MANGALORE UNIVERSITY

Bachelor of Computer Applications (BCA) Degree Programme

2019-2020 Onwards

V SEMESTER BCA

BLOWN UP SYLLABUS & PRACTICAL LISTS

Paper :BCAC331 Theory : 4 hrs/week Credits : 2	**Software Engineering**	48 Hours IA : 20 Exam : 80

Topic	Book No.	Chapter Number	Sub Sections
Unit-1 [12 Hours]			
Introduction: The Problem Domain- Industrial Strength Software, Software is Expensive, Late and Unreliable, Maintenance and Rework, Software Engineering Challenges-Scale, Quality and Productivity, Consistency and Repeatability, Change, The Software Engineering Approach-Phased Development Process, Managing the process.	1	1	1.1, 1.2 and 1.3.
Software Processes: Software Process-Processes and Process Models, Component Software Processes, ETVX Approach for Process Specification, Desired Characteristics of a Software Process-Predictability, Support Testability and Maintainability, Support Change, Early Defect Removal, Process Improvement and Feedback, Software Development Process Models- Waterfall Model, Prototyping, Iterative Development, Timeboxing Model, Comparison of Models, Other software Processes-Project Management Process, The Inspection Process, Software Configuration Management Process, Requirements Change Management Process, Process Management Process.	1	2	2.1, 2.2, 2.3 and 2.4.
Unit- II [12 Hours]			
Software Requirement Analysis and Specification: Software Requirements-Needs for SRS, Requirement Process, Problem Analysis -Informal Approach, Data Flow Modelling, Prototyping, Requirements Specification- Characteristics of an SRS, Components of an SRS, Specification Language, Structure of a Requirement Document, Validation.	1	3	3.1, 3.2, 3.3, 3.5. (Excluding 3.2.3)
Function Oriented Design: Design Principles-Problem Partitioning and Hierarchy, Abstraction, Modularity, Top-down and Bottom-up strategies, Module- Level Concepts-Coupling, Cohesion, Design Notation and Specification-Structure Charts, Specification, Structured Design Methodology-Restate the Problem as a DFD, Identify the Most Abstract Input and Output Data Elements, First Level Factoring,	1	6	6.1, 6.2, 6.3, 6.4 (Excluding 6.4.7), 6.5

Factoring the Input, Output and Transform Branches, Design Heuristics, Transaction Analysis, Verification.			
Unit – III [12 Hours]			
Detailed Design: Detailed Design and PDL-PDL, Logic/Algorithm Design, State Modelling of Classes, Verification-Design Walkthroughs, Critical Design Review, Consistency Checkers.	1	8	8.1 and 8.2
Coding: Programming Principles and Guidelines-Common Coding Errors, Structured Programming, Information Hiding, Some Programming Practices, Coding Standards, Verification-Code Inspections, Static Analysis, Unit Testing, Combining Different Techniques.	1	9	9.1 and 9.4 (Excluding 9.4.3)
Unit – IV [12 Hours]			
Testing and Testing Tools: Testing Fundamentals-Error, Fault and Failure, Test Oracles, Test Cases and Test Criteria, Psychology of Testing, Black Box Testing- Equivalence Class Partitioning, Boundary Value Analysis, Cause-Effect Graphing, Pairwise Testing, Special Cases, State-Based Testing, White Box Testing-Control Flow Based Criteria, Data Flow Based Testing, Mutation Testing, Test Case Generation and Tool Support, Testing Process-Levels of Testing, Test Plan, Test Case Specification, Test Case Execution and Analysis, Defect Logging and Tracking.	1	10	10.1, 10.2, 10.3 and 10.4.
Introduction to Testing Tools: Overview of WinRunner, Silk Test, SQA Robot, LoadRunner, JMeter and Test Director	2		4.1 (Page No 111-112), 5.1 (Page No 167-168), 6.1 (Page No 199), 7.1 (Page No 229-230), 8.1 (Page No 243-244), 9.1 (Page No 265-266), (Relevant sections only).

Text Books:

1. Pankaj Jalote, An Integrated Approach to Software Engineering, 3rd edition, Narosa Publishing House.
2. Dr. K.V. K. K Prasad, Software Testing Tools, Dreamtech Press.

Reference Books:

1. Roger S. Pressman, Software Engineering: A Practitioner's Approach, McGraw Hill, 2009.
2. K K Aggarwal, Yogesh Singh, Software Engineering, 1st edition, New Age International Pvt Ltd Publishers
3. Renu Rajni, Software Testing: Methodologies, Tools and Processes, Tata McGraw hill education.

Paper : BCACAC332 Theory : 4 hrs/week Credits : 2	**Computer & Communication Networks**	48 Hours IA : 20 Exam : 80

Topic	Book Number	Chapter Number	Section/sub-section Numbers
UNIT – I [12 Hours]			
Introduction – Computer Network, Elements of CN, Internet, Fundamentals of Data & Signals, Network Topologies, Network OS, Transmission Medium, Types of Networks, Connection-oriented & Connection-less services, Segmentation & Multiplexing, Network Switching	1	2	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 3,2.11.5,2.11.6), 2.12 (2,12, 2.12.1, 2.12.2 (2.12.2.1, 2.12.2.2), 2.12.2.3)
OSI and TCP/IP Models –Protocol Stack, OSI Model, TCP/IP Model, Difference between OSI & TCP/IP Models, How does TCP/IP Model Work?, Understanding Ports,	1	3	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7
Networking Devices – End Devices, Intermediary Devices, Connectivity Devices, Internetworking Devices	1	4	4.1, 4.2, 4.3, 4.4(4.4.1, 4.4.1.1, 4.4.1.2, 4.4.2 (all sub-sections), 4.4.3 (all sub-sections), 4.4.4 (all sub-sections), 4.4.5)
UNIT – II [12 Hours]			
LAN Technologies – Introduction, Types of Network Links, Medium Access Control Techniques, Random Access Techniques, Static Channelization Techniques, Ethernet, Token Ring	1	5	5.1, 5.2, 5.3, 5.4 (5.4, 5.4.1, 5.4.2, 5.4.3, 5.4.4), 5.7 (5.7, 5.7.1, 5.7.2, 5.7.3), 5.8 (5.8, 5.8.1)
ARP & RARP – ARP, RARP	1	6	6.1, 6.2
IP Addressing – Introduction, What is an IP Address, Understanding IP Address, Why do we need IP Addresses?, IPv4 vs IPv6, Classful Addressing, IPv4 Addressing Types, IPv4 Reserved Addresses, Packet Flow in an IPv4 Network, IPv4 Datagram Header Format, Limitations of IPv4 Classful Addressing, Subnet Masks and Subnetting, Supernetting and classless Inter-Domain Routing, IPv6, IPv6 Features, IPv6 Addressing Notation, IPv6 Addressing Types, Unicast IPv6 Addresses, Multicast IPv6 Addresses, Anycast IPv6 Addresses, IPv6 Datagram Header Format	1	7	7.1, 7.2, 7.3, 7.4, 7.5 (7.5.1, 7.5.2), 7.6, 7.7, 7.8, 7.9, 7.10, 7.12, 7.13(7.13.1,7.13.2,7.13.3,7.13.4), 7.14(7.14.1, 7.14.2), 7.16, 7.17, 7.19, 7.22
UNIT – III [12 Hours]			
Wireless Networks and Mobile IP – Infrastructure of Wireless Network, Wireless LAN Technologies, IEEE 802.11 Wireless Standard, Cellular Networks & Connectivity, Generations of Cellular Systems, Mobile IP, Wireless Mesh Networks (WMNs)	2	6	6.1, 6.2, 6.3, 6.4(6.4, 6.4.1, 6.4.5, 6.4.6), 6.5, 6.6

IP Routing – Introduction, Classification of Routing Algorithms, Routing Algorithm Metrics, Internet Architecture, Autonomous Systems, Routing Protocols, RIP, OSPF, BGP	1	8	8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.8(8.8, 8.8.1, 8.8.2, 8.8.3 ,8.8.4), 8.9(8.9, 8.9.1), 8.10(8.10, 8.10.1, 8.10.2, 8.10.5, 8.10.6)
TCP & UDP – Introduction, TCP & UDP, TCP/IP Terminology, Ports and Sockets, User Datagram Protocol, Transmission Control Protocol, Comparison of TCP & UDP	1	9	9.1, 9.2, 9.3, 9.4, 9.5 (9.5, 9.5.1, 9.5.2, 9.5.3), 9.6(9.6, 9.6.1, 9.6.2, 9.6.3, 9.6.4, 9.6.5, 9.6.6, 9.6.7, 9.6.8, 9.6.10 (excluding sub-section)), 9.7
VoIP – Overview, VoIP Signalling Protocols	2	18	18.1, 18.2
UNIT – IV [12 Hours]			
Session Layer - Introduction, Session Layer Tasks, Session Layer Services, RPC Protocol, Major Session Layer Protocols	1	13	13.1, 13.3, 13.4, 13.5 (13.5, 13.5.1, 13.5.3), 13.6
Presentation Layer – Introduction, Presentation Layer Tasks, Data Conversion, Data Representation, Data Compression, Data Encryption	1	14	14.1, 14.3, 14.4, 14.5, 14.6 (Excluding sub-sections), 14.7
Application Layer Protocols – Introduction, HTTP, SNMP, FTP, DNS, TFTP, DHCP	1	16	16.1, 16.2, 16.3, 16.4, 16.5, 16.6, 16.7 (16.7.1, 16.7.3, 16.7.4, 16.7.5)
Network Security – History of network security, Pillars of Network security, Glossary of Network Security Terms, Network Security Components, Types of Attacks, Known security attacks, Cryptography, Types of Ciphers, Encryption and Decryption, Hashing, Digital Signature, Firewalls	1	15	15.5, 15.6, 15.7, 15.8, 15.9, 15.10 (15.10.1, 15.10.2, 15.10.3, 15.10.4, 15.10.5, 15.10.6, 15.10.7, 15.10.8, 15.11 (15.11.1, 15.11.2), 15.12, 15.13 (15.13.1.1, 15.13.1.2, 15.13.2.1, 15.13.2.2), 15.14 (Excluding sub-sections), 15.15(15.15.1, 15.15.3, 15.15.4, 15.15.5, 15.15.6, 15.15.7,15.15.8,15.15.9)15.17(15.17.1,15.17.2, 15.17.3, 15.17.4, 15.17.5)

Text Books

1. Narasimha Karumachi, A Damodaran, M. Sreenivasa Rao Elements of Computer Networking – An Integrated Approach, CareerMonk Publications, 2014
2. Nader F. Mir, Computer and Communication Networks, PEARSON, 2015

Paper :BCAC333	Distributed Computing	48 Hours
Theory : 4 hrs/week Credits : 2		IA : 20 Exam : 80

Section	Topics	Page Nos
UNIT I [12 Hours]		
1.1	Introduction, Definition	21-22
1.2	History (Excluding figure 1.1 and1.2)	22-23
1.3	Different Forms Of Computing	25,26,28
1.4	Strengths And Weakness	28-29
1.5	Basics Of Operating System (Excluding figure 1.5 code, 1.6 code, 1.7code, Fig 1.10)	32-40
1.6	Network Basics (Excluding Network Architecture, Fig 1.13, 1.14)	40-54
1.7	Software engineering basics	55-57
2.	Interprocess Communications	67-68
2.1,2.2, 2.3,2.4 2.5,2.6 2.7,2.8 2.9,2.10 2.11	An archetypal IPC Program interface, event synchronization, timeouts and threading, deadlocks and timeouts, data representation (Page 78 only), data encoding, text based protocols, request response protocols, event diagram and sequence diagram, connection oriented versus connectionless IPC, The evolution of paradigm for interprocess communication. (Excluding fig2.11,2.12,2.18)	69-86
UNIT II [12 Hours]		
3	Distributed computing paradigms	95
3.1-3.4	Paradigms and abstraction, An example application, paradigms for distributed applications, tradeoffs. (Excluding page 101)	95-113
4	The socket API	117
4.1-4.3	Background, the socket metaphor in IPC, The datagram socket API (Excluding table 4.1)	117-122
4.4-4.6	The stream mode socket API, The socket with non-blocking I/O operations, secure socket API (Excluding example 4 and tables 4.4,4.5 figure 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, Excluding page 138-143, Excluding the java secure socket extension of page 145)	133-146
UNIT III [12 Hours]		
5.1-5.6	Client server paradigm-issues, software engineering for a network service, connection oriented and connectionless servers, iterative server and concurrent server, stateful servers (Excluding figure(programs) 5.6, 5.7,5.8,5.9,5.10,5.11,5.12, 5.13,5.14,5.15,5.16,5.17, 5.18,5.19,5.20,5.21,5.22,5.24, 5.25,5.26,5.28,5.29, 5.31,5.32, 5.33)	153-194
6.1-6.6	Group communication- unicasting and multicasting, multicast API, connection oriented versus connectionless multicast, reliable multicast versus unreliable multicasting, the java based multicast API, reliable multicast API (Excluding Example 1 and 2, Excluding figure 6.2,6.3,6.4,6.5)	203-218

UNIT IV [12 Hours]		
7.1-7.11	Distributed objects-message passing versus distributed objects, an archetypal distributed object architecture, Distributed object system, remote procedure calls, Remote method invocation, The Java RMI architecture, The API for Java RMI, A sample RMI Application (any related programs), Steps for building an RMI applications, testing and debugging, comparison of RMI and socket and socket APIs	223-247
8.1-8.3	Advanced RMI - client callback, stub downloading, RMI security manager (Excluding figure 8.3-8.8,8.11-8.12(all programs), Excluding Instantiation of a security manager in an RMI program of 268)	253-268

Text Book:

M.L.Liu, Distributed Computing-Principles and Applications, Pearson Education, 2004.

Paper: BCAC334 Theory: 4 Hours/week Credits: 2	**Web Technology**	48 Hours IA : 20 Exam : 80

Topic	Book No.	Chapter Number	Page Numbers
UNIT – I [12 Hours]			
An Introduction to HTML5: What is HTML5, New Structural Elements, New Inline Elements New Form Input Types. The HTML5 Doctype Element.	1	1	3-4, 13-14,
Drawing with the canvas Element: Using the HTML5 Element – Canvas, Drawing Rectangles, Drawing Line Art, Filling Line Art, Drawing Arcs, Drawing Text, drawing with Bezier Curves, Drawing with Quadratic Curves.	1 1	2 5	20-21 76-86
Video on Web: Video Codecs, Audio Codecs, HTML5 <video> Markup.	1	6	90-102
Building Forms in HTML5: Placeholder Text, Autofocus Fields, Email Addresses, Web Address, Using Numbers, Numbers as sliders, Date Pickers, Search Boxes, Color Pickers.	1	9	133-142
Overview of C#: Introduction to C#, A sample C# program, namespaces, Using aliases for namespace classes	2	3	18-20 (Except executing C# programs), 22
	2	4	34-49,
Literals Variables and Data types.	2	5	55-72
Operators and Expressions.	2	6	80-95
Decision making and branching.	2	7	102-117
Decision making and looping.	2	8	125-135
Methods in C#	2	12	212-227 (Except
Classes and Objects.			properties and indexers)
UNIT – II [12 Hours]			
Introduction to ASP .NET: ASP .NET Definition, Features of ASP .NET, Characteristics of ASP .NET web Forms, Types of ASP .NET Web Server Controls	Ref. Book-2		119-126
ASP .NET Standard Controls – TextBox, Button, Label, Image, ImageButton, DropDownList, CheckBox, CheckBoxList, RadioButton, RadioButtonList, Panel, AdRotator, Calender, HyperLink Controls.	3	3	54-61, 64-68, 73-81, 88-97
Validation Controls – BaseValidator Class, RequiredField Validator, RangeValidator, CompareValidator, RegularExpression Validator, Validation Summary Control.	3	5	126-139 (except custom validator control)
ADO .NET – ADO .NET objects, DataSource Controls, DataBound Controls (Except Repeater and Chart Controls)	3	8	196-228
UNIT – III [12 Hours]			
PHP Crash Course: Creating a Sample Application: Bob's Auto Parts, Embedding PHP in HTML, Adding Dynamic Content, Accessing Form Variables, Understanding Identifiers, Examining Variable Types, Declaring and Using Constants, Understanding Variable Scope.	4	1	11-27
The Error Suppression Operator, the Execution Operator, The Type Operator.			34-35
Testing and Setting Variable Types (only gettype() and settype(). Breaking Out of a Control Structure or Script, Using declare, Next.			39
Storing and Retrieving Data: Processing Files: Opening a File, Writing to a File, Closing a File, Reading from a File.	4	2	50,51 55-69

Using Arrays, String Manipulation and Regular Expressions: Numerically Indexed Arrays, Arrays with Different Indices, Array Operators, Multidimensional Arrays, Sorting Arrays, Sorting Multidimensional Arrays, Reordering Arrays, Loading Arrays from Files, Performing Other Array Manipulations, Counting Elements in an Array: count(), sizeof(), and array_count_values().	4	3	76-98
String manipulation and Regular expressions: Formatting Strings, Joining and Splitting Strings with String, Functions, Comparing Strings, Matching and Replacing Substrings with String Functions, Introducing Regular Expressions.	4	4	104-130
UNIT – IV [12 Hours]			
Object-Oriented PHP: Creating Classes, Attributes, and Operations in PHP. Implementing Inheritance in PHP, Overriding, Implementing Interfaces (excluding Preventing Inheritance and Overriding with final, Understanding Multiple Inheritance), Understanding Advanced Object-Oriented Functionality in PHP.	4	6	162-166, 168-174, 185-192
Accessing Your MySQL Database from the Web with PHP: How Web Database Architectures Work, Querying a Database from the Web, Putting New Information in the Database, Using Prepared Statements, Using Other PHP-Database Interfaces.	4	11	271-289
Interacting with the File System and the Server: Uploading Files, Using Directory Functions, Interacting with the File System, Using Program Execution Functions.	4	17	379-400
Text Books: 1. Ivan Bayross, HTML5 and CSS3 made simple, BPB Publications. 2. E Balagurusamy, Programming in C#, 3rd Edition, TMH 3. ASP .NET 4.0 in simple steps, Kogent publications 4. Luke Welling, Laura Thomson, PHP and MySQL Web Development, Developer's Library, Sams Publishing, 5th Edition			
Reference Books: 1. Jason Hamilton, C# Programming: Quickly Learn C# Programming 2. C. Komalavalli and Sanjib K. Sahu, Essentials of .NET programming, Ane' Student Edition 3. Sams Teach Yourself HTML5 4. Bill Evjen, Scott Hanselman, Devin Rader, Professional ASP .NET 4 with C# and VB 5. Steven Holzner, PHP the Complete Reference			

Course: BCAC335 Theory/Week: 4 Hrs Credits :2	**Python Programming**	48 hours IA: 20 Exam: 80

Topic	Chapter	Page No
UNIT - I [12 Hours]		
Introduction to Python: Features of Python, Flavors of python, Python Virtual machine, Memory management, Garbage Collection, Comparison between Python and C, Java and Python**.** Installing Python for windows, Writing and executing Python program.	1 2	1-17 19-38
Datatypes& Operators in Python: Writing comments, docstrings, built in data types –None type, numeric type, sequences, sets and mappings. Literals, determining data types of variables, naming conventions in Python.	3	45-69
Operators: Arithmetic, Assignment, relational, logical, Boolean, Bitwise, membership & Identity Operators. Using Python interpreter as Calculator Mathematical functions.	4	71-91
Input &Output: Input/output Statements, Command line arguments.	5	95-110
Control Statements – if, if..else, if..elif, while loop, for loop, else suite, break, continue, assert, return Statements	6	117-148
Arrays in Python- Creating arrays, importing array module, Indexing and slicing on arrays, types of arrays, working with arrays using numpy. Creating array using linspace(), logspace(), arrange(), zeros() and ones() functions Dimensions and attributes of Array. Working with multidimensional arrays, indexing and slicing, matrices in numpy.	7	151-159 167-174 185-199
UNIT - II [12 Hours]		
Strings and characters-Creating, indexing, slicing, repeating, concatenating & comparing strings. Finding and counting substrings in string, Replacing, splitting and joining strings, Working with characters.	8	207 -223 228-230
Functions – Functions and methods, Defining, calling functions, returning multiple values, formal and actual parameters, Keyword argument Default arguments and variable argument, Local and Global variables, Anonymous functions and Lambdas, Decorators and Generators	9	237-261 265-275
Lists and Tuples: Creating, updating, concatenating lists, Methods to process the lists, **Tuples**: Creating and accessing tuple elements, Basic operations on tuples, Functions to process tuples, Nesting, inserting, modifying and deleting tuple elements.	10	283-290 293-294 307-319
Dictionaries: Operations on Dictionaries, Dictionary methods, Sorting elements of dictionary, Converting list and strings into Dictionary.	11	321 -334
UNIT - III [12 Hours]		
Classes and Objects-Defining class & Objects, constructors, type of methods and variables, Inner classes.	13	351 -371
Inheritance and Polymorphism: Type of Inheritance, super () method, method overloading & Overriding, Abstract classes and interfaces.	14 15	373-419 421-439
Exception Handling –Type of exceptions, assert Statemen, Except Block, User defined exceptions, logging the exceptions.	16	477-492
Regular expressions: Sequence characters, Quantifiers & Special characters in regular expressions	18	537-567
Creating Threads –Different ways of creating threads, Thread class methods, Thread Synchronization-Locks, semaphore, Communication between threads, Daemon Threads	21	

UNIT - IV [12 Hours]		
Graphical User Interface: Root window, font & colors, Canvas and frames. Widgets: Button, Label, Message, Text, Scrollbar, Checkbutton, Radiobutton, Entry, Spinbox, Listbox and Menu, Creating Tables.	22	569-620
Networking in Python: Reading source code of web page, downloading webpage and images, TCP/IP server, TCP/IP Client, UDP Server, UDP client, File Server, File Client, two-way communication between server and client, Sending simple mail	23	623-646
Database Connectivity: Types of databases used with Python, Using MySQL from Python, Retrieving and Inserting, updating and deleting data in a table, Creating Database tables through Python. Using Oracle database from Python Stored Procedures	24	650, 665-677 684-691
Text Book: Dr. R. Nageshwara Rao, Core Python Programming, Second Addition, Dreamtech Press		
Reference Books: 1. Martin C. Brown, Python - The Complete Reference, McGraw Hill Education 2. Mark Summerfield, Programming in Python 3 Complete Introduction to Python Language, Second Edition.		

Paper: BCAC336 Theory: 4 Hours/week Credits: 2	**E1: Accounting & Financial Management**	48 Hours IA : 20 Exam : 80

Topic	Book No.	Page Numbers
UNIT – I [12 Hours]		
Excel: Working with Formulas and Functions: Understanding formulas, exploring cell referencing, Defining the Basic concepts defined in a Function, Using Mathematical and statistical Functions, working with logical functions, Working with LookUp and Reference, Working with Auditing Tools	1	423-454
Working with Data Analysis Tools and Data Protection: Working with a Pivot Table, creating power view, understanding what if analysis Tool, Protecting Data in Excel, Linking Worksheets and workbooks, Consolidating Worksheet	1	456-498
Working with Google Sheets: Features of Google Sheet, Creating Google Sheet, Importing and Exporting data in Google Sheet, Putting Comments on a Google Sheet, Sharing a Google Sheet.	1	500-511
UNIT – II [12 Hours]		
Basics of Accounting: Need for accounting, Definitions of Accounting, Important terms in Accounting, Concept of Accounting, Classification of accounts, Rules of debit and credit, journal, ledger, trial balance, Financial statements.	1	1-27 (Excluding convections of Accounting)
Computerized Accounting: Exploring Computerized Accounting	1	29-33
Tally. ERP 9 and Elemental Features: Introduction, opening the Tally ERP 9 Application, Understanding the components of the Tally ERP 9 Application Window, Mouse and Keyboard Convections, Managing the screen Area, Closing the Tally. ERP 9 Application, creating a company in Tally ERP9, selecting a company, shutting a company, Altering Company Details, Company Features, Configuring Tally	1	41-54
Creating Masters in Tally ERP9: Introduction, Understanding Chart of Accounts, Creating Accounting Masters in Tally ERP9, Creating Inventory Masters in Tally ERP9	1	55-81
UNIT - III [12 Hours]		
Working With Vouchers: Introduction, Creating Voucher Type, Accounting Vouchers, Inventory Vouchers, Order Processing, Optional and Non-Accounting Vouchers	1	84-122
Working with Advanced Accounting Features: Introduction, Cost Categories, cost center.	1	123-129
Working with Advanced Inventory Features: Introduction, Price Levels and Price Lists, Actual and Billed Quantities, Point of Sale	1	165-189
Data Handling in Tally. ERP 9 Introduction, Taking Backup of Data in Tally, Restoring Data in Tally, Exporting Data, Importing Data, Password Policy	1	225-233
Tally ODBC **VAT Module:** Definition, Enabling VAT in Tally, Ledgers pertaining to VAT, Ledger creation, Stock item creation When VAT Enabled, Voucher entry when VAT enabled, VAT Reports	2 2	233-237 266,270-282
UNIT - IV [12 Hours]		
Reports in Tally: Introduction, Financial statements, Day Book, Accounting Books and Registers, Inventory Books and Registers,	1	236-256

Statements of Accounts, Statements of Inventory, Management Information System Reports, Exception Reports **Tax Deducted at Source (TDS):** Introduction, Basic Terminology of TDS, Enabling TDS in Tally ERP9, Creating Ledgers for TDS, Creating TDS Vouchers, TDS Reports **Goods and Service Tax:** Introduction, Features of GST, Benefits of GST, Classification of GST, Enabling GST in Tally. ERP 9, Creating Masters for GST, Creating vouchers for GST, Viewing the GST Rates.	1 1	261-272 273-277, 302-326

Text Book:

1. Vikas Gupta, Comdex, Tally.ERP9 course kit with GST &MS Excel, Dreamtech Press
2. Namratha Agarwal, Sanjay Kumar, Comdex Tally 7.2 Course Kit, Dreamtech Press
3. Ashok K Nadhani, Tally for GST, Tally. ERP 9 Training Guide, 4th Revised & Updated Edition BPB

References Books:

1. Nadhani, Tally. ERP 9 Training Guide, BPB
2. Dinesh Maidasani Tally 9.0, Laxmi Publication
3. Vikas Gupta, Comdex Computer and Financial Accounting with Tally 9.0, Wiley India Pvt Ltd, 2010
4. Bernd Held, Theodor Richardson, Excel Functions and Formulas, BPB Publications

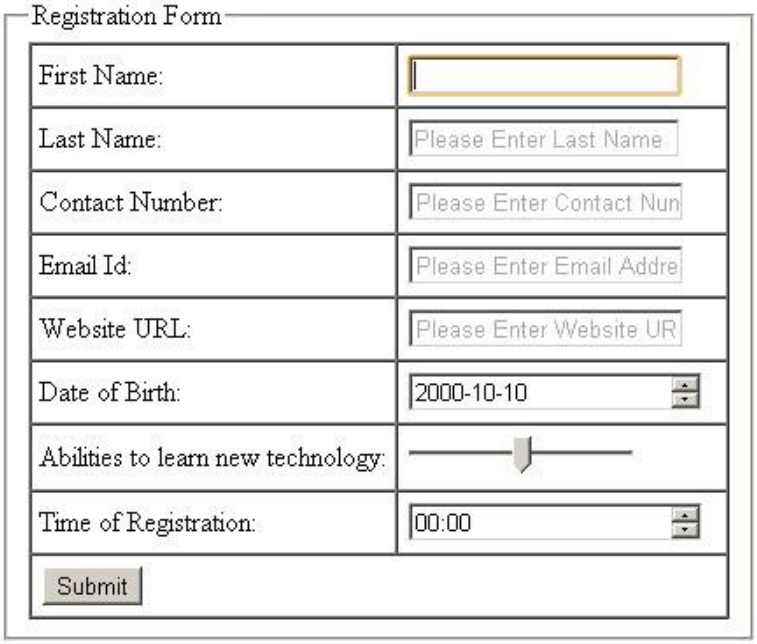
Paper: BCAC337 Theory: 4 Hours/week Credits : 2	**E2: Android Application Development**	48 Hours IA : 20 Exam : 80
Topic		**Chapter Number**
UNIT – I [12 Hours]		
Getting an Overview of Android: Introducing Android: Listing the Version History of Android Platform, Discussing Android APIs, Describing the Android Architecture, Application Framework, Exploring the Features of Android. Discussing about Android Applications: The Application Components, The Manifest File. Developing and Executing the First Android Application: Using Eclipse IDE to Create an Application, Running Your Application, Exploring the Application.		2
Using Activities, Fragments, and Intents in Android: Working with Activities: Creating an Activity, Starting an Activity, Managing the Lifecycle of an Activity, Applying Themes and Styles to an Activity, displaying a Dialog in the Activity, Hiding the Title of the Activity. Using Intents: Exploring Intent Objects, Exploring Intent Resolution, Exploring Intent Filters, Resolving Intent Filter Collision, Linking the Activities Using Intent, Obtaining Results from Intent, Passing Data Using an Intent Object. Fragments: Fragment Implementation, Finding Fragments, Adding, Removing, and Replacing Fragments, Finding Activity Using Fragment, Using the Intent Object to Invoke Built-in Application.		3
Working with the User Interface Using ViewGroups: Working with View Groups: The LinearLayout Layout, The RelativeLayout Layout, The ScrollView Layout, The TableLayout Layout, The FrameLayout Layout, The TabLayout Using the Action Bar.		4
UNIT – II [12 Hours]		
Working with the User Interface Using Views: Working with Views: Using the TextView, Using the EditText View, Using the Button View, Using the RadioButton View, Using the CheckBox View, Using the ImageButton View, Using the ToggleButton View, Using the RatingBar View. Binding Data with the AdapterView Class: Using the ListView Class, Using the Spinner, Using the Gallery View. Designing the AutoTextCompleteView Implementing Screen Orientation: Anchoring the Views of the Current Activity, Customizing the Size and Position of the Views. Designing the Views Programmatically. Handling UI Events: Handling User Interaction with Activities, Handling User Interaction with the View. Specialized Fragments: ListFragment, DialogFragment, PreferenceFragment. Creating Menus: The Options Menu, The Context Menu, The SubMenus.		4
Handling Pictures and Menus with Views: Working with Image Views: Displaying Images in the Gallery View, Displaying Images in the Grid View, Using the IimageSwitcher View. Designing Context Menu for Image View. Using the AnalogClock and DigitalClock Views Embedding Web Browser in an Activity Notifying the User: Creating the Toast Notification, Creating the Status Bar Notification, Creating the Dialog Notification.		5
Storing the Data Persistently: Introducing the Data Storage Options: Using Preferences, Using the Internal Storage: Exploring the Methods Used for Internal Storage, developing an application to Save User Data Persistently in File. Using the External Storage: Exploring the Methods Used for External Storage, Developing Application to Save File in SD Card.		6

UNIT – III [12 Hours]	
Using the SQLite Database: Creating the Database Helper Class, Creating the Layout and Main Activity Class, Creating the Layout and Activity for the Insert Operation, Creating the Layout and Activity to Search a Record, Creating the Activity Class to Fetch All Records, Creating the Layout and Activity for the Update Operation, Creating the Layout and Activity for the Delete Operation, Executing the Database Operations	6
Working with Location Services and Maps: Working with Google Maps: Exploring Google Maps ExternalLibrary, Creating an Application Using Google Maps Android API, Disabling the Zoom Control Button, Changing the Map Type, Displaying the Specific Location and Adding Markers, Handling Map Gestures Interaction, Getting the Current Location of a User. Working with Geocoding and Reverse Geocoding.	8
Audio, Video, and Camera: Role of Media Playback, Using Media Player: Media Formats Supported by Media Player, Preparing Audio for Playback, Preparing Video for Playback, Recording and Playing Sound: Use of Media Store. Creating a Sound Pool.	10
Threads and Services: Introducing Threads: Worker Threads, Using AsyncTask, Introducing Services: Exploring Services Essentials, Understanding the Lifecycle of a Service, Exploring the Service Class, Introducing the Service Class, Creating a Bound Service.	11
UNIT – IV [12 Hours]	
Telephony and SMS: Handling Telephony: Displaying Phone Information Application, Receiving Phone Calls Application, Making Outgoing Phone Calls Application. Handling SMS: Sending SMS Using SmsManager. Sending SMS Using Intent: Receiving SMS Using the BroadcastReceiver Object, Role of Default SMS Providers.	13
Hardware Sensors: Introducing Sensors: Exploring the Sensor Framework, Managing Various Sensor Configurations, Understanding the Sensor Coordinate System. Using Sensors.	14
Widgets and Live Wallpapers in Android: Home Screen Widgets: Adding the Broadcast Receiver Class to an Android Manifest, Using the RemoteViews and AppWidgetManager Classes, Creating a CustomizedClock Widget. Collection View Widgets: Collection View Widget Layouts, Creating the Remote Views Service Class, Creating a Remote Views Factory Interface, Populating Collection View Widgets. Live Wallpaper: Creating Live Wallpaper Resource and Service, Configuring Wallpaper Service, Creating Live Wallpaper Application.	15
Text Book 1. Pradeep Kothari, Android Application Development (With KitKat Support) – Black Book, DreamTech Press.	

Paper: BCAP339 Practical: 3 Hours/week Credits : 2	Web Applications Lab	IA : 20 Exam : 80

PART-A

1. Develop a HTML5 document to create a Registration Form as shown below :



2. Develop a HTML5 document to create a 'No Parking' sign as shown below. (use canvas element)

3. Create an HTML5 document which will play an audio and video. Note: Both the audio and video should be auto played and should have full controls and both should play in loop.
4. Create an HTML5 documents to draw a bezier curve and a quadratic curve using canvas element.
   Note: Must use color input for the stroke style, that is, if user changes the color in web page, the curve with selected color should be drawn. For line thickness range input must be used i.e., when range value changes curve line thickness must change.

PART–B

1. Create an ASP.NET web application to show an advertisement banner which shows advertisement related to LENOVO if the date selected is odd and DELL if the date selected is even. (Use MonthCalendar control to select the date).
2. Create a webpage which shows a food menu based on user selection (Morning, afternoon, evening, night – use RadioButtonList control) in a panel with greeting according to time of the day. Menu should have at least 5 items which should be displayed in CheckedListBox and there must be total amount displayed based on selected items.
3. Create a web application using PHP which takes two non-numerically indexed arrays and append both if they have same elements and store the content of only one array in a file. If the arrays do not have same elements file should contain appended content of both the arrays.
4. Create a web application using PHP which receives a line of text and split it into words and in each of those words calculate number of letters, digits & special characters and display the result for each word. The application should also display the entire sentence by replacing a specific word with another word and represent the replaced word with uppercase letters.

PART – C

1. Create web application using ASP.NET which helps a candidate to apply for a job with candidate name, father's name, gender, date of birth, qualification, CGPA, skill set (Using check boxes) email and contact number. The form should have a candidate id auto generated. After successfully inserting the data into a database, display a confirmation message. Using GridView display all added rows on another page.

   Validations to be applied:

   a) Candidate name and Father's name cannot be empty.
   b) Age must be greater than or equal to 21.
   c) Contact number must have 10 digits and it must be number.
   d) Email should be in proper email format.
   e) At least one skill should be selected from skill set.
2. Create an ASP .NET web application to enter Telephone number, name and address of a customer. Application must allow the user to insert and delete phone number. While deletion appropriate prompt must appear. Also, code must check for existence of the telephone number before deletion. If the record for deletion with the specified phone number does not exist, the user must receive an appropriate message. A success message must appear after successful insertion and deletion.

   Validations: Telephone number, name and address cannot be blank.
3. Create a web application using Object Oriented PHP to insert manage library application in which user can insert a book information containing accession number (primary key), title, author, publication, no. of pages, price and availability status (issued or available). The user must be able to issue and return books depending on their accession number. If the book has already been issued, an appropriate message should be displayed; similarly, when returning a book, an appropriate message should

be presented if the book has already been returned. If issue and return are successful, the success message must be displayed.

4. Create a web application that manages hotel reservations using Object Oriented PHP. Room no (primary key), Type of room (may take values like single semi, single deluxe, single ac, double semi, double deluxe, double ac, dormitory), capacity, and status (booked or available) must all be present in the database table. The webpage should list all of the rooms that are available for reservation. The user must enter the room number and the date when making a reservation. When a user checks in, the booking status must be changed to booked, and when they check out, the room status must be changed to available. The list of available rooms on the web page must be updated during both booking and check-out. The proper message must appear after a successful booking or check out. If the entered room number is not present or is not in the concerned status when booking or checking out, an appropriate message should be displayed.

Evaluation Scheme for Lab Examination

Assessment Criteria		**Marks**
Program – 1 from Part A	Writing the Program	10
	Execution & Formatting	05
Program – 2 from Part B	Writing the Program	12
	Execution & Formatting	08
Program – 3 from Part C	Writing the Program	20
	Execution & Formatting	10
Viva-Voce		05
Practical Record		10
Total		**80**

Paper: BCAP340 Practical: 3 Hours/week Credits: 2	**Python Programming Lab**	IA : 20 Exam : 80

PART – A

1. Program to input N numbers into array and separate prime numbers and display them.
2. Program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
3. Consider a tuple t1= (1,2,5,7,9,2,4,6,8,10). Write a program to perform following operations:
   a. Print half the values of tuple in one line and the other half in the next line.
   b. Print another tuple whose values are even numbers in the given tuple.
   c. Concatenate a tuple t2= (11,13,15) with t1.
   d. Return maximum and minimum value from this tuple.
4. Write a function that takes a sentence as input from the user and calculates the frequency of each letter. Use a variable of dictionary type to maintain the count.

PART – B

1. Program to create a class Employee with empno, name, depname, designation, age and salary and perform the following function
   a) To accept details of N employees
   b) To display details of all the employees
   c) To search for an employee among all employees and display the details of that employee.
2. Program to create a class Rectangle with data members length and width and a method which will compute the area and perimeter of rectangle. Inherit a class Box that contains additional method volume. Override the perimeter method to compute perimeter of a Box. Display details Rectangle and Box.
3. Program using user defined exception class that will ask the user to enter a number until he guesses a stored number correctly. To help them figure it out, a hint is provided whether their guess is greater than or less than the stored number using user defined exceptions.
4. Write a Python program to
   a. find the sequences of one upper case letter followed by lower case letters.
   b. match a word containing 'z'
   c. match a string that contains only upper and lowercase letters, numbers, and underscores
   d. to remove leading zeros from an IP address

PART – C

1. GUI program to design a Simple Calculator
2. Create a GUI to input Principal amount, rate of interest and number of years, Calculate Compound interest. When button submit is pressed Compound interest should be displayed in a textbox. When clear button is pressed all contents should be cleared.

3. Create a table student table (regno, name and marks in 3 subjects) using MySQL and perform the followings
    a. To accept the details of students and store it in database.
    b. To display the details of all the students
    c. Delete particular student record using regno.
4. Create a table employee (empno, name and salary) using MySql and perform the followings
    a. To accept the details of employees and store it in database.
    b. To display the details of a specific employee
    c. To display employee details whose salary lies within a certain range

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part A	Writing the Program	10
	Execution & Formatting	05
Program – 2 from Part B	Writing the Program	12
	Execution & Formatting	08
Program – 3 from Part C	Writing the Program	20
	Execution & Formatting	10
Viva-Voce		05
Practical Record		10
Total		**80**

Paper: BCAP341 Practical: 3 Hours/week Credits: 2	E1: Accounts & Financial Management Lab	IA : 20 Exam : 80

PART-A

MS-Excel

1. Create a worksheet with sl.no., Name of the salesman, Item, no. of items sold, rate per unit, total amount.

a) Find the total number of items sold.
b) Round the total sales to 1 digit.
c) Find the sum of sales if item equal to book.
d) Count the sales if item equal to soap.
e) Concatenate name with total amount.
f) Find the count of salesmen who has not sold any item.

2) Create a student worksheet with the following format: (Use data validation while entering marks).

Student Name	Arjun	Bhuvan	Deepa	Ranjan	Vindhya
Kannada	68	54	65	43	87
English	90	68	76	86	98
Science	87	67	56	76	56
Maths	65	65	65	87	98
Social	87	98	87	86	76
Hindi/Sanskrit	76	65	54	43	65

a) Create a dropdown list for Student Name in separate cell. Using Hlookup function retrieve the mark of Bhuvan in Science.
b) Fetch the marks in all subjects of Deepa.
c) Use VLookup function to obtain the maths mark of Vindhya.
d) Calculate total marks. Retrieve the total mark of the student who obtained maximum total marks.

3) Create a worksheet in the following format and separate numbers and text from a cell. Use macros. (Create a module using VBA). (Enter 10 records)

Quantity	Number	Text
5 Kg	5	Kg
56 Ltr	56	Ltr

4. Create 2 worksheets to enter Employee details like Employee Id, Name, Designation, Phone no., address, email_id, salary, DA, HRA, PF, Gross Salary, net salary of 2 years.

a) Find net salary of an employee in 2 years.
b) Use Lookup function to Retrieve Employee address of the employee selected from the list.
c) Use Scenario Manager to find net salary of an employee with different salaries.
d) Use goal seek to find salary if the net salary is 40,000.

PART-B

1) **Create last year closing ledger as per given below details**

Jindal Pvt. Ltd. **Balance Sheet** **1-Apr-2019 to 31-Mar-2020**			
Liabilities	**Amount**	**Assets**	**Amount**
Capital	5,00,000	Plant &Machinery	1,75,000
Loan from HDFC	2,50,000	Furniture	1,50,000
Outstanding Salary	25,000	Building	2,00,000
Sundry Creditors	65,000	Cash	50,000
Profit & Loss	1,55,000	Investment in Govt. Bond	1,40,000
		Kotak Mahindra Bank	1,40,000
		Sundry Debtors	70,000
		Closing Stock	70,000
Total	**9,95,000**		**9,95,000**

2) Prepare the given Trial Balance in Tally.

Name of the Ledger	**Opening Balance (Dr) in Rs**	**Name of the Ledger**	**Opening Balance (Cr) In Rs.**
Electricity Charges	500	Rangan Capital	3,000
Furniture Fittings	250	Bank OD	520
Debtors	1,380	Sales	15,000
Stock	2,200	Discount Received	200
Purchases	11,000	Commission Received	15,000
Cash in Hand	4,000	Rent Received	960
Plant & Machinery	8,000		
Discount Paid	160		
Insurance Paid	200		
General Exp.	400		
Salaries	900		
Buildings	2000		
Carriage Inwards	180		
Bad debts	90		
Commission paid	220		
Depreciation	200		
Factory Rent	3000		
	34,680		**34,680**

3. Record the following vouchers in Tally and generate Balance sheet.

July 1 2020	Ram commenced business with cash 10,000
July 30 2020	Paid to bank, 8000
August 1 2020	Bought goods for cash 500
August 1 2020	Bought Office furniture 400
August 1 2020	Drew from bank for office 1000
August 30 2020	Goods sold to Shyam 2600
August 30 2020	Bought goods from Kishan 410
Sep 1 2020	Trade expenses paid 100
Sep 1 2020	Received cash from Shyam 600
Sep 30 2020	Wages paid 50
Oct 1 2020	Kishan paid off in full settlement of his account 410
Oct 1 2020	Rent paid 100
Oct 30 2020	Interest due on capital 500

4. Record the following transactions for Ram Home Needs for the year 2014-15

Jun 1	Ramu commenced business with cash Rs.20000
Jun2	He bought goods for cash. Rs. 10000
Jul 31	Bought furniture Rs. 2000
Aug 1	Deposited into bank Rs. 5000
Sep 1	Sold goods in cash Rs. 18000
Oct 31	Withdrawn cash for personal use Rs.500
Nov 1	Paid commission Rs.200
Dec 1	Paid rent Rs.200
Dec 31	Paid salaries Rs.200

i)Export the balance sheet into excel worksheet.

ii)Create a tally ODBC with excel to display all ledgers in this company with email_address and phone_no.

PART-C

1. **Journalize the following**

On 1-7-2020 Mr. Naresh started business with cash Rs.50,000

Stock in hand:

Item	Quantity	Rate per
Pen	3000	8
Pencil	2500	5
Eraser	1200	4
Sharpener	3000	2
Crayon	200	10

- On 1-7-2007 purchased 1500 Pens @Rs.8 each, 750 Pencils @Rs. 5 each, 1000 Eraser @Rs. 4 each from J.J.Stores
- On 1-7-2007 sold 200 Pens @ Rs.10 each, 300 Pencils @Rs.6 Each, 400 Eraser @6 Rs. Each for cash.
- On 2-7-2007 sold 1100 Pens @Rs. 12 each, 400 Pencils @Rs.7 each, 500 eraser @ Rs.6.50 each for cash
- On 2-7-2007 opened an SB Account in Syndicate Bank by depositing Rs. 65000
- Display

2. Create units [work] for payroll –Minute

Create Attendance type:
Sick Leave [Leave with pay]
Absent [leave without pay]
Overtime [Production]

- Create payheads
  a. Basic [on attendance]
  b. Da [On attendance value-50% on basic]
  c. HRA [As computed value -12% on Basic]
  d. Overtime [On Production]
  e. Gratuity [On gratuity]
  f. Provident Fund [as computed value-12% on Basic +DA]
  g. Professional Tax [as computed value]

  Professional Tax Slab%

From	Upto	Value Basic
----	3000	0
3000	5999.99	40
5999.9	7999.99	120
7999.9	----	250

  Create Employee Group
  a. Category:Employee
  b. Name:Accounts

  Create Two Employee
  a. Mr.A(Basic=6000, DA=50%, Hra=20%, Ta=500 monthly, OT=30/Hr)
  b. Mr. B(Basic=6000, DA=50%, Hra=20%, Ta=700 monthly, OT=30/Hr)

  Create salary Details of the above two employees with all the above pay head
  Display payroll report.

[Enable Feature maintain payroll-yes:- GOT->F11 (Features)-Accounting Features->Maintain Payroll->Yes]

3. Create a company and pass necessary entries

- On 1st Dec 2020 cash paid for conveyance Rs.10000 to marketing, sales and admin department in the ratio 4:4:2. Pass the necessary entry using cost center and category.
- On 2nd Dec 2020 cash paid for projected purchase of raw material worth Rs. 28000 for Project 1, Project 2 and project 3 from Rahul enterprise bill no-212 (Gross value Rs.25000 and GST@12% Rs.3000). Pass the necessary entry using cost center and category.

- On 2nd Dec 2020 raise an invoice for Rs.47200(gross value Rs.40000 + GST @18% Rs. 7200) to Jugal Technologies towards sales of finish goods (INVOICE No-TI/01/2020-21). Pass the necessary entry using cost center and category (project sales).

Note: Detail of debtor and creditors:

Name	GST No	Address
Rahul Enterprises	07DTQPK8687M1ZF	PLOT NO 1 BAWANA INDUSTRIAL AREA DELHI
Jugal Technologies	07GZGPS0194J1ZU	KARAWAL NAGAR, DELHI-119044

4. Pass necessary entries for the following under GST.

- ABC Pvt. Ltd. Sales one mobile phone on of gross value of mobile phone is Rs.15000/- and charge GST @12% (Rs.1800) total value Rs.16800 invoice no-01/T/20-21 to Mr.X in Delhi as Local Sales. Make sales invoice.
- ABC Pvt. Ltd. Sales two same mobile phone of gross value Rs.10,000 each and charge IGST@12% invoice no-02/20-21/TI to Mr.Y. He lives in Uttar Pradesh pass the necessary entry.
- On 1st July 2020 Mobile solutions ltd. Sales 5 mobile phone costing Rs.6000 each and Charge GST @12% on cost (invoice no-06/TI/2020) to ABC Pvt. Ltd. Mobile Solution Established in Delhi. Pass the necessary entry
- XYZ Ltd. (Uttar Pradesh) Sales 4 Mobile phones on 1st july 2017 costing Rs.7000 each charge IGST @12% (invoice no-03/TI/20-21) to ABC. Pvt. Ltd. Make purchase entry.

Evaluation Scheme for Lab Examination

Assessment Criteria		**Marks**
Activity – 1 from Part A	Implementation	15
Activity – 2 from Part B	Implementation	20
	Company creation 3 Marks, Ledger creation-5 Marks, Voucher Entry- 7 Marks, Output-5 Marks	
Activity – 3 from Part C	Implementation	30
	Company creation 3 Marks, Ledger creation-10 Marks, Voucher Entry- 10 Marks, Output-7 Marks	
Viva Voce		05
Practical Record		10
Total		**80**

Paper: BCAP342 Practical: 3 Hours/week Credits: 2	E2: Android Application Development Lab	IA : 20 Exam : 80

PART – A

1. Create an Android application, which pops up and Alert Dialog with three buttons.
2. Create an Android application using intents and two activities. On the first activity, user can add name and then on pressing the OK button, the second activity should be started. The second activity must greet the user by using the text that entered on Activity one.
3. Create an Android application using TableLayout to arrange Text View, Edit Text, RadioButton View and CheckBox View.
4. Create an Android application with two toggle buttons named Toggle1 and Toggle2. Use an extra button called States, which on tapping shows the current states (i.e., ON or OFF) of two toggle buttons through a toast notification.

PART – B

1. Create a screen that has input boxes for User Name, Password, Address, Gender (radio buttons for male and female), Age (numeric), Date of Birth (Date Picker), State (Spinner) and a Submit button. On clicking the submit button, print all the data below the Submit Button (use any layout)
2. Create an Android application to display images in Grid View (min 5 images).
3. Write an android program to demonstrate a Menu with name File with New,
4. Open, Save and Save As as menu items. Give toast msgs on click of each menu item. Create an Android application to play audio using Service.

PART – C

1. Create an Android application to implement the functioning of Simple calculator.
2. Create a menu driven Android application to store data of employees (ID, Name, Salary, Designation) in SQLite database and display all stored records.
3. Create an Android application to view Book details (Title, Author, Publisher and Price) stored in a file on a ListView in Android
4. Create an Android application that implements Multi-threading**.**

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program–1 from Part A	Writing the Program	10
	Execution & Formatting	05
Program-2 from Part B	Writing the Program	12
	Execution & Formatting	08
Program-3 from Part C	Writing the Program	20
	Execution & Formatting	10
Viva Voce		05
Practical Record		10
Total		**80**

Paper: BCAP343 Practical: 3 Hours/week Credits: 2	E3: Scilab Lab	IA : 20 Exam: 80

Part A

1. Write a program to generate Fibonacci Series with N terms. N must be greater than 0. If N=1 single term is to be displayed, otherwise specified number of terms to be displayed.
2. Write a program to find the GCD and LCM of the given two numbers without using built-in function.
3. Write a program to implement guessing game. A random number between 1 and 10 is to be generated. User will be given three attempts to guess the generated number. If the user guess is correct "YOU ARE THE WINNER" message will be given. During each wrong guess a hint message is given based on difference. If the user failed to guess the number in all attempts the generated number to be displayed with the message "BETTER LUCK NEXT TIME".

Difference	Hint Message
=1	HOT
=2	WARM
>2	COLD

4. Create a GUI using Axes and Pushbuttons to perform the following image processing operation. Load image from the directory, converting to grayscale, converting to binary.

Part B

1. Write a program to convert decimal to binary (both integer and fractional part).

2. Create a GUI using Edit, Text and Pushbutton control for shopping a book that accepts book code, book title and price. Calculate the discount on code as follows:

Book Code	Discount Rate
101	15%
102	20%
103	25%
Any other	5%

Find the discount amount and net bill amount. Display the bill.

3. Write a menu driven program to find
   1. Factorial of the given number.
   2. Reverse and Digit Sum of the given number.

   [Define functions to generate Factorial and to find Reverse and Digit Sum of the number].

4. Write a program to calculate the electricity bill based on Tariff Code and Number of Units consumed by receiving the inputs Customer_Name, Meter Number, Previous_Reading and Current_Reading.

Tariff Code	Units Consumed	Rate/Unit
LT1	0-30	2.0
	31-100	3.5
	101-200	4.5
	Above 200	5.0

LT2	0-30	3.5
	31-100	5.0
	101-200	6.0
	Above 200	7.5

Part C

1. Create a GUI using a Edit and Pushbuttons to perform simple calculator operations (+,-,*,/).
2. Create a GUI using Edit, Text and Pushbuttons to generate and print the prime numbers between the given range of values. Both range value should be positive. The start value of the range must be smaller than the end range value. The generated numbers must be displayed in single textbox.
3. Create a GUI using Edit, Text and Pushbuttons to read employee name and basic salary. Calculate DA, HRA, PF and TAX based on the following conditions. Calculate Net_Salary and Gross_Salary. Display the calculated results.

Basic Salary<20000	DA=40% of Basic Salary HRA=12% of Basic Salary PF=12% of Basic Salary; TAX=100
Basic Salary>=20000	DA=50% of Basic Salary HRA=15% of Basic Salary PF=12% of Basic Salary TAX=200

Gross_Salary=Basic Salary+DA+HRA
Net_Salary=Gross_Salary-PF-TAX

4. Write a program to read the rollno and marks in three subjects of n student. The student is pass if he/she got more than 35 marks in each subject. Calculate total and average of each student along with grade. Draw a bar chart for the calculated average value.

AVG	GRADE
>=70	“DISTINCTION”
>=60 and <70	“FIRST CLASS”
>=50 and <60	“SECOND CLASS”
>=35 and <50	“PASS CLASS”
Otherwise	“FAIL”

Evaluation Scheme for Lab Examination

Assessment Criteria		**Marks**
Program - 1 from Part A	Writing the Program	10
	Execution & Formatting	05
Program -2 from Part B	Writing the Program	12
	Execution & Formatting	08
Program -3 from Part C	Writing the Program	20
	Execution & Formatting	10
Viva Voce		05
Practical Record		10
Total		**80**