	DSC-XVI	UBCCT601	Basic's Computer Graphics	3	1	0	4	80	20	100	40
2	DSC-XVII	UBCCT602	Programming in python	3	0	0	3	80	20	100	40
		UBCCL602	Lab python	0	0	1	1	40	10	50	17
3	DSC-XVIII	UBCCT603	TOC	3	1	0	4	80	20	100	40
4	DSE-IV	UBCGE604	Internet of things	3	1	0	4	80	20	100	40
5	GE- IV	UBCGT604	Basic's IOT	3	1	0	4	80	20	100	40
6	SEC-VI	UBSEC612	Choose one from pool of SEC	2	0	0	2	40	10	50	17
Total				17	4	1	22	-		600	

DSC- Discipline Specific Course,
DSE- Discipline Specific Elective
AEC-Ability Enhancement Core Course,
SEC- Skill Enhancement Course,
GE- Generic Elective,
VAC- Value Added course

MINIMUM PASS MARKS 40%

Section	Maximum Marks (80)		Maximum Marks (40)	
A	2 x 8 = 16	Very short answer type questions consisting 8 questions of 2 marks, two question from each unit.	8 x 5 = 40	8 questions of 8 mark each, out of which any 5 question to be answer.
B	6 x 4 = 24	Short answer type questions consisting 4 questions of 6 marks each, one question from each unit with internal choice.		
C	10 x 4 = 40	long answer (Descriptive) type questions consisting 4 questions of 10 marks each, one question from each unit with internal choice		

SYLLABUS OF 4 YEARS UG PROGRAM (FYUGP) IN
COMPUTER APPLICATION,
GOVT. DIGVIJAY AUTONOMOUS P G COLLEGE,
RAJNANDGAON,

AS PER NEP 2020 (SEMESTER-V AND VI)

Program Objective(PO)

Po1- The Program objective of this course make students familiar with the use of .Net Framework and concept of .NET and enable communication and data transfer between devices without the need for physical, wired connections.

Po2- Software engineering that prepares agility in solving software and system challenges with a comprehensive set of skills appropriate to the needs of the dynamic global computing-based society.

Po3- The necessary mathematical techniques to prove more advanced attributes of these models.

Po4– Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Po5- The Internet of Things (IoT) is aimed at enabling the interconnection and integration of the physical world and the cyber space.

Program Specific Outcome (PSO)

PSO1- Implement Basic language and their advanced features like event handling, exception handling.

PSO2- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

PSO3-Through mobile communication and wireless network analyze various routing algorithms used in mobile/wireless networks.

PSO4- Compare and evaluate different computer graphics techniques based on performance, aesthetic and implementation difficulty

PSO5- Define the Structure and Components of a Python Program

Department of Computer Application

BCA- V Semester

DSC – XIII Dot Net Technology

Session 2024-25	**Programme- UG**
Semester - V	**Subject- Dot Net technology**
Course Type - DSC	**Course Code- UBCCT501**
Credit – 3+1=4	**Lecture -60**
MM - 100	**Min Marks-40**

Course Title	**Dot Net technology**
Course Objective	The primary objective of this course is to provide concepts of .NET framework and different concepts of vb.net, C# programming language and make students familiar with their uses and applications..

Course Learning Outcome	After completion of course the students will able to:- • To implement basic language • To create classes and objects and to implement different object oriented features • To implement inheritance, advanced features like delegates, event handling, lambda expressions, exception handling

Unit	Lecture	Contents/Topic	Credits
I	14	**Introduction:** Overview of .Net framework, Features of .Net, CLR, Common Language Specification, JIT compilation, MSIL, Namespace, FCL, Assemblies, Common Type System, Cross-Language Interoperability, Garbage Collection. Data types of variables, Constant, Type Conversions, Operators, Control Structure: Conditional Statement, loops (Do...loop, for loop, while loop, for --Next loop), arrays, Declaring arrays and dynamic arrays, Types, Structure, Enumeration, Sub Procedure, Functions.	04
II	15	**Windows Forms:** Working with visual Studio IDE ,creating a .NET Solution, simple forms, MDIforms, windows forms: Control class, Text Box, Rich textboxes, Labels, Button, Checkbox , Radio Button, Panels, Group box, List box, Checked list box, Combo box , Picture box, Timer, Scrollbar, Timer, Trackbar, Progress bar. Message box, Function, Message Box. Show Method, Input box function, Creating MDI application. Menus, creating Menu, sub menu items, Context menu	
III	15	**Class and objects**, creating classes, objects, creating data member, creating class shared data member, shared methods, shared properties , overloading methods and properties, with statement, constructor, Destructor, inheritance, overriding base class member, inheriting constructor, overloading base class member.	
IV	16	Database concept, Ado.net Architecture, .Net Data Provider (Connection class: OledbConnection, SQL Connection, Command class: SQL command class, OleDbCommand class, Data Adaptor class, Data Reader class), Dataset Component, Creating Database application using windows forms (DB connectivity through ADO.net), accessing data from database, navigate in data, working with Data Grid.	
Total	**60**	**04 Unit**	

Dot Net Technology Lab

1.Scheme of Examination:-

Practical examination will be of 3 hours duration. The distribution of practical marks will be as follows

Program 1	**-5**
Program 2	**-5**
Program 3	**-5**
Viva	**-10**
(Practical Copy+ Practical Sessional)	**-15**
Total	**-40**

2. In every program there should be comment for each coded line or block of code.
3. Practical files should contain printed program with name of author, date,path of program, unit no and printed output.
4. All the following programs or a similar type of programs should be prepared.

List of Pratical

1. WAP to find maximum between three numbers.
2. To check whether a number is negative, positive or zero.
3. To check whether a character is alphabet or not.
4. To find all roots of a quadratic equation.
5. Design an application to input marks of five subjects Physics, chemistry, Biology, Maths and computer. Calculate percentage and grade.

   Percentage >
   90% : Grade A
   Percentage >=
   80% : Grade B
   Percentage >
   70% : Grade C
   Percentage >60%
   : Grade D
   Percentage >= 40% : Grade E Percentage < 40%: Grade F
6. Write a program to convert decimal to binary number system using bitwise operator.
7. Write a program to swap two numbers using bitwise operator
8. Write a program to create Simple Calculator using select case.
9. Write a program to check whether a number is Armstrong number or not
10. Design a digital clock using timer control.
11. Design an application that accepts the item name from the user and add it to a list box and combo box.
12. Create an application that offers various food items to select from check boxes and a mode of payment using radio button. It then display the total amount payable.
13. Create an application to implement the working of Context menu on textbox
14. WAP to illustrate all functionalities of list box and combo box.
15. WAP using check names for the following font effects Bold Italic Underline Increase Font size Decrease Font size Font Color
16. WAP for temperature conversion using radio button.
17. WAP to launch a rocket using Picture Box and Timer control
18. WAP to change the back color of any control using scroll box.
19. WAP to search an element for one dimensional array.

30. Design a menu such that it contain submenu such as Addition, Subtraction, Scalar Multiplication, Transpose of two metrics.

31. Design the following application using radio button and checkbox:

32. Design an application to create the Payroll form shown below. Number of hours well as the appropriate rate.

Gross salary = rate* hours.

Net salary = gross salary - deductions.

33. Develop an application which is similar to notepad using menus.

34. Develop an application for facilitating purchasing order

35. Develop an application for billing system in coffee shop

36. Develop an application which is similar to login form

37. Define a class account include following data members: Name of the depositor account no, type of Account, balance amount, Member Functions: To deposit an amount, To withdraw an amount after checking balance, to show balance also provide proper validation wherever necessary write a main program to test above class

38. Develop a project which display the student information in the relevant field from the database which already exist.

39. Create a class circle with data member radius provide member function to calculate area driver class fare from class circle provide member function to calculate volume derived class cylinder from class is fair with additional data member for height and member function to calculate volume

30. consider an example for declaring the examination result design 3 classes student exam result the student class has data member such as representing roll number name of subject create the class exam which contain the data member representing name of subject minimum marks maximum marks obtained marks for 3 subject derived class result from both students and exam classes test the results class in main function

31. write a program that implement the concept of encapsulation

32. write a program to demonstrate concept of polymorphism function overloading and constructor overloading

33. Create a class student having data member to store roll number name of the student name of three subject Max marks, Min marks, obtained marks. Declare an object of class student. Provide facilities to input data in data members and display result of students.

34. Create a class student having data members to store roll number name of Student name of a subject Max marks, min marks, obtained marks declare array of object to hold data of three students. Provide facilities to display result of all students provide also facility to display the result of specific student whose roll number is given.

35. Create a class array having an array of integer having five elements at data member provide following facilities:

a) constructor to get number in array element
b) sort the elements
c) find the largest element
d) search the present of particular value in an array element.

36. Write a program to display records of table using eing data adaptor and code for items buttons to move at first record next record previous record last record in the table.

37. Create a table for employee write a program using data set to add delete edit and navigate records.

38. Write a program to access a database using ado.net and display key column in the combo box or list box when an item is selected in it its corresponding records is shown in data grid control.

Department of Computer Application

BCA- V Semester

DSC – XIV Software Engineering

Session 2024-25	Programme- UG
Semester - V	Subject- Software Engineering
Course Type - DSC	Course Code- UBCCT502
Credit – 3+1=4	Lecture -60
MM – 100	Min Marks-40

Course Title	Software Engineering
Course Objective	The course's goal is to provide a professionally guided education in software engineering that prepares agility in solving software and system challenges with a comprehensive set of skills appropriate to the needs of the dynamic global computing-based society.
Course Learning Outcome	After completion of course the students will able to:- • Acquires skills and knowledge to support a professional pathway, including communication, analytic, and technical skills. • An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. • An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Unit	Lecture	Contents/Topic	Credits
I	15	Introduction to software engineering, software engineering principles, software process, process framework, Umbrella activities, Process adaptation, software crisis, process model – Waterfall model, prototype model, Increment Model, Spiral Model, RAD Model.	04
II	15	Requirement engineering, Analysis Model- DFD, ERD, Decision Table, software requirement specification, Structure of SRS, pseudo code, Software design: Design process, design concept- Abstraction, partitioning,Modularity, information hiding, refinement, refactoring, function oriented design, object oriented design, cohesion, coupling.	
III	15	Software Metrics, software quality assurance,Programming Style : Structured programming, coding standard, internal documentation, Software testing: testing techniques: White box, black box, cyclomatic complexity, Test plan, Debugging- Debugging procee, debugging strategie.	
IV	15	Risk management: software risk, risk identification, Introduction to software maintenance, Categories of maintenance, Belady & Lehman Model, Boehm Model, Project Management concept:people, product, process, project, software team, software project planning, Software project estimation, cost estimation model (COCOMO, Putnam-slim, Watson and feliix), software reengineering.	
Total	60	04 Unit	

Department of Computer Application

BCA- V Semester

DSC – XV Statistical Analysis

Session 2024-25	Programme- UG
Semester – V	Subject- Statistical Analysis
Course Type – DSC	Course Code- UBCCT503
Credit – 3+1=4	Lecture -60
MM – 100	Min Marks-40

Course Title	Statistical Analysis
Course Objective	The main goal of this program, a student would have in depth understanding of the key statistical, mathematical, computer programming & economics concepts to have a strong knowledge base in Analytics domain.
Course Learning Outcome	After completion of course the students will able to:- • Students will be introduced to the concepts of Data Science and Analytics with an emphasis on the applications • Students will learn to apply various statistical theories to solve real life situations by doing projects • They will be able to perform well in group and develop professional presentation skills

Unit	Lecture	Contents/Topic	Credits
I	15	UNIT-I: COMBINATORICS: Permutation and Combination, Repetition an Constrained Repetition, Binomial Theorem. Frequency distribution, Histogra and frequency polygons, Measures of central tendency: Mean, Mode, Media Dispersion, Mean deviation and standard, deviation Moments, Skewnes kurtosis	04
II	15	UNIT-II: Elementary probability theory: Definition, conditional probability, Probability distribution , mathematical expectation. Theoretical distribution: Binomial, Poisson and Normal distribution, relation between the binomial, poisoned Normal distribution.	
III	15	UNIT-III: Correlation and Registration:Linear Correlation, Measure of Correlation, Least Square Regression lines.Curve fitting: Method of least square, least square line, least squares Parabola. Chi-square test: definition of chi-square; signification test: contingency test, coefficient of contingency.	
IV	15	UNIT-IV: Basics of sampling theory : sample mean and variance, students t-test, test of Hypotheses and significance, degree of freedom, Z-test, small and large sampling, Introduction of Monte Carlo method.	
Total	60	04 Unit	

Department of Computer Application

BCA- V Semester

DSE– III Mobile & Wireless communication

Session 2024-25	**Programme- UG**
Semester - V	**Subject- Mobile & wireless communication**
Course Type - DSE	**Course Code- UBCCG504**
Credit – 3+1=4	**Lecture -60**
MM - 100	**Min Marks-40**

Course Title	**Mobile & wireless communication**
Course Objective	The purpose of a wireless network is to enable communication and data transfer between devices without the need for physical, wired connections.
Course Learning Outcome	After completion of course the students will able to:- • Identify the issues in transport and application layers. • understand the new trends in mobile/wireless communications networks • analyze various routing algorithms used in mobile/wireless networks. • Test the performance of various wireless protocols.

Unit	Lecture	Contents/Topic	Credits
I	15	**UNIT-I:** Data communication :Definition, Mode – Half/full duplex, Transmission mode, Switching, Network topology, OSI reference model, Network protocol(TCP?IP).	04
II	15	**UNIT — II** Introduction Mobile & wireless device, history, application, wireless transmission, signals, antennas, signal propogation, multiplexing, modulation, Wireless LAN & WAN, spread spectrum, celluar system, MAC.	
III	15	**UNIT — III** Telecommunication & Broadcast System GSM, mobile service, system architecture, GSM subnets, GSM Communication frames, Security, new data service, satellite system application, GEO, LEO, MEO, routing, localization, broadcast system.	
IV	15	**UNIT—IV** Wireless LAN, infrared vs radio transmission, infrastructure& adhoc networks, IEEE 802.11, MAC frames, MAC Management, roaming, HIPERLAN, Bluetooth, application, physical layer, modes MAC layer, packet format, networking security, link management, GPRS.	
Total	60	04 Unit	

Department of Computer Application
GE – III E commerce & Application

Session 2024-25	Programme- UG
Semester - III	Subject- E commerce & application
Course Type - GE	Course Code- UBCGE504
Credit – 3+1=4	Lecture -60
MM - 100	Min Marks-40

Course Title	**E-commerce & Application**
Course Objective	E-Commerce means that utilizing Internet and the web services to the transaction of the business and the transaction of the commercial purposes that typically involved exchanges of the values all over the organization and the individuals' boundary in return to the services and the products.
Course Learning Outcome	After completion of course the students will able to:- • Analyze the impact of E-commerce on business models and strategy. • Describe the major types of E-commerce. • Explain the process that should be followed in building an E-commerce presence. • Identify the key security threats in the E-commerce environment.

Unit	Lecture	Contents/Topic	Credits
I	15	Unit I – Introduction of E commerce, electronic market, Electronic data interchange, EC Framework and EC Classification , EC Business Models, Benefits and Limitations of EC E Marketplace, Types of E Marketplace, Intermediation in E-Commerce, EC Market Mechanisms – Electronic Catalog and Auctions, Impact of EC on Business Processes and Organizations	04
II	15	Unit II- Internet Marketing and Electronic Retailing, E-Tailing Business Models, Problems and Issues in E-Tailing, Web Advertising, Advertising Methods, Advertising Strategies B2B E-Commerce: Concepts, Characteristics and Models One to Many: Sell Side EMarketplaces, Selling via Intermediaries, Selling via Auctions	
III	15	Unit III- Electronic Payments Systems: Payment Revolution, Using Payment Cards Online, Smart Cards, Stored Value Cards, E-Micropayments, E Checking, Electronic Bill Presentment and Payment, B2B Electronic Payments	
IV	15	Unit IV-Mobile Commerce: Mobile Computing, Mobile Commerce, Pervasive Computing Legal, Ethical and Social Impacts of EC: Legal Issues versus Ethical Issues, Privacy, Intellectual Property Rights, EC Fraud and Consumer and Seller Protection.	
Total	60	04 Unit	

Department of Computer Application

V Semester

SEC – V (PHP with MySQL-I)

Session 2024-25	**Programme- UG**
Semester - V	**Subject- PHP with MySQL-I**
Course Type - SEC	**Course Code-**
Credit – 2	**Lecture -30**
MM - 50	**Min Marks-17**

Course Title	**PHP with MySQL-I**
Course Objective	The objective of the PHP is a widely used programming language which works on the principal of server-side scripting to produce dynamic Web pages. To introduce how PHP can be combined with MySQL to integrate database functions into Websites
Course Learning Outcome	After completion of course the students will able to:- • To implement PHP script using Decisions and Loops • To develop PHP applications using Strings, Arrays and Functions. • To design object-oriented programming (OOP) principles for PHP and use HTML form elements that work with any server-side language. • To display and insert data using PHP and MySQL

Unit	Lecture	Contents/Topic	Credits
I	15*2	Embedding PHP in web pages, redirecting output to browser, data types, expressions, control structures; Functions– Creation, passing arguments ,default argument values, returning values, recursive functions; Arrays-Creating,processing,sorting, merging, slicing, splicing, and dissecting arrays. Constructors, static class members, auto loading objects, inheritance, interfaces, abstract classes, error logging, exceptional handling; Strings - regular expressions and other string functions. Introduction to MySQL - Data types, attributes, working with databases, working with tables, altering table structure; Database Connectivity-Using the MYSQLI extension, setting up the connection, handling errors, querying the database, working with prepared statements, auto commit mode, committing and rolling back a transaction.	02
Total	**30**		

Department of Computer Application
BCA- VI Semester
DSC – XVI Basic's Computer Graphics

Session 2024-25	Programme- UG
Semester – VI	Subject- Basic's Computer Graphics
Course Type – DSC	Course Code- UBCCT601
Credit – 3+1=4	Lecture -60
MM – 100	Min Marks-40

Course Title	Computer Graphics
Course Objective	It's used in digital photography, film and television, video games, and on electronic devices and is responsible for displaying images effectively to users. Think of computer graphics as the intersection of design and computer science, with the purpose of delighting and engaging audiences.
Course Learning Outcome	After completion of course the students will able to:- • To implement various algorithms to scan, convert the basic geometrical primitives, transformations and clipping. • construct and manipulate complex models, geometries and scene graphs in both 2D and 3D • implement computer graphics algorithms in a shader language • compare and evaluate different computer graphics techniques based on performance, aesthetic and implementation difficulty

Unit	Lecture	Contents/Topic	Credits
I	15	Introduction, What is computer Graphics?, Area of Computer Graphics, Design and Drawing, Animation Multimedia applications, Simulation, How are pictures actually stored and displayed, Difficulties for displaying pictures.Cathode Ray Tube, Quality of Phosphors, CRTs for Color Display, Beam Penetration CRT, The Shadow - Mask CRT, Direct View Storage Tube, Tablets, The light Pen, Three Dimensional Devices.	04
II	15	Point Plotting Techniques, Qualities of good line drawing algorithms, The Digital Differential Analyzer (DDA), Bresenham's Algorithm, Generation of Circles. What is transformation?, Matrix representation of points.	
III	15	Basic transformation, Need for Clipping and Windowing, Line Clipping Algorithms, The midpoint subdivision Method, Other Clipping Methods, Sutherland - Hodgeman Algorithm, Viewing Transformations.	
IV	15	THREE DIMENSIONAL GRAPHICS Need for 3-Dimensional Imaging, Techniques for 3-Dimesional displaying, Parallel Projections, Perspective projection, Intensity cues, Stereoscope effect, Kinetic depth effect, Shading. Solid Area Scan Conversion, Scan Conversion of Polygons, Algorithm Singularity.	
Total	60	04 Unit	

Department of Computer Application

BCA- VI Semester

DSC – XVII Python programming

Session 2024-25	Programme- UG
Semester - VI	Subject- Python programming
Course Type - DSC	Course Code- UBCCT602
Credit – 3+1=4	Lecture -60
MM - 100	Min Marks-40

Course Title	Python programming
Course Objective	Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.
Course Learning Outcome	After completion of course the students will able to:- • Define the Structure and Components of a Python Program. • Demonstrate proficiency in handling of loops and creation of functions. Identify the methods to create and manipulate lists, tuples and dictionaries. • Discover the commonly used operations involving regular expressions and file systems.

Unit	Lecture	Contents/Topic	Credits
I	15	**Introduction to Python** :-Installing Python, basic syntax, interactive shell, editing saving and running a script; The concept of data types, variables, assignments; immutable variables; numerical types, operators(Arithmetic Operator, Relational Operator, Logical or Boolean Operator, Assignment Operator, Ternary Operator, Bitwise Operator, Increment or Decrement Operator) and expressions; comments in the program, understanding error messages.	04
II	15	Creating Python Programs: - Input and Output Statements, Control Statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass). Function : Defining a function, calling a function, types of function, Function Arguments, Anonymous Functions, global and local variables, Recursion	
III	15	Strings and Text Files: - Manipulating files and directories, os and sys modules, text files: reading/writing text and numbers from/to a file, creating and deleting a formatted file, String Manipulations: subscript operator, indexing, slicing a string; strings and number system: converting string to numbers and vice-versa, Binary, octal and hexadecimal numbers.	
IV	15	Lists, Tuples and Dictionaries :Basic list operators, replacing, inserting and removing an element, searching and sorting lists, Accessing tuples, Working Functions and Methods, dictionary literals, Adding and Removing keys, accessing and replacing values, traversing dictionaries.Data Structures using Lists: Elementary Data Representation- Linear List Array, Stacks, Queues, Linked Lists, and Trees. Modules: - Importing module, Math module, packages, Composition,Exception Handling: Exception, Exception Handling, except clause, try, finally clause, User-Defined Exceptions.	
Total	60	04 Unit	

25

Python Programming Lab

1 Scheme of Examination

Practical examination will be of 3 hours duration. The distribution of practical marks will be as follows

Program 1	**8**
Program 2	**8**
Program 3	**8**
Viva	**10**
(Practical Copy + Practical Sessional)	**15**
Total	**40**

2. In every program there should be comment for each coded line or block of code
3. Practical files should contain printed program with name of author, date,path of program, unit no and printed output
4. All the following programs or a similar type of programs should be prepared.

List of Pratical

1. Write a program that reads an integer value and prints —leap year or —not a leap year.
2. Write a program that takes a positive integer a and then produces n lines of output shown as follows.
3. Write a program to create the following Pattern For example enter a size: 5

   *

   **

   **
4. ****
5. *****
6. Write a function that takes an integer n as input and calculates the value of 1 + 1/1! + 1/2! + 1/n!
7. Write a function that takes an integer input and calculates the factorial of that number,
8. Write a function that takes a string input and checks if it is a palindrome or not.
9. Write a list function to convert a string into a list, as in list (-abc) gives [a, b, c].
10. Write a program to generate Fibonacci series.
11. Write a program to check whether the input number is even or odd.
12. Write a program to compare three numbers and print the largest one.
13. Write a program to print factors of a given number.
14. Write a method to calculate GCD of two numbers.
15. Write a program to create Stack Class and implement all its methods, (Use Lists).
16. Write a program to create Queue Class and implement all its methods, (Use Lists)
17. Write a program to implement linear and binary search on lists,
18. Write a program to sort a list using insertion sort and bubble sort and selection sort.

Note: List of experiments may be changed by the concerned teacher.

Department of Computer Application

BCA- VI Semester

DSC –XVIII TOC

Session 2024-25	**Programme- UG**
Semester – VI	**Subject- TOC**
Course Type – DSC	**Course Code- UBCCT603**
Credit – 3+1=4	**Lecture -60**
MM – 100	**Min Marks-40**

Course Title	**TOC**
Course Objective	It introduces basic computation models, their properties and the necessary mathematical techniques to prove more advanced attributes of these models.
Course Learning Outcome	After completion of course the students will able to:- • Distinguish different computing languages and classify their respective types • Recognise and comprehend formal reasoning about languages • Show a competent understanding of the basic concepts of complexity theory

Unit	Lecture	Contents/Topic	Credits
I	15	UNIT I AUTOMATA FUNDAMENTALS Introduction to formal proof — Additional forms of Proof — Inductive Proofs –Finite Automata — Deterministic Finite Automata — Non-deterministic Finite Automata — Finite Automata with Epsilon Transitions	04
II	15	UNIT II REGULAR EXPRESSIONS AND LANGUAGES Regular Expressions — FA and Regular Expressions — Proving Languages not to be regular — Closure Properties of Regular Languages — Equivalence and Minimization of Automata	
III	15	UNIT III CONTEXT FREE GRAMMAR AND LANGUAGES CFG — Parse Trees — Ambiguity in Grammars and Languages — Definition of the Pushdown Automata — Languages of a Pushdown Automata — Equivalence of Pushdown Automata and CFG, Deterministic Pushdown Automata.	
IV	15	UNIT IV PROPERTIES OF CONTEXT FREE LANGUAGES Normal Forms for CFG — Pumping Lemma for CFL — Closure Properties of CFL — Turing Machines — Programming Techniques for TM, UNDECIDABILITY :- Non Recursive Enumerable (RE) Language — Undecidable Problem with RE — Undecidable Problems about TM	
Total	60	04 Unit	

25

Department of Computer Application

BCA- VI Semester

DSE– IV Internet of Things

Session 2024-25	**Programme- UG**
Semester - VI	**Subject- Internet Of things**
Course Type - DSE	**Course Code-**
Credit – 3+1=4	**Lecture -60**
MM - 100	**Min Marks-40**

Course Title	**Internet of things**
Course Objective	The Internet of Things (IoT) is aimed at enabling the interconnection and integration of the physical world and the cyber space. It represents the trend of future networking, and leads the third wave of the IT industry revolution. IoT covers a wide spectrum of applications, including the detailed real-time sensing of our environment and the embedding of connected intelligence into everyday objects.
Course Learning Outcome	After completion of course the students will able to:- • Identify the level of IOT stack and be familiar with the key technologies & protocol. • Apply the knowledge & skills acquired during the course to build and test a complete. • Working IOT system involving prototyping, programming and data analysis. •

Unit	Lecture	Contents/Topic	Credits
I	15	**UNIT-I:** Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, M2M and IOT technology fundamental - Device, gateways, local & wide area network, Everything as a service(Xaas),	04
II	15	**UNIT — II** : IOT Architecture: Introduction state of Art, Refrence Model& architecture, IOT refrence architecture, functional view, information view, deployment & operational view, PHY/MAC layer(3GPP MTC, IEEE802.11,IEEE 802.15), Z wave, Bluetooth, Zigbee smart energy, DASH7- Network layer- IPv4,IPv6, 6LoWPAN, DHCP,ICMP, RPL.	
III	15	**UNIT** — III Data Handling& Analytics: Introduction, Bigdata, Types of data, Characteristics of Big data, Data handling Technologies, Flow of data, Data acquisition, Data Storage, Introduction to Hadoop. Introduction to data Analytics, Types of Data analytics, Local Analytics, Cloud analytics and applications	
IV	15	**UNIT—IV** One M2M, European telecommunication, standard institute(ETSI),M2M(machine to machine), OMA, BBF- security in IOT protocol – Mac 802.15.4, Routing protocol for low power & lossy network, Application layer, Applications of IoT	
Total	**60**	04 Unit	

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Govt. Digvijay Autonomous PG College Rajnandgaon(CG)

Department of Computer Application

GE – IV Basic's IOT

Session 2024-25	**Programme- UG**
Semester - IV	**Subject-** Basic's IOT
Course Type - GE	**Course Code- UBCGE604**
Credit – 3+1=4	**Lecture -60**
MM - 100	**Min Marks-40**

Course Title	**Basic's IOT**
Course Objective	The Internet of Things (IoT) is aimed at enabling the interconnection and integration of the physical world and the cyber space. It represents the trend of future networking, and leads the third wave of the IT industry revolution. IoT covers a wide spectrum of applications, including the detailed real-time sensing of our environment and the embedding of connected intelligence into everyday objects.
Course Learning Outcome	After completion of course the students will able to:- • Understanding of various IOT application development tools. • implementation for IOT applications. • ability to develop problem solving skills through programming techniques for addressing real life problems

Unit	**Lecture**	**Contents/Topic**	**Credits**
I	**15**	Unit I – Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M.	**04**
II	**15**	Unit II- Sensors Networks : Definition, Types of Sensors, Types of Actuators, Examples and Working, IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components, Wireless Sensor Networks: History and Context, The node, Connecting nodes, Networking Nodes, WSN and IoT	
III	**15**	Unit III- Data Handling& Analytics: Introduction, Bigdata, Types of data, Characteristics of Big data, Data handling Technologies, Flow of data, Data acquisition, Data Storage, Introduction to Hadoop. Introduction to data Analytics, Types of Data analytics, Local Analytics, Cloud analytics and applications	
IV	**15**	Unit IV- Applications of IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.	
Total	**60**	**04 Unit**	

25/9/24

Department of Computer Application

VI Semester

SEC – VI (PHP with MySQL-II)

Session 2024-25	**Programme- UG**
Semester - VI	**Subject- PHP with MySQL-II**
Course Type - SEC	**Course Code-**
Credit – 2	**Lecture -30**
MM - 50	**Min Marks-17**

Course Title	**PHP with MySQL-II**
Course Objective	The objective of the PHP is a widely used programming language which works on the principal of server-side scripting to produce dynamic Web pages. To introduce how PHP can be combined with MySQL to integrate database functions into Websites
Course Learning Outcome	After completion of course the students will able to:- • To implement PHP script using Decisions and Loops • To develop PHP applications using Strings, Arrays and Functions. • To design object-oriented programming (OOP) principles for PHP and use HTML form elements that work with any server-side language. • To display and insert data using PHP and MySQL

Unit	Lecture	Contents/Topic	Credits
I	15*2	**Introduction to MySQL** - Data types, attributes, working with databases, working with tables, altering table structure; Database Connectivity-Using the MYSQLI extension, setting up the connection, handling errors, querying the database, working with prepared statements, auto commit mode, committing and rolling back a transaction. **List of Practical :-** 1. Creating web pages using different XHTML elements like lists ,images, tables, frames , form. 2. Formatting web pages using cascading style sheets 3. Creating dynamic web pages using form elements 4. Implementing various control structures using PHP script 5. OOP exercises using PHP 6. PHP application to handle forms 7. Database connectivity using PHP 8. CRUD operations on database using PHP Note: List of Practicals may be changed by the concerned teacher.	02
Total	**30**		

25/5/24