

B.Com. (Computer Application) – (BCCA)

Semester - III

Paper – I

Course Code – 3AE1

Course Name – Environmental Studies & Community Engagement

COURSE OUTCOMES	
CO1	Given information on basics of Environmental studies and its types students will be able to understand the importance of resources and will be able to apply in
CO2	Given information on Ecology students will be able to identify the threats to environment and also able to apply their knowledge to reduce it
CO3	Given information on pollutions and its effect student will be able to apply the knowledge to identify the types of pollution and their role in prevention of it
CO4	Given information on social issues and community engagement student will be able to apply their knowledge while doing ISR activities to guide the peoples in the society

UNIT - I

Multidisciplinary Nature of Environmental Studies- Environment, Environment Studies, Need for public Awareness, Environmental Degradation, Shelter Security, Economic Security, Social Security, Effects of Housing on Environment , Effects of Industry on Environment. Natural Resources- Introduction, Types of Natural Resource, Forest Resources, Water Resources, mineral Resources, Food Security Resources, Energy resources, Land Resources, Conservation of Natural Resources, Sustainable Lifestyles, Sustainable Water Management(SWM), Biogeochemical Cycle.

UNIT – II

Ecosystem- Introduction to Ecology and Ecological Succession, Ecosystem, Food Chain, Ecological Pyramids, Types of Ecosystems, Forest Ecosystems, Aquatic Ecosystems, Grassland Ecosystem, Desert Ecosystem. Biodiversity and its Conservation- Biodiversity,

Values or Benefits of Biodiversity, Biogeographic Zones of India, Hot Spots of Biodiversity, Endangered and Endemic Species, Rare and Threatened Species, Threats to Biodiversity, Human –Wildlife Conflicts, Conservation of Biodiversity.

UNIT – III

Environmental Pollution and Its Effects- Introduction ,Requirements of a Nonpolluted Environment, Public Health Aspects, Air Pollution, Land Pollution, Land Pollution or Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Hazardous Wastes, Nuclear Hazards (Radiation Pollution),Solid Waste and Its Management, Role of Individuals in Pollution Prevention, Disaster Management.

UNIT - IV

Community Engagement / Social Issues and the Environment- Introduction, Sustainable Development, Urbanization, Water Conservation, Resettlement and Rehabilitation of People ; Its Problems and Concerns, Social Issues and The Environment, Wasteland Reclamation, ACTs for Environmental Protection, Carbon Credits, Industrial Symbiosis, Initiatives and Roles of Nongovernmental Organization (NGOs) in Environmental Protection, Issues Involved in Enforcement of Environmental Legislation ,Animal Husbandry. Human population and the Environment- Population Growth, Family Welfare Programs, Environment and Human Health, Fundamental Rights, Human Rights, Value Education, HIV/AIDS, Environmental Education, Women’s Education, Role of Information Technology in Environment and Human Health.

Text Book

1. Shashi Chawla , Environmental Studies, McGraw-Hill.

Reference Books

1. Dr. D. K. Asthana, Dr. Meera Asthana ,Environmental Studies, S. Chand.
2. Dr. K. Mukkanti, Environmental Studies, S. Chand.
3. Dr. D. D. Mishra,Fundamental Concepts in Environmental Studies, S.Chand.
4. Benny Joseph, Environmental Studies, McGraw Hill Education.

Paper - II

Course Code – 3CC1

Course Name – Business Studies

COURSE OUTCOMES	
CO1	Given information on Basic of Marketing students will be able to define have working knowledge of Marketing.
CO2	Given information on various financial terms, students will be able to differentiate between different elements of Marketing Mix.
CO3	Given information on Human Resource Management student will be able to develop the basic understanding of role and importance of HRM role.
CO4	Students will be able to understand different functions of Human Resource Management and able to apply the working knowledge of operations management.

UNIT - I

Introduction to Marketing: Introduction, Definition, nature, scope & importance, Marketing Management, Core concepts of marketing, selling concept, production concept, modern marketing concept. Marketing Mix and STP

UNIT - II

Introduction of Finance: Meaning, Scope and importance of Business Finance. Finance Functions. Goals & objectives of financial management. Sources of Financing Long term and Short term, Concept of Capital Structure and budgeting

UNIT - III

Introduction to Human Resource Management: Definition, concept and Scope of H. R. M., Difference between Personnel Management and H.R.M., Importance and Functions of H.R.M. Role of H.R Department.

UNIT - IV

Introduction to Operations Management: Introduction to Operations Management, its Nature, Scope, Importance and Functions. Difference between production, manufacturing and service. Concept and types of production, mass, job-based, batch and assembly line production system. Types of services.

Reference Books

1. Marketing Management by Namaswamy & Ramakumari.
2. Financial Management – I M Pandey – S. Chand & Co. Pvt. Ltd.
3. Aswathappa, K.; Human Resource and Personnel Management (Text and Cases), Tata McGraw Hill Publishing Company
4. Production and Operations Management, K.Aswathappa & K. Shridhara Bhat, Himalaya Publication

Paper – III

Course Code – 3AE1

Course Name - CSS and Java Script

	Course Outcome
CO1	Given information on basic CSS tags of HTML students will be able to Apply Cascading Style Sheet while developing Web Pages.
CO2	Given information on elements of CSS students will be able to demonstrate the ability to format and represent fonts in effective manner.
CO3	Given information on basics of Java Script student will be able to Use different Data Types, Conditional Statements and Looping Statements to Make Web Pages Interactive.
CO4	Students will be able to Create the Interactive Web Pages by Using Functions, Arrays and Events in JavaScript students will be able to demonstrate different events and objects in their web pages

UNIT – I

Introduction to HTML: Tags and Attributes, Basic HTML Syntax. CSS- Overview, Introduction, Advantages, Versions, Creation and maintenance of CSS, CSS Syntax, Type Selectors, Universal Selectors, Descendant Selectors, Class Selectors, ID Selectors, Child Selectors, Attribute Selectors, Multiple Style Rules, Grouping Selectors, CSS –Inclusion - Embedded CSS - The <Style> Element, Attributes, Inline CSS - The *Style* Attribute, External CSS - The <Link> Element, Attributes, Imported CSS - @Import Rule, CSS Rules Overriding, CSS Comments.

UNIT-II

CSS – Measurement Units, COLORS - Hex Codes, Short Hex Codes, RGB Values, Building Color Codes, Browser Safe Colours. CSS – BACKGROUND, CSS FONTS – Setting of Font Family, Style, Variant, Weight, Size, Size Adjust, Stretch, Shorthand Property. CSS TEXT- **Setting of Text** Colour, Direction, Indent, Alignment, DECORATING THE TEXT – Setting of White Space Between Text, Text Cases, Text Shadow, CSS BORDERS - Color Property, Style Property, Width Property, Border Properties Using Shorthand.

UNIT –III

Java Script - Introduction, Internal Vs. External Scripts, Internal JavaScript Code, Understand The JavaScript Language & The Document Object Model. Variable Declaration, Operators, Types of Operators: Arithmetic Operators, Assignment Operators, Comparison Operators, Logical, Operators, Conditional Operators, Type Operators. Control Statements: **Conditional Statement:** If, If Else, Else If. **Looping Statement:** While, Do_While, For Loop.

UNIT –IV

Function: Function Declaration, built in Functions, Standard Date and Time Functions, HTML Document Object Model, working with HTML Form and Its Elements, Passing Parameter to Function, Returning A Value from Function, Array, Object: Creating Object, Accessing Object Properties, Array Object, String Object, Date Object, Math Object, Window Object, Navigator Object. Events: Event Type: Mouse Events, Frame/Object Events, Form Events.

Text Book

1. Lee Purcell, Mary Jane Mara The ABCs of JavaScript BPB Publication Douglas
2. Crockford JavaScript: The Good Parts, 2nd Edition O'Reilly
3. David Flanagan JavaScript: Pocket Reference 3rd Edition O'Reilly

Reference Book

1. WEB PROGRAMMING John Dean, PhD Associate Professor of Computer Science Park
2. University Parkville, Missouri with HTML5, CSS, and JavaScript
3. Kogent Learning Solutions Inc. Web Technologies Black Book: HTML, JavaScript, PHP,
4. Java, JSP, XML and AJAX by Dreamtech Press
5. The Complete Reference Html and CSS by Thomas A. Powell , New York Chicago San
6. Francisco ,Lisbon London Madrid Mexico City,Milan New Delhi San Juan,Seoul Singapore
7. Sydney Toronto

Practical Questions

Execution Program

1. Write an algorithm, draw a flowchart and Write a JavaScript program to find-out the Factorial of a Number.
2. Write an algorithm, draw a flowchart and Write a JavaScript Program to Check Number Is Positive, Negative or Zero.
3. Write an algorithm, draw a flowchart and Write a JavaScript Program to Check the Number Is Palindrome or Not.
4. Write an algorithm, draw a flowchart and Write a JavaScript Program to Check Number Is Prime or Not.
5. Write an algorithm, draw a flowchart and Write a JavaScript program to print factors of a inputted number.
6. Write an algorithm, draw a flowchart and Write a JavaScript Program to Print the Following Pattern.
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7. Write an algorithm, draw a flowchart and Write a JavaScript Programme to Accept Product Price, Quantity and GST and Calculate the Total Bill Amount.
8. Create a webpage using HTML, CSS create a custom hover and focus effect for navigation items, using CSS transformations.
9. Create a webpage using HTML, CSS create a list with floating headings for each section.
10. Create a webpage using HTML, CSS create a styled checkbox with animation on state change.

Writing Program

1. Create a webpage using HTML, CSS create display an image overlay effect on hover.
2. Create a webpage using HTML, CSS create display a text on top of an image using an overlay.
3. Create a webpage using HTML, CSS create a Navigation bar (with dropdown).

4. Create a webpage Using HTML, CSS create a scrollable container that will snap on elements when scrolling.
5. Write an algorithm, draw a flowchart and Write a JavaScript Program to Calculate the Area of Circle and Circumference of Circle by Using Functions.
6. Write an algorithm, draw a flowchart and Write a JavaScript Program to Accept a Year from User and Check Year Is Leap Year or Not.
7. Write an algorithm, draw a flowchart and Write a JavaScript Program to Perform Click Event On the Button to Change the Background colour of Webpage.
8. Write an algorithm, draw a flowchart and Write a JavaScript Program to Print Table of Inputted Number.
9. Write an algorithm, draw a flowchart and Write a JavaScript program to POPUP Message Program Using Event
10. Write an algorithm, draw a flowchart and Write a JavaScript program to Display Alert for Prompt Message Program.

Paper - IV

Course Code – 3GE4

Course Name – Ethical Hacking

	Course Outcome
CO1	Students will be able to understand the basic terminologies of information security and various threats to information.
CO2	Students will be able to apply the obtained knowledge of Ethical hacking, and develop an understanding of different vulnerabilities.
CO3	Students will be able to use hacking tools and techniques in an ethical manner.
CO4	Students will be able to demonstrate knowledge of cryptography and social engineering.
CO5	Given information on Ethical Issues on information security students will be able to memories the legal aspects in information security.

UNIT - I

Information Security Overview

Information Security: Meaning, Elements of information security; the security, functionality, and usability triangle; Security testing-principles, key areas, types. Security policies: need and recommendations; Information security threats and attack vectors; Top information security attack vectors; Common categories of cyber threats. Potential security threats to computer system: security threat, physical threat, non-physical threat; Worm, Virus & Trojan horse – meaning, difference between virus, worm and trojan horse, difference between virus and worm, protection tips to avoid worm, Trojan horses and virus; Spyware –meaning, types, difference between spyware and Trojan horse.

UNIT - II

Ethical Hacking Concepts : Essential terminologies used in hacking; Ethical Hacking : Meaning, definition, need, advantages, disadvantages, scope, limitations, modes of Ethical Hacking, methods, types; Hacker : Meaning, definition, classes, types; Cyber Crime : Meaning, its Types; Cyber-attacks : Meaning, Common types of cyber-attacks, Prevention from Cyber-attacks; Hactivism; Information Warfare : types, components.

Unit - III

Phases in hacking: the reconnaissance phase, the scanning phase, the gaining access phase, the maintaining access phase, the covering of tracks phase. Social Engineering: attacks, techniques & prevention; Cryptography: meaning, features, types and applications. Encryption : Meaning, key in cryptography; Data encryption : meaning and its need; Overview of cryptology; difference between cryptography and cryptology; difference between symmetric and asymmetric cryptography; Cryptography and Network Security Principles; Ethical Hacking - Sniffing : Meaning ,types

UNIT - IV

Ethical Issues in information security & privacy; Cyber Crime and Cyber Terrorism; **Hacker Vs Cracker; The liability of the cracker - Civil liability, Penal liability; Essentials of hacking under section 66; Laws on hacking in India; Filing a complaint about hacking;** Legal aspects of ethical hacking; punishment for hacking in India; Computer fraud and abuse act

Textbooks

1. Security in Computing by Kiran Gurbani , Prof. Sandeep Vishwakarma , Nitesh Shukla, Prof. Ravindra Jaiswal ,Himalaya Publishing House.
2. The Unofficial Guide to Computer Hacking by Ankit Fadia, Laxmi Publications
3. First Step to Ethical Hacking by Bhadoria Nikhalesh

Reference Books

1. Beginners Guide To Ethical Hacking and Cyber Security by Abhinav Ojha
2. Ethical Hacking: A Hands-on Introduction to Breaking In by Daniel Graham
3. Ethical Hacking 2022 - BLACK BOOK by Aamer Khan

Paper – IV

Course Code – 3GE4

Course Name – Computer Network

	Course Outcome
CO1	Students will be able to understand and use information of basic concepts of Computer Network.
CO2	Students will demonstrate the ability to understand and differentiate between different protocols.
CO3	Students will be able to get detailed knowledge about the various types of transmission media and their uses.
CO4	Students will gain valuable skills in computer networks like switching, routing by using all connectivity devices.
CO5	Students will showcase ability to use different Network Connectivity Devices.

UNIT - I

Basics of Computer Network: Computer Network, Uses of Computer Networks, Business application, Home application, Mobile users, Social issues, Network Topology and their various Types, Analog Signals, Digital Signals, Transmission impairment, Data Rate Limits, Performance, Digital Transmission, Digital-to-Digital Conversion, Analog-to-Digital Conversion, Analog Transmission, Digital-to-Analog Conversion, Analog-to-Analog Conversion. **Types of Network:** LAN, MAN, WAN. Server Based LANs & Peer-to-Peer LANs, Communications Types: Synchronous, Asynchronous, Client-Server Architecture.

UNIT - II

Network Models: Design Issues of the Layer, Protocol Hierarchy, ISO-OSI Reference Model: Functions of each Layer, Various Terminology used in Computer Network, Connection-Oriented & Connectionless Services, Internet. Internet transport layer protocols: UDP and TCP.UDP- Introduction to UDP, Remote Procedure Call, Real-Time Transport Protocol. TCP/IP Reference Model, Comparison of ISO-OSI and TCP/IP Model

UNIT - III

Transmission Media: Media - Guided Media (Wired), Coaxial Cable, Physical Structure, Standards, BNC Connector, Applications, Twisted Pair, Physical Structure, UTP vs STP, Connectors, Applications, Fibre Optics Cable: Physical Structure, Propagation Modes (Single Mode & Multimode), Fibre Sizes, Connectors, Applications, Advantages & Disadvantages, Unguided Media(Wireless): Electromagnetic Spectrum for Wireless Communication, Propagation Methods, (Ground, Sky, Line-of-Sight), Wireless Transmission, Radio Waves, Infrared, Micro-wave.

UNIT - IV

Network Connectivity Devices: Switching, Circuit-Switched Networks, Telephone Networks, Dial-up Modems. Categories of Connectivity Devices, Hub-Passive and Active Hubs, Repeaters, Bridges, Switch-Router, Gateways, Network Security Devices (Firewalls, Proxy Servers); Internet Basics- Internet: Growth, Architecture, Accessing, Internet Service Providers(ISP), **Internet Addressing System:** IP Address, DNS, URL; World Wide Web(WWW): Web Servers, Web Browsers, Search Engine; Concept of Intranet & Extranet.

Text Books:

1. A. S. Tanenbaum (2003), Computer Networks, 4th edition, Pearson Education/ PHI, New Delhi, India.

Reference Books:

1. Behrouz A. Forouzan (2006), Data communication and Networking, 4th Edition, Mc Graw-Hill, India.
2. Kurose, Ross (2010), Computer Networking: A top down approach, Pearson Education, India.

Paper – IV

Course Code – 3GE4

Course Name – Content Writing & Analysis

Course Outcomes	
CO1	Given information on concepts of content writing student will be able, understand the importance of content writing.
CO2	Given information on different types and process of content writing student will be able to understand and identify the process of content writing.
CO3	Given information of various styles and modes of business student will be able to apply the different styles while writing the content according to type of business.
CO4	Given information on basic of plagiarism student will be able to apply the rules and regulation while drafting the content.

UNIT – I

Basics of Content Writing - Concept of Content Writing and its relevance, Role and functions of Content Writers, Print and Web Content Writing, Scope and Types of Content Writing, Principles and processes of Content Writing.

UNIT - II

Types of Content Writing- Process of Content Writing: getting the brief, ideating, researching, structuring, formatting; Editing and Proof-Reading: following company style sheet, grammar, copy flow, restructuring, market research,

UNIT - III

Writing Styles - Writing Styles: Non-fiction (Essays, Reports), Advertising, Newspapers, Writing blogs, Case Studies, White Papers; Corporate Communications: writing for business to business (B2B), business to consumer (B2C), press releases; Newsletters: focus on language, jargon, writing style, target audience, formal and informal language.

UNIT - IV

Plagiarism and Content Writing - Introduction to plagiarism, rules of plagiarism, techniques of writing plagiarism-free content.

Reference Books:

- Turk, Christopher and John Kirkman. *Effective Writing*. London and New York: Chapman & Hall. Indian Reprint 2003
- Pinker, Steven. *The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century*. Penguin Books, Reprint edition, 2015
- Seely, John. *Oxford Guide to Effective Writing and Speaking*. OUP 2nd edition, 2005
- Goins, Jeff. *You Are a Writer (So Start Acting Like One)*. Tribe Press
- Brohaugh, William. *Write Tight: Say Exactly What You Mean with Precision and Power*.
- Janzer, Anne. *The Writer's Process: Getting Your Brain in Gear*. Cuesta Park Consulting, 2016
- King, Stephen. *On Writing: A Memoir of the Craft*. Scribner, 2010

Semester – IV

Paper - I

Course Code – 4CC1

Course Name – Business Economics

Course Outcome	
CO1	Given the basic Problems of an economy, students will be able to gain an insight, understand the concept of Economics, Business Economics, and Classify the different types of economic system and utilities.
CO2	Given the demand -Supply Analysis, Students will be able to understand and analyse Demand-Supply, elasticity of demand, elasticity of supply and Calculate the Price ,Income and Cross Elasticity of demand
CO3	Given the information on Production and Cost Analysis, Students will be able to able to relate the basic concepts of Production ,Cost and will also be able to demonstrate the law relating to Short Run and Long Run Production Function and compute the Production cost for the given product.
CO4	Students will be able to understand the concept of Market, identify the features of market. They will also analyse and compare the price -output determination under different market structure

UNIT - I

Introduction - Economics and Business Economics – Meaning, nature, concept & scope of business economics. **Basic problem of an Economy and Role of price Mechanism:** Basic problems of an economy, Classification of economy - features, advantages and disadvantages. **Theory of Consumer Behaviour** - Nature of human wants, classification of wants; Utility Analysis – Meaning, definition, features of utility ; Marginal utility analysis – concept of total utility , marginal utility , assumptions of marginal utility analysis ; the law of diminishing marginal utility ; Indifference curve analysis - concept & properties of indifference curve.

UNIT - II

Theory of Demand and Supply - Demand Analysis - Concept of Demand, factors determining demand, Demand Function, Law of Demand **Elasticity of Demand** - Meaning, Definition, Types and Factors affecting Elasticity of Demand **Supply Analysis** – Concept of

Supply: factors determining supply ,Supply function, Law of Supply **Elasticity of Supply** - Meaning ,definition, types of price elasticity of supply.

UNIT - III

Theory of Production and Cost - Theory of Production - Meaning of production, factors of production; Production Function - Meaning, short run v/s long run production function; **Short Run Production Function** - concepts of total product, average product and marginal product, Law of Variable Proportion ; **Long Run Production Function** - Law of Returns to Scale. **Theory of Cost** – meaning of cost, cost concepts, cost function, Short Run total Cost – total fixed cost, total variable cost, total cost; Short Run Average Cost -average fixed cost, average variable cost, average total cost, marginal cost ; Economies and Diseconomies of Scale

UNIT - IV

Market Structure and Pricing theory- Market Structure- Meaning of market, Classification of Market, Concepts of Total revenue, Average revenue and Marginal revenue, Market Structure - Concept, Features types. **Equilibrium Price and Output Determination under Different types of markets in short run and long run** - Perfect Competition, Monopoly, Monopolistic Competition; Price Discrimination in Monopoly; Oligopoly- Meaning , Types, Kinked demand curve

Text Books

1. D. N. Dwivedi, Essentials of Business Economics, Vikas Publishing House Pvt. Ltd.
2. Taxmann's Business Economics (Economics) by Dr. P.M. Salwan and CA Priyanka Jindal

Reference Books

1. David P. Doane, Lori E. Seward, Applied Statistics in Business and Economics, McGraw-Hill.
2. Amit Kumar Upadhyay, Principles of Economics, Vikas Publishing House Pvt. Ltd.
3. P. K. Mehta, Business Economics, Taxmann.
4. Michael Mandel, Economics The basics, McGraw-Hill.
5. Sudip Chaudhuri, Anindya Sen, Economics, McGraw-Hill.
6. Geetika, Piyali Ghosh, Purba Roy Choudhury, Managerial Economics, McGraw-Hill.

Paper – II

Course Code – 4GE2

Course Name – Business Law & Cyber Security

	Course Outcome
CO1	Given information on Contract Act 1872 students will be able to define various terminologies comes under this Act. Eg. Agreement, Contract, Types of Contracts etc.
CO2	Given information of Negotiable Instruments Act 1881 students will be able to define and understand the types of Negotiation Instruments.
CO3	Given information on The Information Technology Act, 2000 students will be able to illustrate the various legal terminologies comes under IT Act 2000
CO4	Given information on The Information Technology Act, 2000 students will be able to Apply the code of Ethics while using social media for communication.

UNIT - I

The Indian Contract Act, 1872: Contract – meaning, characteristics and kinds, Essentials of a valid contract - Offer and acceptance, consideration, contractual capacity, free consent, legality of objects., Void agreements, Discharge of a contract – modes of discharge, breach and remedies against breach of contract, Contingent contracts, Quasi – contracts. **Specific Contracts-** Contract of Indemnity and Guarantee, Contract of Bailment, Contract of Agency

UNIT – II

The Negotiable Instruments Act 1881 - Meaning, Characteristics, and Types of Negotiable Instruments - Promissory Note, Bill of Exchange, Cheque, Holder and Holder in Due Course, Privileges of Holder in Due Course. Negotiation: Types of Endorsements, Crossing of Cheque, Bouncing of Cheque. Hundi-Definition, history and types.

UNIT - III

The Information Technology Act, 2000 (Part I):- Introduction of Information Technology Act, Objectives and Features, Applicability and Non-Applicability of the Act- Government and Controller, Definitions, Digital signature, Electronic governance, Attribution, acknowledgement and dispatch of electronic records, Digital Signatures Certificates, Duties of

Subscribers, Penalties and adjudication, Appellate Tribunal, Offences, Secure Electronic Records And Secure Digital Signatures

UNIT - IV

The Information Technology Act, 2000 (Part II):- Code of Ethics, What are the New Changes in the Act? Amendments in the Act, Due Diligence by Intermediaries and Grievance Redressal Mechanism, Additional due diligence to be observed by significant social media intermediary. Additional due diligence to be observed by an intermediary in relation to news and current affairs content.

Reference Book:

1. S. Chand CA Foundation Tulsian's Business Laws By CA Dr. P C Tulsian
2. The Cyber Security Handbook by Alan Calder.
3. Vinod Publication Cyber Law & Cyber Crimes by Dr. J.N Barowalia Dr Aarushi Jain Edition 2023.

Paper - II

Course Code – 4GE2

Course Name – Research Methodology

Course Outcome	
CO1	Given the information on various types of research and design and process, student will be able to identify the basic research process and will be able to interpret its scope for organization.
CO2	Given the information on sample design, its types and hypothesis the student will be able to describe different parameters used for sample design also able to formulate the hypothesis.
CO3	Given the various measurement techniques the student will be able to compile questionnaire for various research studies
CO4	Given the information on different data collection methods students will be able to collect the data using primary and secondary methods.
CO4	Given the information students will be able to prepare reports for the given data

Unit I:

Introduction - Meaning, Objectives and Types of research, Research Approach, Research Process, Relevance & scope of research in management. **Research Design** - Features of good Design, Types of Research Design,

Unit II:

Sampling Design - Steps in sample Design, Characteristics of a good sample Design, Probability & Non-Probability sampling. Hypothesis – Meaning, Types, Process, Formation of Hypothesis, Testing of Hypothesis

Unit III:

Measurement & scaling techniques - Errors in measurement. Test of sound measurement, Scaling and scale construction technique. Attitude Measurement and Scales: Introduction to attitude - Various Methods to measure attitude.

Unit IV:

Methods of data collection - Primary data – questionnaire and interviews; Collection of secondary data. **Interpretation of data** - Techniques of Interpretation, Report writing, Layout of a project report, preparing research reports.

Text Book

1. Research Methodology – C.R. Kothari

Reference Books:

1. Business Research Methods – Naval Bajpai
2. Business Research Methodology – J K. Sachdev

Paper - III

Course Code – 4DSE3

Course Name – Cloud Computing

Course Outcome	
CO1	Students will be able to use the obtained knowledge to differentiate between different computing paradigms.
CO2	Students will be able to understand the ways to develop and deploy the cloud fundamentals programs.
CO3	Students will be able to classify various service delivery models of a cloud computing architecture and management of cloud.
CO4	Students will be able to describe the cloud service Model and understand the importance of its service providers.

UNIT-I

Computing Paradigms: High-Performance Computing, Parallel Computing, Distributed Computing, Cluster Computing, Grid Computing, Cloud Computing, Bio computing, Mobile Computing, Quantum Computing, Optical Computing, Nano computing, Network Computing.
Cloud Computing Fundamentals: Need for Cloud Computing, Defining Cloud Computing; Network Computing Cloud Computing as a Service, Cloud Computing as a Platform, Principles of Cloud computing, Essential Characteristics, Requirements for cloud services, Benefits and Drawbacks of cloud computing.

UNIT-II

Cloud Computing Architecture and Management: Cloud architecture, Anatomy of the Cloud, Network Connectivity in Cloud Computing, Cloud Applications, Managing the Cloud-Cloud Infrastructure and Cloud application, Migrating Application to Cloud, Phases of Cloud Migration, Approaches for Cloud Migration, **Cloud deployment model-** Characteristics, Types of Deployment -Private, Public, community and hybrid.

UNIT-III

Cloud Service Models: Infrastructure as a Service, **IaaS-** Characteristics, Suitability, Pros and Cons, Summary of IaaS Providers, Platform as a Service **PaaS-** Characteristics, Suitability, Pros and Cons, Summary of PaaS Providers, Platform as a Service, Software as a Service. **SaaS**

- Characteristics, Suitability, Pros and Cons, Summary of SaaS Providers, Platform as a Service, Other Cloud Service Models. **Virtualization:** Opportunities, Approaches to virtualization.

UNIT-IV

Cloud Service Providers: EMC, EMC IT, Captiva Cloud Toolkit, Google, Cloud Platform, Cloud Storage, Google Cloud Connect, Google Cloud Print, Google App Engine, Amazon Web Services, Amazon Elastic Compute Cloud, Amazon Simple Storage Service, Amazon Simple Queue, service, Microsoft, Windows Azure, Microsoft Assessment and Planning Toolkit, SharePoint, IBM, Cloud Models, IBM Smart Cloud, SAP Labs, SAPHANA Cloud Platform, Virtualization Services Provided by SAP, Sales force, Sales Cloud; **Service Cloud:** Knowledge as a Service, Rack space, VMware, Manjra soft, Aneka Platform.

Text Book:

1. Essentials of cloud Computing: K. Chandrasekhran, CRCpress,2014

Reference Book:

1. Cloud Computing: Principles and Paradigms by Rajkumar Buyya,James Broberg and Andrzej M. Goscinski, Wiley, 2011.
2. Cloud Computing: A Practical Approach, Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, Tata McGraw Hill, 2011.
3. Cloud Computing: Implementation, Management and Security, John W. Rittinghouse, James F.Ransome, CRC Press, 2012.

Paper – III

Course Code – 4DSE3

Course Name – Artificial Intelligence & Machine Learning

	Course Outcome
CO1	Student will be able to demonstrate build AI blocks.
CO2	Student will be able to understand basic concept of fuzzy logic and robotics.
CO3	Student will be able to analyze and formalize the problem as a Machine Learning Techniques.
CO4	Students will be able to understand the basics of Neural Network in ML and able to apply and evaluate supervised machine-learning techniques to real world problem.

UNIT-I

Introduction to AI: What is AI? History & Applications, **Intelligence System:** What is Intelligence? Types of Intelligence, what is Intelligence Composed of AI? Artificial Intelligence vs. Human Intelligence. **Research Areas of AI:** Speech and Voice Recognition, Working of Speech and Voice Recognition Systems, Real Life Applications of Research Areas, Task Classification of AI. **Agents and Environments:** What are Agent and Environment? The Structure of Intelligent Agents, The Nature and properties of Environments.

UNIT-II

Fuzzy Logic Systems: What is Fuzzy Logic? Why Fuzzy Logic? Fuzzy Logic Systems Architecture, Application Areas of Fuzzy Logic, Advantages and Disadvantages of FLS. **Expert Systems:** Characteristics of ES, Capabilities, Components, what is Knowledge? Inference Engine, User Interface, Limitations, benefits and Applications of Expert System, Development of Expert Systems: General Steps. **Robotics:** What is Robotics? Difference in Robot System and Other AI Program, Robot Locomotion, Components of a Robot, Computer Vision, Application Domains of Computer Vision, Applications of Robotics.

UNIT-III

Introduction to Machine Learning: Human learning & it's types, Machine learning and its categories (Supervised, unsupervised, reinforcement), Algorithms for Supervised Learning-

k-Nearest Neighbours, Decision Trees, Naive Bayes, Logistic Regression, Support Vector Machines, Algorithms for Unsupervised Learning- k-means clustering, Cluster Identification, Comparison- Supervised, unsupervised, reinforcement, **Machine learning using deep learning**-black box approach, duration of development, application of deep learning. Problems not to be solved using Machine Learning, Applications of Machine learning, Tools in Machine Learning, Issues in Machine Learning.

UNIT-IV

Preparing to Model: Machine-learning activities, Basic types of data in machine Learning, exploring structure of data (Numerical data, Categorical data), Data quality and remediation, Data Preprocessing-Dimensionality Reduction, Feature Subset Selection. **Machine learning using Neural Networks**-Introduction of ANN, architecture of ANN-Single layer feed forward network, Multi-layer feed forward ANN's, Competitive network, Recurrent Network, Learning Process in ANN-Number of layers, Direction of single flow, Number of nodes in layers.

Text Book:

1. E.Rich and K. Knight, Artificial Intelligence, Tata McGraw Hill, 2008,
2. Machine Learning by Subramanian Chandramouli, Saikal Dutt, Amit Kumar Das

Reference Book:

1. S, Russell and P. Norvig, Artificial Intelligence: A Modern Approach, 3rd edition, Pearson Education, 2015.
2. Introduction to Machine Learning by Dr. Nilesh Shelke, Dr, Narendra. V.Choudhary, Dr. Gopal Sakarkar, Das Ganu Publications.

Paper – III

Course Code – 4DSE3

Course Name – Management Information System

Course Outcome	
CO1	Students will be able to evaluate dimensions of information and its quality. Students will be able to understand the Impact of Information System on Organization.
CO2	Students will be able to understand the concept of MIS and differentiate various types of MIS. Students will be able to evaluate the concepts of Data Mining and Data Warehousing.
CO3	Students will be able to understand ERP, CRM and SCM. Students will be able to evaluate the concept of Business Intelligence and Knowledge Management Systems.
CO4	Students will be able to understand concept of Project Planning and Project Management. Students will be able to interpret Structured Analysis Tools.

UNIT- I

Information: Introduction, Definition, Types of Information, Information Quality, And Dimensions of Information System: Definition, Kinds of Systems, System -related Concepts, Elements of a System, Information System and Organization: Concept, Impact of Information System on Organization.

UNIT- II

Management Information Systems: Definition, MIS and IT, Nature and Scope of MIS, Characteristics, Structure, Types, Role of MIS in Global Business, Challenges faced by MIS. Decision Support Systems: Characteristics and Components. Data Mining, Data Warehousing.

UNIT- III

Enterprise Systems - Introduction, Enterprise Systems, Enterprise Resource Planning (ERP) System, Customer Relationship Management (CRM) System, Supply Chain Management (SCM) System. Business Intelligence, Knowledge Management Systems.

UNIT- IV

Information System Planning - Introduction, Resource Allocation, Project Planning. IS Development and Project Management - Introduction, System Development Models, Project Management. Information Requirements Analysis & Systems Design - Introduction, Systems Analysis, Requirements Determination, Strategies for Requirements Determination, Structured Analysis Tools.

Text Book

1. D. P. Goyal, Management Information System, Vikas Publishing House Pvt Ltd.

Reference Books

1. Waman S. Jawadekar, Management Information Systems, McGraw-Hill.
2. D. P. Nagpal, Management Information Systems, S. Chand.
3. Dr. SushilaMaden, Management Fundamental and Information System, Taxmann.
4. S. Sadagopan, Management Information Systems, PHI.
5. A. K. Gupta, Management Information Systems, S. Chand. 6. Mahesh Halale, Management Information Systems, Himalaya publishing house

Paper – IV

Course Code – 4SE3

Course Name – PHP & MySQL

	Course Outcome
CO1	Students will be able to understand and compare html file and php file and will be able to use the knowledge for a given business application.
CO2	Students will be able to analyse the data and can create forms for real life business applications.
CO3	Student will be able to use techniques to handle cookies and sessions, to create and modify server cookies and operate session on the internet.
CO4	Student will be able to explore, analyse and use different files for creating forms and will be able to use database in the backend for the applications.

UNIT- I:

Getting Started with PHP- Basic HTML Syntax, Basic PHP Syntax, Using FTP, Testing Your Scripts, Sending Text to The Browser, Adding Comment to The Script, Basic Debugging Steps. **Variables-** What Are Variables? Variable Syntax, Types of Variables, Variable Values, Understanding, Quotation Marks. **HTML Forms and PHP-** Creating A Simple Forms, Choosing A Form Data in PHP, Displaying Errors, Error Reporting. **Using Numbers-**, Performing Arithmetic, Formatting Numbers, Understanding Precedence, Incrementing and Decrementing a Number, Creating Random Numbers.

UNIT- II:

Using Strings- Creating The HTML Forms, Concatenating Strings, Handling Newlines, HTML and PHP, Finding Substrings, Replacing Parts of a String. **Control Structures-** The If Conditional, Validation Functions, Using Else, More Operators, Using else if, The Switch Conditional, The for Loop. **Using Arrays-** What Is an Array, creating an Array, Adding Items to an Array, Accessing an Array from A Form.

UNIT- III:

Creating Web Applications- Creating Templates, Using Constants, working with The Date and Time, Handling HTML Forms with PHP, Sending Email. **Cookies and Sessions-** What Are Cookies? Creating Cookies, reading from Cookies, Adding Parameters to Cookies, Deleting A

Cookie, What Are Sessions? Creating Session, Accessing Session Variables, Deleting Session.
Creating Functions- Creating and Using Simple Functions, Creating and Calling Functions That Take Arguments, Setting Default Arguments Values, Creating and Using Functions That Return a Value, Understanding Variable Scope.

UNIT- IV:

Files and Directories- File Permissions, writing to Files, locking to Files, reading from Files,
Introduction to Database- Introduction to SQL, connecting to MYSQL, MYSQL Error Handling, Creating and Selecting a Database, Creating A Database, Inserting Data into A Database, Securing Query Data, Retrieving Data from A Database, Deleting Data in A Database, Updating Data in A Database. **Putting It All Together-** Getting Started, connecting to The Database, Writing The User-Defined Function, Creating The Template, Adding Quotes, Listing Quotes, Editing Quotes, Deleting Quotes.

Reference Books

1. Holznr, The Complete Reference – PHP, McGraw-Hill.
2. Mike Mcgrath, PHP & MySQL in Easy Steps, McGraw-Hill.
3. Steve Suehring, Tim Converse & Joyce Park, PHP and MySQL, Wiely.
4. Joel Murach & Ray Harris, murach's PHP and MySQL, Shroff Publishers.
5. Jason Gilmore, Beginning PHP and MySQL

Practical List

Execution Programs

1. Write an algorithm, draw a flowchart and Write a PHP script to print the addition and multiplication of two numbers in PHP using print and echo respectively.
2. Write an algorithm, draw a flowchart and Write a PHP script to generate three random numbers and calculate their average.
3. Write an algorithm, draw a flowchart and Write a PHP script to print the following pattern using nested loop.

```
* * * * *
* * * *
* * *
* *
*
```

4. Write an algorithm, draw a flowchart and Write a PHP script to insert a new item in an array on any position.
5. Write an algorithm, draw a flowchart and Write a PHP script to sort an associative array using the Sort function `asort()` and `ksort()`.
6. Write an algorithm, draw a flowchart and Write a PHP script to convert a date from `yyyy-mm-dd` to `dd-mm-yyyy`.
Sample Date: 2012-09-12
Expected Result: 12-09-2012
7. Write an algorithm, draw a flowchart and Write a PHP script to remove the whitespaces from a string.
8. Write an algorithm, draw a flowchart and Write a PHP function that checks if a string is all lower case.
9. Write an algorithm, draw a flowchart and Write a PHP script to check whether a entered string is palindrome or not.
10. Write an algorithm, draw a flowchart and Write a PHP script to check that email id is valid or not.

Writing Programs

11. Write an algorithm, draw a flowchart and Write a PHP script to for Creating, Retrieving and Deleting data from the cookie using POST Method.
12. Write an algorithm, draw a flowchart and Write a PHP script to print Fibonacci series using recursion.
13. Write an algorithm, draw a flowchart and Write a PHP script using switch case and dropdown list to display a – Hello! message depending on the language selected in drop down list.
14. Write an algorithm, draw a flowchart and Write a PHP script to count the person age in number of days.
15. Write an algorithm, draw a flowchart and Write a PHP script to create a simple 'birthday countdown' script, the script will count the number of days left for coming birth day.
16. Write a SQL statement to create simple table countries including columns `country_id`, `country_name` and `region_id`.
17. Write a SQL statement to create table countries including columns `country_id`, `country_name` and `region_id` and make sure that the column `country_id` will be unique and store an auto incremented value.

18. Write a SQL statement to create a table named countries including columns country_id, country_name and region_id and make sure that no countries except Italy, India and China will be entered in the table.

19. Write a SQL statement to insert a record with your own value into the table countries against each columns region_id.

20. Write an algorithm, draw a flowchart and Write a PHP script to replace the first 'the' of the following string with 'That' – Sample: 'the quick brown fox jumps over the lazy dog.'

Expected Result: That quick brown fox jumps over the lazy dog.

Semester – V

Paper - I

Course Code – 5CC1

Course Name - Python

	Course Outcome
CO1	Students will be able to install python and will be able to make efficient use of collection data types.
CO2	Students will be able to apply the concept of decision-making, looping, functions and modules to solve given problem.
CO3	Students will be able to apply file handling and OOPs concept to develop real time business applications for a given problem.
CO4	Student will be able to develop business application using graphical user interface. They will also be able to deploy it on client/customer computer.

UNIT-1

Introduction: History, Installing Python on Windows and Linux, Interacting with interpreter, writing first program, using variables, runtime user input, handling errors. **Performing operations-**Doing arithmetic, Assigning values, Comparing Values, Assessing logic. Examining Conditions, Setting precedence, casting data types, Manipulating bits. **Collection Data types:** List, Manipulating list, tuple, set, dictionary, String- Formatting strings, Modifying strings.

UNIT-II

Decision Making and Looping: Branching with if, Looping while true, Looping over items, continue and break statement. **Defining Functions-**Understanding scopes, Supplying arguments, Returning Values, Using callbacks, Adding placeholders, producing generators, Handling exceptions, Debugging assertions. **Importing Modules -** Storing functions, Owing function names, Interrogating the system, Performing mathematics, Calculating decimals, Telling the time, Running a timer.

UNIT - III

File Handling: Reading and writing files, Updating file strings, Pickling and unpickling of data. **Object Oriented Programming:** Class, Object, data encapsulation, creating instance objects, `__init__` method, self parameter, Addressing class attributes, Examining built-in attributes, Collecting garbage, Data hiding, Inheritance, types of inheritance, Overriding base methods, polymorphism.

UNIT-IV

Building interfaces-Launching a window, Responding to buttons, Displaying messages, Gathering entries, Listing options, Polling radio buttons, Checking boxes, Adding images
Developing applications- Generating random numbers, Planning the problem, Designing the interface, Assigning static properties, Initializing dynamic properties, Adding runtime functionality, Testing the program, Freezing the program, Deploying the application.

Text Book

1. Python in easy steps, 2nd Edition by Mike McGrath, McGraw-Hill (2018)

References

1. Think Python: How to Think Like a Computer Scientist 2nd Edition
2. by Allen Downey O'Reilly Media 2016
3. Head First Python Second Edition by Paul Barry – 2016
4. Python Crash Course, 2nd Edition by Eric Matthes No Starch Press; 2nd edition-2019
5. Learning Python 5th edition: Powerful Object-Oriented Programming by Mark Lutz, O'Reilly -2013
6. Fluent Python: Clear, Concise, and Effective Programming 1st Edition by Luciano Ramalho O'Reilly Media - 2015

Paper - II

Course Code – 5AE2

Course Name – Internet of Things

	Course Outcome
CO1	Students will be able to describe the components of IoT, design of IoT and challenges associated with implementation of the Internet of Things
CO2	Students will be able to interpret and explain architecture of IoT and role of different protocols used in the implementation of Internet of Things.
CO3	Students will be able to differentiate between Web of Things and Internet of Things. They will also be able to get better insight about IoT programming.
CO4	Students will be able to identify and explore the applications of Internet of Things in real life and different industries.

UNIT-I

Internet of Things: Introduction, Characteristics of IoT, Major components of IoT, Building blocks of IoT, The physical design of IoT, Logical design of IoT, Greenfield and brownfield IoT, Overview of Governance, Privacy and Security Issues.

UNIT-II

IoT Architecture and Protocols: Taxonomy of IoT, Three-layer and five-layer architecture of IoT, cloud and fog based architecture, representative architecture, NFC, WSN, IoT Network Protocol Stack, Bluetooth, ZigBee and 6LowPAN.

UNIT-III

Web of Things and Programming Framework for IoT: Web of Things versus Internet of Things, Two Pillars of the Web – Architecture Standardization for WoT – Platform Middleware for WoT – Unified Multitier WoT Architecture. Programming paradigm, assembly, procedural, Functional, OOP, multi-paradigm programming, Introduction to Arduino programming, Introduction to Python programming, Raspberry Pi and its components, Case studies of IoT using Raspberry Pi

UNIT-IV

IoT Applications areas:– Smart Home, IoT and Healthcare, IoT and Agriculture, IoT and precision farming, IoT and Livestock monitoring, IoT agricultural drones, IoT smart greenhouses, IoT and military application, IoT and politics, IoT and constructions, IoT Smart Self Driving car, IoT and Fitness Trackers, IoT and Connected Factories, IoT and Hospitality and Tourism.

Text Book:

1. Internet of Things (IoT): Principles, Paradigms and Applications of IoT by Dr Kamlesh Lakhwani, Dr Hemant Kumar Gianey, Joseph Kofi Wireko, BPB Publications, 27 February 2020

Reference Book:

2. Internet of Things (A Hands-on-Approach) by Vijay Madiseti and Arshdeep Bahga, 1st Edition, VPT, 2014
3. Rethinking the Internet of Things: A Scalable Approach to Connecting Everything, by Francis daCosta, 1st Edition, Apress Publications, 2013
4. Getting Started with the Internet of Things by Cuno Pfister, O'Reilly Media, 2011,
5. The Internet of Things, Revised and Updated edition by Samuel Greengard, The MIT Press, August 2021
6. Learning Internet of Things by Peter Waher Packt Publishing January 27, 2015
7. Arduino Programming: The Ultimate Guide For Making The Best of Your Arduino Programming Projects by Damon Parker, Independently Published, 13 April 2020.

Paper – III

Course Code – 5DSE3

Course Name – Big Data

	Course Outcome
CO1	Students will be able to understand and learn the basics of Big Data.
CO2	Students will showcase the ability to analyse and identify Big Data Adoption and Planning.
CO3	Student will be able to identify and apply the concepts of Enterprise Technologies, Big Data Business Intelligence and Big Data Storage process.
CO4	Students will showcase the ability to understand the concept of big data processing related to Hadoop File System and MapReduce.
CO5	Student will showcase the understanding of usage of Technology like RDBMS, NoSQL Databases and NewSQL Databases.

UNIT-I

Understanding Big Data: Definition, Datasets, Data Analysis, Data Analytics (Descriptive Analytics, Diagnostic Analytics, Predictive Analytics, Prescriptive Analytics), Business Intelligence (BI), Key Performance Indicators (KPI), Big Data Characteristics, Types of Data (Structured Data, Unstructured Data, Semi-structured Data, Metadata). **Business Motivations and Drivers for Big Data Adoption:** Business Architecture, Business Process Management, Information and Communications Technology, Internet of Everything (IoE).

UNIT-II

Big Data Adoption and Planning Considerations:- Organization Prerequisites, Data Procurement, Privacy, Security, Provenance, Limited Real-time Support, Distinct Performance Challenges, Distinct Governance Requirements, Distinct Methodology, Clouds, Big Data Analytics Lifecycle, Business Case Evaluation, Data Identification, Data Acquisition and Filtering, Data Extraction, Data Validation and Cleansing, Data Aggregation and Representation, Data Analysis, Data Visualization, Utilization of Analysis Results.

UNIT-III

Enterprise Technologies and Big Data Business Intelligence: - Online Transaction Processing (OLTP), Online Analytical Processing (OLAP), Extract Transform Load (ETL),

Data Warehouses, Data Marts, Traditional BI, Ad-hoc Reports, Dashboards, Big Data BI, Traditional Data Visualization, Data Visualization for Big Data. **Big Data Storage Concepts:** - Clusters, File Systems and Distributed File Systems, NoSQL, Sharding, Replication, Master-Slave, Peer-to-Peer, Sharding and Replication, Combining Sharding and Master-Slave Replication, Combining Sharding and Peer-to-Peer Replication, CAP Theorem, ACID, BASE.

UNIT-IV

Big Data Processing Concepts: - Parallel Data Processing, Distributed Data Processing, Hadoop, Processing Workloads, Batch, Transactional, Cluster, Processing in Batch Mode, Batch Processing with MapReduce, Map and Reduce Tasks, Map, Combine, Partition, Shuffle and Sort, Reduce. **Big Data Storage Technology:** - On-Disk Storage Devices, Distributed File Systems, RDBMS Databases, NoSQL Databases, Characteristics, Rationale, Types, Key-Value, Document, Column-Family, Graph, NewSQL Databases, In-Memory Storage Devices, In-Memory Data Grids, Read-through, Write-through, Write-behind, Refresh-ahead, Quantitative and Qualitative Analysis, Statistical Analysis, Correlation, Regression.

Text Book: -

1. Beginners Guide for Data Analysis using R Programming, Jeeva Jose, KhannaPubli.
2. Data Analytics, Maheshwari, McGraw

Reference Book: -

1. Big Data Fundamentals Concepts, Drivers & Techniques. By-Thomas Erl, Wajid Khattak, and Paul Buhler
2. Big Data for Beginners: Understanding Smart Big Data, Data Mining & Data Analytics for Improved Business Performance, Life Decisions & More! By: Vince Reynolds.
3. Tom White, "Hadoop: The Definitive Guide", 3rd edition, O'Reilly Media.
4. Big Data (Covers Hadoop 2, Map Reduce, Hive, YARN, Pig, R and Data Visualization) Black Book, DT Editorial Services, Dreamtech Press.
5. BIG DATA and ANALYTICS, Seema Acharya, Subhasinin Chellappan, Wiley publications.

Paper – III

Course Code – 5DSE3

Course Name – Block Chain Technology

	Course Outcome
CO1	Student will be able to understand and use information about the basic concepts of Blockchain.
CO2	Students will be able to apply obtained knowledge of Blockchain to understand concepts and characteristics of ledger and Bitcoins
CO3	Students will be able learn and understand the components of Bitcoins.
CO4	Student will be able to analyse and differentiate between working of databases and Bitcoins
CO5	Student will be able to integrate ideas from Blockchain technology in their projects.

Unit-I

Blockchain Introduction, Concept of Blockchain, History, Definition, Fundamentals of Blockchain, Characteristics of Blockchain, Public, Private and Hybrid Blockchains, Ledger, Architecture of Blockchain, Transactions, Chaining Blocks, Need of Blockchain, Users of Blockchain, Advantages and Disadvantages of Blockchain.

Unit-II

Definition of Hashing, Blockchain Hash Function, Working of Hash Process, Blockchain Block Hashing, Blockchain Distributed Ledger, Bitcoin Mining, Role of Bitcoin Miners, Building of Bitcoin Block Chain, Version – Currency, Smart Contracts, Dapps. Smart Contracts- Definition, Concept, Benefits, Characteristics, Key to Trust and Security.

Unit-III

Bitcoin – Introduction, Basic Components of a Bitcoin, Working of Bitcoin, Bitcoin Chain, Bitcoin Concepts – Disintermediated, Distributed, Decentralized, Trustless, How Bitcoin Works, Blockchain Key Areas, Cryptocurrency, Decentralized Autonomous Organization – DAO, Working of DAO, Blockchain Limitation, Blockchain Bitcoin Cash, Blockchain Proof of Work

Unit-IV

Advantages of Database, Blockchain Vs Database, Who Sets the Bitcoin Price, Bitcoin Concepts – Wallet, Address, Public and Private Keys, Get and Spend Bitcoins, Sending and Receiving Bitcoin, Ethereum 2.0 – Introduction, Version, Smart Contracts, Deployment of Smart Contracts, Security, Blockchain in Insurance – Use Case of Blockchain in Health Insurance.

Text Book

1. Blockchain Technology Concepts And Applications by Kumar Saurabh, Ashutosh Saxena, Wiley
2. The Basics of Bitcoins and Blockchains- Antony Lewis

Reference Book

1. The Fundamentals of Blockchain Technology (English, Paperback, Saurabh Jain)
2. Blockchain Basics: A Non-Technical Introduction in 25 Steps - Daniel Drescher

Paper – III

Course Code – 5DSE3

Course Name – Software Project Management

Course Outcome	
CO1:	The Students will be able to understand the roles and responsibilities of a Project Manager. The Students will be able to apply various project-scheduling techniques.
CO2:	The Students will be able to relate to various Software Testing Strategies. The Students will be able to differentiate between Unit Testing and Integration Testing.
CO3:	The Students will be able to judge overall Project Risk. The Students will be able to design a Risk Table.
CO4:	The Students will be able to interpret the cost of quality. The Students will be able to understand Formal Technical Reviews.

Unit-I

Introduction to Software Project Management - The Management Spectrum, Project Manager- Role & Responsibilities, Project Estimation- Introduction, Decomposition Techniques- Software sizing, Problem Based Estimation, LOC Based, Concepts, FP Based estimation, Project Scheduling – Basic Concepts, Project Scheduling, Effort Distribution, Defining a task network- CPM/PERT, Gantt Chart.

Unit-II

Software Testing Strategies - A strategic approach to software testing- verification & Validation. Test Strategies for conventional software – Unit Testing, Integration Testing. Test Strategies for object- oriented software – Unit Testing Integration Testing. Validation Testing –Test Criteria, Configuration Review, Alpha & Beta Testing. System Testing – Recovery, Security, Stress & Performance Testing. The Art of Debugging- the Debugging process, Debugging strategies, correcting the errors.

Unit-III

Risk Management - Introduction, Software risks, Risk Identification- Assessing overall project risk, Risk Components & Drivers, Risk Projection- Developing a risk table, Assessing

Risk Impact. Risk Refinement. Risk Mitigation, Monitoring and Management. The RMMM Plan.

Unit-IV

Quality Management - Quality Concepts – Quality, Quality Control, Quality assurance, Cost of Quality. Formal Technical Reviews- the Review Meeting, Review reporting & record keeping, Review guideline. Software Reliability – Measure of software reliability & Availability, Software Safety.

Reference Books

- 1) System Analysis and Design, Elias M.Awad, Galgotia Publication.
- 2) Software Engineering, Roger S. Pressman, A Practitioner's Approach, McGraw-Hill.
- 3) System Analysis and Design, FitzAng Gery Gerald, Galgotia Publication.
- 4) System Analysis and Design Methods, By Whitten, Bentley Dittman, McGraw-Hill.
- 5) System Analysis Design & MIS, V.K.Khanna, Khanna Book Publishing, New Delhi.

Semester – VI

Paper – I

Course Code – 6SE1

Course Name – Web Technology and Multimedia

	Course Outcome
CO1	Students will have basic knowledge of Web basics, Internet protocols and web services.
CO2	Students will demonstrate the understanding of HTML5, DHTML and XHTML.
CO3	Students will be able to differentiate between the uses of XML, DTD and DOM platforms.
CO4	Students will showcase the ability to use different multimedia tools.
CO5	Students will demonstrate the ability to use communication and multimedia technology for any business.

UNIT - I

Web Basics: Internet, Intranet, WWW, Static and Dynamic Web Page; Web Browsers; Web Servers; Client Server Architecture: Single Tier, Two-Tier, Multi-Tier; **Internet protocols:** HTTP, POP, SMTP, FTP, TCP/IP, PPP, SFTP, TELNET, POP3, ICMP, UDP, IMAP; Working of different internet protocols, Web Architecture, Web Standards, **HTTP:** HTTP Request and Response; Domain names, IP Address, URL, Client Side Scripting, Server Side Scripting, **Web Services** : features, advantages, functions, components & working of web services; Domain name and hierarchy, domain name registration process, web hosting; **Web Design:** Web site design principles, planning the site and navigation.

UNIT - II

Introduction to HTML5 : New features of HTML5, HTML5 Doc Type, HTML5 Structure; Tags- nav, section, article, aside, header, footer; HTML5 Form Elements- Search, tel, url, email, number and range; HTML5 Media tags - Audio and video. **DHTML** : Meaning, Components of Dynamic HTML, Uses of DHTML, Features of DHTML, Advantages of DHTML, Disadvantages of DHTML, Difference between HTML and DHTML, DHTML Events **XHTML** : Meaning, features, advantages, use, events, difference between HTML & XHTML

UNIT - III

XML: Meaning , XML Tree , XML syntax , XML elements , XML Attributes, XML namespaces, XML Display ,XML Parser , XML DOM , XML DTD, Uses of XML, simple XML, XML key components, DTD and Schemas, Well formed, using XML with application. XML, XSL and XSLT. **DTD:** Meaning ,Building blocks ,Elements ,Attributes ,Entities
DOM : Nodes, accessing ,Node List

UNIT - IV

Multimedia: Concept , Hardware for Multimedia Computer - The CPU , The Monitor, Input-Output Devices , CD-ROM, Sound Card ; Software for Multimedia ; Components of Multimedia **Multimedia: Design, Production and Distribution:** Planning/Design of Multimedia, Production of Multimedia , Distribution of Multimedia **Application Areas for Multimedia :** Entertainment ,Edutainment , Business Communications , Knowledge Transfer , Public Access **Communication Technology And Multimedia Services:** Basic Television Services , Interactive entertainment ,Digital Audio ,Video on demand , Home shopping, Financial transactions , Interactive single and multiuser games , Digital multimedia libraries, Electronic versions of newspapers, magazines etc.; **Multimedia in Business:** Voice Mail ,Electronic Mail , Multimedia based FAX **Office Needs:** Audio conferencing ,Video conferencing, Document conferencing.

Text Books:

1. HTML5 Step by Step Faithe Wempen Microsoft Press 2011.
2. Head First HTML 5 programming Eric Freeman O'Reilly 2013.
3. Web Technology by R. N. Srivastava 2015.
4. Multimedia and Web Technology by Vishnu Prasad 2018.

Reference Books:

1. Web Technology: A Developer's Perspective by J. Akilandeswari and N. P. Gopalan 2014.
2. Web Technologies and Applications by Sammulal Porika and Peddi Kishor 2015.

Paper – II

Course Code – 6SE2

Course Name – Entrepreneurship Skill Development

	Course Outcome
CO1	Students will be able to differentiate between Entrepreneur and Intrapreneur and will be able to delineate the evolution of the concept of Entrepreneur.
CO2	Given information on Agri Entrepreneurship student will be able to identify and differentiate between affecting factors and motivational factors of it
CO3	Students will be able to list the various economic and non – economic factors influencing the emergence and development of Entrepreneurship in the country and be able to define the concept of EDP,
CO4	Students will be able to define Small enterprises and list their essential Characteristics. They will be able to Highlight relationship between small and large units and identify the specific problems faced by SSI's.

UNIT – I

Entrepreneur: Introduction, Evolution of the concept of Entrepreneur, Characteristics of successful Entrepreneurs, The charms of becoming Entrepreneur, The Entrepreneurial decision process, Functions of Entrepreneur, Need of Entrepreneur, Types of Entrepreneurs, Distinction between an Entrepreneur and a Manager, Intrapreneur, social Entrepreneur.
Entrepreneurship: Concept of Entrepreneurship, Growth of Entrepreneurship in India, Role of Entrepreneurship in economic development. Types of Entrepreneurship, Family Business

UNIT - II

Agri-Preneurship: Introduction, Need for developing Agri-Preneurship in India, Opportunities for developing Agri-Preneurship, Challenges involved in developing Agri-Preneurship. **Factors affecting Entrepreneurship growth:** Factors affecting Entrepreneurship, Government Actions. **Entrepreneurial Motivation:** Meaning of Entrepreneurial Motivation, Motivational Cycle or Process, and Theories of Entrepreneurial Motivation. **Entrepreneurial Competencies:** Meaning of Entrepreneurial Competency, Major Entrepreneurial Competencies, Developing Entrepreneurial Competencies.

UNIT - III

Entrepreneurship Development Programmes (EDPs): Meaning of EDP, Need of EDPs, Objectives of EDPs, Entrepreneurship Development Programmes in India: A Historical Perspective, Course contents and curriculum of EDPs, Phase of EDP, Evaluation of EDPs, and Problems of EDPs. **Micro and small enterprises:** Small enterprise: Meaning & Definition, Essentials, features & Characteristics, Relationship between Micro and Macro enterprises, Rationale behind Micro & small enterprises, Role of Micro enterprise in economic development, Package for promotion of Micro and Small-scale enterprise. **Formulation of Business Plans:** Meaning of business plan, Contents of business plan, Significance, Formulation of business plan, Network Analysis, Common Errors in business plan formulation.

UNIT - IV

Project Appraisal: Concept of Project Appraisal, Methods of Project Appraisal, and Environmental clearance of SMEs. **Financing of Enterprise:** Meaning and need for financial planning, Source of Finance, Capital Structure, Capitalization, Term Loans, Sources of short-term Finance, Venture Capital, Export Finance. **Forms of business Ownership:** Sole Proprietorship, Partnership, Company, Cooperative, And Selection of an appropriate form of ownership structure, **Institutional Finance of entrepreneurs:** Need for institutional finance, Institutional Finance. **Institutional Support to Entrepreneurs:** Need for institutional support, Institutional Support to small Entrepreneurs.

Text Book-

1. Dr. S. S. Khanka, Entrepreneurial Development, S. Chand.(Reprint 2016)

Reference Books

1. Robert D. Hisrich, Mathew J. Manimala, Michael P. Peters, Dean A. Shepherd, Entrepreneurship, McGraw-Hill.
2. CA Dr. Abha Mathur, Business Entrepreneurship and Management, Taxmann.
3. Charles E. Bamford, Garry D. Bruton, Entrepreneurship – A Small Business Approach, McGraw-Hill.

Paper – III

Course Code – 6GE3

Course Name – Digital Marketing

	Course Outcome
CO1	Students will be able to showcase the basic knowledge of digital marketing
CO2	Students will demonstrate the ability to use Search engine optimisation
CO3	Students will be able to apply the obtained knowledge of email marketing and social media marketing
CO4	Students will be able to understand functioning of ecommerce website
CO5	Students will be able to differentiate between different internet marketing elements

UNIT-I

Introduction to Digital Marketing-Types of Digital Marketing, Trends of the Digital Marketing Industry, Importance of digital marketing, Difference between traditional and Digital Marketing. **Planning and Creating a Website**-Brand awareness, and delivery among consumers, how to create a website, adding content, incorporate design and other elements into the website

UNIT-II

Search Engine Optimisation-SEO, History & Growth of SEO, on-Page Optimization Off-Page Optimization, Keywords, Google AdWords. **Social Media Marketing**-Definition of Social Media Marketing & Social Media, Blogging, Social Networking, Video Creation & Sharing, Use of Different Social Media Platforms, Content Creation.

UNIT-III

Importance of Email Marketing-Basics of Email Marketing, Email Marketing Strategy and planning, Email Campaign design and execution. **Search Engine Marketing**-Introduction to SEM, Campaign Creation, Ad Creation, Site Targeting Keyword Targeting

UNIT-IV

E-Commerce-Management of e-commerce Store, Product Keyword Research Supply Chain management, Uploading Products to the Website Selling, Packaging & Shipping. **Internet**

Marketing-Introduction & Advantages of Internet Marketing in Business, Optimization of Business Site and Market Featured Products, Blogs & Opinion, Importance of Branding.

Text Book: -

1. Digital Marketing for Dummies, By Ryan Deiss & Russ Henneberry
2. Jab, Jab, Jab, Right Hook, By Gary Vaynerchuk
3. Building a StoryBrand: Clarify Your Message So Customers Will Listen, By Donald Miller
4. Digital Marketing Strategy: An Integrated Approach to Online Marketing, By Simon Kingsnorth.
5. Epic Content Marketing: How to Tell a Different Story, Break Through the Clutter, and Win More Customers by Marketing Less, By Joe Pulizzi.
6. The Art of SEO: Mastering Search Engine Optimization, By Eric Enge, Jessie Stricchiola, Stephan Spencer.
7. New Rules of Marketing and PR, By David Meerman Sc.

Paper – III

Course code – 6GE3

Course Name – Company Law and Secretarial Practice

	Course Outcome
CO1	Given basic information on Indian Companies Act 2013 student will be able to define and understand the provisions and classification of company.
CO2	Given information on procedure for incorporation student will be able to identify the legal terminologies and formalities while incorporation of company.
CO3	Given information on primary source of finance generation by the company student will be able to differentiate and illustrate, shares , debentures etc
CO4	Given information on Secretary student will be able to define the role of secretary in all operations of the company

Unit - I

Company and its Nature and Scope - Meaning, Definition and characteristics of company. Historical background of company law in India, Companies Act 2013, landmark provisions of the Act, Classification of companies, Lifting the corporate veil.

Unit – II

Procedure for Incorporation of companies - Role of promoters, Legal Position of Promoter, functions and liabilities of a promoter, Registration and incorporation of a company, Merits and Demerits of Incorporation of company - Memorandum of Association - Meaning, Purpose, Contents, clauses Ultra vires and Doctrine of Ultravires. Articles of Association - Meaning Purpose, Content. Alteration, Doctrine of Constructive Notice. Distinction between the Memorandum and Articles, Doctrine of Indoor management. Meaning - Formalities of issue Prospectus - Misrepresentation of Prospectus - Golden Rule **Amalgamation and winding up** - Merger and Demerger of Company, Amalgamation, Winding up of a Company, Payment of Liabilities in the event of winding up, Role of Official Liquidator, Court and National Company Law Tribunal.

Unit - III

Shares, Debentures and Company Meetings - Shares - Meaning, Types of Shares and Transfer of shares, price of issue of shares. Share Capital, Meaning, Kinds, Alteration, Reduction and Voting Rights, Global Depository receipts, Sweat Equity shares, bonus shares, buyback of shares. Share Certificate. Debenture - Meaning, Types, Charge-Fixed and Floating, Crystallization of Floating charge. **Company Meetings:-** Annual General Meetings, Extraordinary General Meetings, Persons Entitled To Call EGM, Notice,

Unit - IV

Secretary :- Definition, need and importance, Appointment and dismissal, Work, duties, rights and liabilities, Memorandum of association and secretary, Articles of association and secretary, Prospectus and secretary. **Directors Position, Appointment And Removal: -** Definition Of Directors, Position Of Director In A Company, Composition Of Board Of Directors, Methods and Provisions As To Directors Appointment, Appointment/Reappointment Of Rotational Directors, Director Identification Number, Disqualifications For Director, Vacation Of Office Of Director, Resignation Of Director, Removal Of Directors

Book Recommended:

1. C.A.Kamal Garg, Bharat's Corporate and Allied Laws, 2013
2. Institute of Company Secretaries of India, Companies Act 2013, CCH Wolter Kluver Business, 2013

APPENDIX – II

QUESTION PAPER PATTERN

First / Second / Third / Fourth / Fifth / Sixth Semester

**Bachelor of Commerce (Computer Application)- (BCCA)NEW OB & CBCS
Examination**

Semester – I – Fundamentals of Computers

Semester – II - Principles of Business Management, Database Management system, E-Commerce and Web Designing,

Semester – III – Business Studies, CSS & Java Script

Semester – IV- Business Economics, Business Law & Cyber Security,

Research Methodology, Cloud Computing, AI & ML, MIS, PHP & MySQL

Semester – V – Python

Semester – VI – Web Technology and Multimedia, Entrepreneurship Skill

Development, Digital Marketing, Company Law and Secretarial Practice

Time: 3 Hours

Total Marks: 80

N. B. - a) Draw well labeled diagram wherever necessary.

b) All questions are compulsory.

Q1.

8 x 2 = 16

N. B. – 1. Each question carries two marks.

2. Answers should not more than five lines.

- A. Unit I
- B. Unit I
- C. Unit II
- D. Unit II
- E. Unit III
- F. Unit III
- G. Unit IV
- H. Unit IV

Q2.

8 x 3 = 24

N. B. – 1. Each question carries three marks.

2. Answers should not more than ten lines.

- A. Unit I
- B. Unit I
- C. Unit II
- D. Unit II
- E. Unit III
- F. Unit III
- G. Unit IV
- H. Unit IV

N. B. – 1. Each question carries five or ten marks.

2. Answers should not more than 250 words for 5 marks questions and 600 words for 10 Marks questions respectively.

Q3. Either

- (A) 5 Unit I
- (B) 5 Unit I

OR

- (C) 10 Unit I

Q4. Either

- (A) 5 Unit II
- (B) 5 Unit II

OR

- (C) 10 Unit II

Q5. Either

- (A) 5 Unit III
- (B) 5 Unit III

OR

- (C) 10 Unit III

Q6. Either

- (A) 5 Unit IV
- (B) 5 Unit IV

OR

- (C) 10 Unit IV

QUESTION PAPER PATTERN

First // Third // Fifth / Semester

Bachelor of Commerce (Computer Application)- (BCCA) OB & CBCS Examination

BCCA NEW SEMESTER – I

1CC2	MS Office (IT)	Total 50 MCQ of 2 marks each. (Minimum 10 MCQ on each Unit) (Total marks : 100)
1GE4	Professional Ethics and Human values OR Personal Wellbeing	

BCCA NEW SEMESTER – III

3AE1	Environmental studies & Community Engagement	Total 40 MCQ of 2 marks each. (10 MCQ on each Unit) (Total marks : 80)
1GE4	Ethical Hacking OR Computer Network OR Content Writing & Analysis	Total 50 MCQ of 2 marks each. (Minimum 10 MCQ on each Unit) (Total marks : 100)

BCCA NEW SEMESTER – V

5AE2	Internet of Things	Total 40 MCQ of 2 marks each. (10 MCQ on each Unit) (Total marks : 80)
5DSE3	Big Data OR Block chain technology OR Software Project Management	Total 50 MCQ of 2 marks each. (Minimum 10 MCQ on each Unit) (Total marks : 100)

