KavikulaguruKalidas Sanskrit University, Ramtek

University established by State Government of Maharashtra and UGC Recognized u/s 2f and 12B Accredited by NAAC with B++ Grade

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Nagpur Office: 05th Floor, NIT Commercial Complex, Near Morebhavan, Sitabuldi, Nagpur 440012

Bachelor of Computer Application (BCA)

Choice Based Credit System (CBCS Pattern)

Course Curriculum (Syllabus)

Approved by the Academic Council Meeting No. 01, Dt. 31.08.2021, Item no. 38.

(Revised) (Onwards 2021-2022)

Name of the Program	**Bachelor of Computer Application (BCA)**
Name of the Faculty	Ancient Indian Science And Humanity
Name of the Department	Computer Science
Examination Type	Semester
Program Duration	03 years (06 Semesters)
Total Credits	166
Eligibility	Arts, Commerce and Science

Year	Internal		Theory		Other Practical		Total		Credits	Remarks
First Year (Sem.I& II)	330	116	1120	392	200	72	1650	580	66	-
Second Year (Sem.III& IV)	250	88	800	280	200	72	1250	440	50	-
Second Year (Sem.V& VI)	210	74	640	224	150	54	1250	352	50	-
Final Total	**790**	**278**	**2560**	**896**	**550**	**198**	**4150**	**1372**	**166**	**-**

Course Code	Course Title	Internal A		Theory B		Other (Practical) C		Subject Total case of joint passing) A+B+C		No. Credits (if credit system is applicable)
		Max	Passing	Max	Passing	Max	Passing	Max	Passing	
First Year - Semester – I										
BCA-I-01	Sanskrit	20	07	80	28			100	35	04
BCA-I-02	English Language	20	07	80	28			100	35	04
BCA-I-03	Computer Fundamentals	20	07	80	28			100	35	04
BCA-I-04	"C" Programming	20	07	80	28			100	35	04
BCA-I-05	Operating Systems	20	07	80	28			100	35	04
BCA-I-06	Office Automation	20	07	80	28			100	35	04
BCA-I-07	Fundamental of Statistic	20	07	80	28			100	35	04
Pactical-I	Practical I – based on Course 3 & Course 4	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
Pactical-II	Practical II – based on Course 5 & Course 6	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
		140	49	560	196	100	36	800	281	32
First Year - Semester – II										
BCA-II-01	Sanskrit	20	07	80	28			100	35	04
BCA-II-02	English Language	20	07	80	28			100	35	04
BCA-II-03	Programming In 'C++'	20	07	80	28			100	35	04
BCA-II-04	System Analysis And Design	20	07	80	28			100	35	04
BCA-II-05	Financial Accounting with Tally	20	07	80	28			100	35	04
BCA-II-06	Linux Operating System	20	07	80	28			100	35	04
BCA-II-07	E Commerce	20	07	80	28			100	35	04
Pactical-I	Practical I – based on Course 3 & Course 4	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
Pactical-II	Practical II – based on Course 5 & Course 6	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
BCA-II-08	Yoga Ethic (college level, compulsory subject as per AC decision)	50	18	-	-	-	-	50	18	2
		190	67	560	196	100	36	850	299	34
First Year Total		**330**	**116**	**1120**	**392**	**200**	**72**	**1650**	**580**	**66**

Course Code	Course Title	Internal A		Theory B		Other (Practical) C		Subject Total (in case of joint passing) A+B +C		No. Credits (if credit system is applicable)
		Max	Passing	Max	Passing	Max	Passing	Max	Passing	
Second Year - Semester – III										
BCA-3-01	Data Base Management system	20	07	80	28			100	35	04
BCA-3-02	Elective 1)Cloud Computing 2)Data Mining 3)Digital Marketing	20	07	80	28			100	35	04
BCA-3-03	Data Structures	20	07	80	28			100	35	04
BCA-3-04	Web Technology-I	20	07	80	28			100	35	04
BCA-3-05	Discrete Mathematics	20	07	80	28			100	35	04
Pactical-I	Practical I – based on Course 1 & Course 2	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
Pactical-II	Practical II – based on Course 3 & Course 4	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
		100	35	400	140	100	36	600	211	24
Second Year - Semester – IV										
BCA-04-01	Software Engineering	20	07	80	28			100	35	04
BCA-04-02	SQL and Pl/SQL	20	07	80	28			100	35	04
BCA-04-03	Elective 1)Computer Graphics 2) Internet of Things 3)R Programming	20	07	80	28			100	35	04
BCA-04-04	Web Technology-02	20	07	80	28			100	35	04
BCA-04-05	Digital Electronics	20	07	80	28			100	35	04
Pactical-I	Practical I – based on Course 1 & Course 2	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02

Pactical-II	Practical II – based on Course 3 & Course 4	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
BCA-04-06	Environmental Studies +Cleanliness (college level,compulsory subject as per AC decision)	50	18	-	-	-	-	50	18	02
		150	53	400	140	100	36	650	229	26
Second Year Total		**250**	**88**	**800**	**280**	**200**	**72**	**1250**	**440**	**50**

Course Code	Course Title	Internal A		Theory B		Other (Practical) C		Subject Total (in case of joint passing) A+B +C		No. Credits (if credit system is applicable)
		Max	Passing	Max	Passing	Max	Passing	Max	Passing	
Third Year - Semester – V										
BCA-05-01	Core Java	20	07	80	28			100	35	04
BCA-05-02	Software Testing	20	07	80	28			100	35	04
BCA-05-03	ASP.Net	20	07	80	28			100	35	04
BCA-05-04	PHP	20	07	80	28			100	35	04
Pactical-I	Practical I – based on Course 1 & Course 2	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
Pactical-II	Practical II – based on Course 3 & Course 4	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
		80	28	320	112	100	36	500	176	20
Internship	**(08 Weeks duration)** **Activities during Internship program and submission**							**100**	**-**	**04**
Third Year - Semester – VI										
BAC-06-01	Android Programming	20	07	80	28			100	35	04
BCA-06-02	Python Programming	20	07	80	28			100	35	04
BCA-06-03	Cyber Security	20	07	80	28			100	35	04
BCA-06-04	Data Communication And Network-II	20	07	80	28			100	35	04
Pactical-I	Practical I – based on Course 1 & Course 2	-	-	-	-	50 (CA+UA) (30+20)	18	50	18	02
BCA-06-05	Human Right & Indian Constitution	50	18					50	18	02
		130	46	320	112	50	18	500	176	20
Project – Submission of project report and viva-voce of project .								**150**	**-**	**06**
Third Year Total		**210**	**74**	**640**	**224**	**150**	**54**	**1250**	**352**	**50**

STUDENTS LEARING OUTCOMES

1. Introduction:

Bachelor of Computer Application is a three year undergraduate degree program for candidates wishing to search into the world of computers. It imparts knowledge on the basics of computer application and software development. One of the most popular options to get started with a career in Information Technology, the course gives you an insight into the world of computers and its applications.

This course provides a lot of opportunities to the students who are interested in computer field and wants to work in the IT sector as programmers, system analysts or software Developers.

The duration of the course is 3 years and divided into 6 semesters. The program is based on Choice-based credit system (CBCS) comprising 166 credit points. Paper Pattern is 80:20 i.e. 80 for Theory and 20 for Internal.

Exit Point for the course:

First year (Sem I and Sem II): **Certificate**

First Year (Sem I and Sem II) and Second Year (Sem III and Sem IV): **Diploma**

First Year (Sem I and Sem II) , Second Year(Sem III and Sem IV),Third year(Sem V and Sem VI): **Degree**

2. Objectives:

It is designed to bridge the gap between the studies of computers and its application.

BCA offers the prequalification for professionals heading for smart career in the IT field, which measures up to international standards. On completing this course one can do higher studies such as MCA, MBA etc., in any UGC recognized universities or in any other reputed institution in India or abroad.

3. Eligibility:

Candidate should have passed standard XII (10+2) in any discipline(Arts , Commerce & Science stream).

A candidate who has completed qualifying qualification from any Foreign Board /University must obtain an equivalence certificate from Association of Indian Universities (AIU).

Students should not be more than 25 years of age.

4. PEO (Program Educational Outcomes), PO (Program Outcomes) and CO (Course Outcomes) Mappings:

a) PEO (Program Educational Outcomes):

After completion of this program, the graduates/students would:

PEO I	Technical Expertise	Implement fundamental domain knowledge of core courses for developing effective computing solutions by incorporating creativity and logical reasoning.
PEO II	Successful Career	Deliver professional services with updated technologies in Computer application based career.
PEO III	Interdisciplinary and Life Long Learning	Develop leadership skills and incorporate ethics, team work with effective communication & time management in the profession. Undergo higher

		studies, certifications and technology research as per market needs.

b) PO (Program Outcomes):

After completion of program Students / graduates will be able to:

PO1: Apply knowledge of ICT in solving business problems.

PO2: Learn various programming languages and custom software.

PO3: Ability to understand the Software concepts and their applications.

PO4: Ability to practice and develop software for interpretation and analysis of data.

PO5: Ability to use the techniques, skills, and modern Software tools necessary for software Development.

PO6: Identify, formulate, and solve problems using computational temperaments.

PO7: Express effective communication skills.

PO8: Recognize the need for interdisciplinary, and an ability to engage in life-long learning.

PO9: Utilize the techniques, skills and modern tools, for actual development process.

c) CO (Course Outcomes):

Every individual course under this program has course outcomes (CO). The course outcomes rationally match with program educational objectives. The mapping of PEO, PO and CO is as illustrated below:

Program Educational Objectives	**Thrust Area**	**Program Outcome**	**Course Outcome**
PEO I	Technical Expertise	PO1,PO2,PO3,PO9	All Core and Lab courses
PEO II	Successful Career	PO4,PO5,PO6	All AEC courses
PEO III	Interdisciplinary and Life Long Learning	PO7,PO8	All Electives

*AEC- Ability Enhancement Compulsory Courses

5. Workload (Period/Lectures for each Course):

For every semester 60 periods (60 minutes per period) are allotted to complete the syllabus of each Course (Subject).

6. Guidelines for Internal Assessment, Theory paper pattern and Practical:

1. Each semester shall comprise of minimum 90 teaching days.
2. Each semester will comprise
    a. Five theory papers – 80 Marks each
    b. Internal assessment for each paper - 20 Marks each.
3. In addition to the above, Semester I and II will have

a. One compulsory Sanskrit paper of 80 marks with 20 marks internal assessment, Total 100 marks.
b. One compulsory English paper of 80 marks with 20 marks internal assessment, Total 100 marks.

4. Medium of paper setting & Examination will be English for all Courses.

a) Internal Assessment:

1. The internal assessment shall be done by the College at least 15 days prior to the final examination of each semester. The Marks shall be sent to the University immediately after the Assessment in the prescribed format.
2. Guidelines for Internal Assessment are appended herewith.
   a) The internal assessment marks assigned to each theory paper as mentioned in Appendix - A shall be awarded on the basis of assignments like class test, attendance, project assignments, seminar, study tour, industrial visits, visit to educational institutions and research organizations, field work, group discussions or any other innovative practice / activity.
   b) There shall be one / two assignments (as described above) per Theory paper.
   c) There shall be no separate / extra allotment of work load to the teacher concerned. He/ She shall conduct the Internal Assessment activity during the regular teaching days / periods as a part of regular teaching activity.
   d) The concerned teacher / department / college shall have to keep the record of all the above activities until six months after the declaration of the results of that semester.
   e) At the beginning of each semester, every teacher shall inform his / her students unambiguously the method he / she proposes to adopt and the scheme of marking for internal assessment.
   f) Teacher shall announce the schedule of activity for internal assessment in advance in consultation with HOD / principal.
   g) Final submission of internal marks to the University shall be before the commencement of the University Theory examinations.

b) Theory Papers:

1. All Theory papers shall be divided into four units.
2. The theory question papers shall be of 3 hours duration and comprise of 5 questions with equal weightage to all units.
3. The pattern of question papers is appended herewith.
   Each theory paper will be of 80 marks each.

Paper Pattern –

All questions are compulsory and carry equal marks.

Unit – I Q. 1 Long answer (Any one out of two) 01X12 = 12

Unit – II Q. 2 Long answer (Any one out of two) 01X12 = 12

Unit – III Q. 3 Long answer (Any one out of two) 01X12 = 12

Unit – IV Q. 4 Long answer (Any one out of two) 01X12 = 12

Unit – I to IV Q. 5 Short notes (Any four out of six) 04X05 = 20

Unit – I to IVQ. 6 Short answer (All questions Compulsory)6X2 = 12

All questions are compulsory and will carry equal marks.

Question paper for any theory paper will comprise of five questions of 12 marks each.

Question No. 1 to 4 will be from four units each with an internal choice.

The questions can be asked in the form of long answer type for 12 marks.

Question No.5 will be from four units and in the form of short notes type for 5 marks each and student shall have option of answering any 4 out of six question.

Question No. 6 shall be compulsory with four questions / notes of very short answer type from each of the four units having 1 mark each. The student shall have an option of answering any 12 questions out of the 14 questions.

c) Practical:

1. Two practical's –50 marks each (Paper I + Paper II 25 marks each)
2. Practical exam shall be of 4 hours duration.
    a. The Practical Record of every student shall carry a certificate as shown below, duly signed by the teacher-in-charge and the Head of the Department.
    b. If the student fails to submit his / her certified Practical Record duly signed by the Teacher In-Charge and the Head of the Department, he / she shall not be allowed to appear for the Practical Examination and no Marks shall be allotted to the student.
    c. The certificate template shall be as follows:

C E R T I F I C A T E

Name of the college / institution _ Name of the Department: _

This is to certify that this Practical Record contains the bonafide record of the Practical work of Shri / Kumari / Shrimati _ of _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Semester _ _ _ _ _ _ _ _ _ during the academic year _ _ _ _ _ _ _. The candidate has satisfactorily completed the experiments prescribed by Kavikulaguru Kalidas Sanskrit University, Ramtek for the subject _

Dated _ _ _ / _ _ _ / _ _ _ _ _

Signature of the teacher who taught the examinee

1. _
2. _

Head of the Department

B.C.A. FIRST YEAR, SEMESTER-I

Course Outcomes (COs)

PAPER NO-3	**COMPUTER FUNDAMENTALS**	After completion of this course students will be able to – 1. Understand basic concepts of computer. 2. Describe peripheral devices and number systems and their conversions. 3. Understand operating environment with input and output devices. 4. Understand the Network terminology and topologies.
PAPER NO-4	**C PROGRAMMING**	After Completion of this course the student will be able to – 1. Able to implement the algorithms and draw flowcharts for solving Mathematical problem. 2. Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage. 3. Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures and file Handling. 4. Develop confidence for self education and ability for life-long learning needed for computer language.
PAPER NO-5	**OPERATING SYSTEM**	After completion of this course students will be able to – 1) Possess knowledge of Operating Systems and their types. 2) Apply the concept of a process and scheduling algorithms. 3) Realize the concept of deadlock and different ways to handle it. 4) Understand various memory management techniques and file system.

PAPER NO-6	**OFFICE AUTOMATION**	After completion of this course students will be able to – 1) Understand the components of office automation 2) Perform operations using MS Word and PowerPoint 3) Understand and discuss about the use of Office Package and internet in daily life 4) Navigate the Google suite and know about the sharing and publishing a Google site.
PAPER NO-7	**FUNDAMENTALS OF STATISTICS**	On completion of the course the student should be able to: 1) Learn about statistical data and frequency distribution. 2) Familiar with Measures of Central Tendency and Measures of Dispersion Range. 3) Calculate the number of samples needed to construct confidence levels on the mean and variance of a normal distribution. 4) Use linear regression analysis to develop an empirical model of experimental data. 5) Understand the Hypothesis Testing.
B.C.A. FIRST YEAR, SEMESTER-II		
PAPER NO-3	**C++ PROGRAMMING**	After completion of this course students will able to – 1) Understand object-oriented programming and advanced C++ concept. 2) Apply the concepts of object, classes and constructor. 3) Design C++ Programs based on object, class, inheritance, abstraction. 4) Implement concept of virtual functions and exception handling Model.
PAPER NO-4	**SYSTEM ANALYSIS AND DESIGN**	On successful completion of the course, a student will be able to: 1) Understand the steps in software development. 2) Know the tools for System Analysis and design. 3) Understand the implementation and project planning.

		4) Learn the ConfiguringManagement Activities.
PAPER NO-5	**FINANCIAL ACCOUNTING WITH TALLY**	After completion of this course students will able to – 1) Use basic accounting terminology, procedures and systems of maintaining accounting records. 2) Understand financial statements 3) Learn to create company, enter accounting voucher entries and also print financial statements, etc. in Tally. 4) Learn GST and its objectives.
PAPER NO-6	**LINUX OPERATING SYSTEM**	On successful completion of the course, a student will be able to: 1) To know the basic concepts of Linux Operating System. 2) Familiar with Linux commands. 3) Understand shell programming 4) Familiar with system administration
PAPER NO-7	**E-COMMERECE**	To prepare students to acquire the knowledge of recent trends in e-commerce. Also students are prepared for website management which can helpful in industry.

B.C.A. SECOND YEAR SEMESTER-III

PAPER NO-1	**DATABASE MANAGEMENT SYSTEM**	After completion of this course students will be able to – 1) Describe the basic concepts of DBMS and various databases used in real applications 2) Demonstrate the principles behind systematic database design approaches. 3) Design the database structure by applying the concepts of Entity relational model and Normalization. 4) Learn MS-Access for database creation and handling transactions.

PAPER NO-2	**ELECTIVE-1** **CLOUD COMPUTING**	On completion of the course, the student will be able to: 1) Understand the basic about cloud computing 2) Learn about cloud computing architecture and types 3) Learn about cloud application platforms
	ELECTIVE-2 **DATA MINING**	On completion of the course, the student will be able to: 1) Understand the basic about data mining, classification and major issues 2) Learn about Data Warehouse and OLAP technology 3) Learn about Mining Methods.
	ELECTIVE-3 **DIGITAL MARKETING**	On completion of the course, the student will be able to: 1) Understand the latest trends in digital marketing and critically assess the use of digital marketing tools by applying relevant marketing theories and frameworks. 2) Understand various channels and activities essential to plan to implement and manage an effective digital marketing strategy for their businesses.
PAPER NO-3	**DATA STRUCTURES**	Upon successful completion of the course, a student will be able to: 1) To access how the choices of data structure & algorithm methods impact the performance of program. 2) To Solve problems based upon different data structure & also write programs. • Choose an appropriate data structure for a particular problem.
PAPER NO-4	**WEB TECHNOLOGY-I**	On successful completion of the course, a student will be able to: 1) Learn different Tags like layer Tags, CSS Tags. 1) Understand, analyze and apply the role of languages like HTML in the workings of the web and web applications. Analyze a web project and identify its elements and attributes in comparison to traditional projects. 2) Understand, analyze and create web pages using HTM and Cascading Styles Sheets.

		3) Understand, analyze and build dynamic web pages and web Forms.
PAPER NO-5	**DISCRETE MATHEMATICS**	After completion of course students are expected to be able to: 1) Understand, analyze and create mathematical arguments. 2) Understand sets, perform operations and algebra on sets, describe sequences and summations. 3) Determine properties of relations, identify equivalence and partial order relations, sketch relations. 4) Understand the Graph Theory.
B.C.A. SECOND YEAR SEMESTER-IV		
PAPER NO-1	**SOFTWARE ENGINEERING**	On completion of the course, the student will be able to: 1) Understand the steps in Software Development. 2) Select and implement different software development process models. 3) Extract and analyze software requirements specifications for different projects. 4) Develop some basic level of software architecture/design.
PAPER NO-2	**SQL & PL/SQL**	1) To prepare students in using and managing databases.
PAPER NO-3	**ELECTIVE-1 COMPUTER GRAPHICS**	On successful completion of the course, a student will be able to: 1) Provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations. 2) Make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations.
	ELECTIVE-2 INTERNET OF THINGS	1) Develop expertise in designing IOT systems through an in-depth knowledge of IOT infrastructure, Shell Programming, and Python language.

	ELECTIVE-3 **R PROGRAMMING**	After successful completion of the course students should be able to 1) Understand the basics in R programming in terms of constructs, control statements, string functions 2) Understand the use of R for Big Data analytics 3) Learn to apply R programming for Text processing 4) Understand the Statistical graphs and learn Data querying.
PAPER NO-4	**WEB TECHNOLOGY-II**	On completion of the course, the student will be able to: 1) Learn Java Script and VB Script fundamentals. 2) Understand, analyze and build interactive web applications. 3) Understand and analyze the different web services.
PAPER NO-5	**DIGITAL ELECTRONICS**	After learning the course the students should be able to: 1) Explain about the fundamentals of computers, digital number systems and logic circuits. 2)The student should be able to solve logic function minimization. 3)The students should be able to differentiate between combinational and sequential circuits such as decoders, encoders, multiplexers, de-multiplexers, flip-flops, counters, registers. 4). Learn 8086 Microprocessor and able to write Assembly language programming for 8086. 5)Understand the Assembler directives.

B.C.A. THIRD YEAR SEMESTER-V

PAPER-1	**CORE JAVA**	To prepare students to acquire knowledge of programming language using Java. The students will be able to create applications in Java
PAPER-2	**SOFTWARE TESTING**	1. To study fundamental concepts in software testing 2. To discuss various software testing issues and solutions in software unit test, integration and system testing. 3. Understand and analyze test management.
PAPER-3	**ASP.NET**	Upon successful completion of this course, students will be able to: create a Microsoft ASP.NET Web Application Form, add code to a Microsoft ASP.NET Web form, validate user input, create user controls, and database connection.
PAPER-4	**PHP**	On completion of the course, the student will be able to: 1) Understand the PHP Language **Basics.** 2) Develop basic WebPages . 3) Create, modify and format the contents of webpage. 4) Study the server side scripting language, PHP

B.C.A. THIRD YEAR SEMESTER-VI

PAPER-1	**ANDROID PROGRAMMING**	On completion of the course, the student will be able to: 1) Understand about the architecture and features of Android 2) Understand about the Android user interface 3) Learn to use SQLite Database in Android 4) Learn Tools JDK, SDK, Eclipse/Android Studio, ADT, AVD, Android Emulator.
PAPER-2	**PYTHON PROGRAMMING**	1. To introduce the fundamentals of Python Programming. 2. To teach about the concept of Functions in Python.

		3. To impart the knowledge of formatting and escape sequencing characters.
PAPER-3	**CYBER SECURITY**	1) Acquire knowledge about Cyber Crime and the facilities for secure communication. 2) Learn the causes, symptoms and prevention of cyber addiction. 3) Understand Cryptography and Network Security Concept. 4) Learn Cyber Security Regulations, Roles of International Law, Cyber Security Standards.
PAPER-4	**DATA COMMUNICATION AND NETWORK**	On successful completion of the course, a student will be able to: 1) Explain how communication works in computer networks and to understand the basic terminology of computer networks 2) Explain the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack. 3) Acquire knowledge about signals and learn the conversions. 3) Understand and analyze error detection and correction.

BCA -I Semester-I
SANSKRIT
PAPER NO-1

Credits-04 **Total Marks 100**

1. Neetishatakam (Complete)

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:
Neetishatakam – ChaukhambaPrakashan, Varanasi. Neetishatakam – Prasad Prakashan, Pune. SuyogPrakashan – Amravati.

BCA -I Semester-I
COMMUNICATION ENGLISH
PAPER NO-2

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**

Comprehension, Enriching Vocabulary, Single Word For a Group of Words, Words Frequently Misspell.

UNIT- II: **25 Marks (credit - 01)**

Business Letter Writing, Getting to the point, Choice of Words, Punctuation, E-mail etiquette. Enquiries and replies - Placing and fulfilling orders - Complaints and follow-up - Sales letters - Circular letters - Application for employment and resume.

UNIT- III: **25 Marks (credit - 01)**

Nature, Scope, and Functions of Communication: Definition, Objectives, Purpose of Communication, Communication Process, Sender's Thoughts, Encoding, Decoding, Feedback Loop, Noise Channels of Communication, Informal Channels Of Communication, Barriers to Effective communication.

UNIT- IV: **25 Marks (credit - 01)**

Textbook entitled 'Prism: Spoken and Written Communication, Prose & Poetry' published by Orient Longman

1) The Bet – Anton Chekov

2) Socrates and the Schoolmaster – F. L. Brayne

3) An Astrologer's Day – R. K. Narayan

4) The Gift of the Magi – O' Henry

5) With the Photographer – Stephen Leacock

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:

1. Oxford Practice Grammar – John Eastwood (Oxford)
2. Basic Business Communications – Rober M. Archer
4. English Grammar – Wren in & Martin
5. Effective Business Communication – Herta Murphy Chorles Perk (Tata McGraw Hill)
6. Business Communication: Urmila Rai, S.M. Rai- (Himalaya Publishing House)
7. Business Correspondence & Communication Skill- Kapur (S. Chand Co.)
8. A Guide to Business Correspondence – Kapoor A. (S. Chand & Co.)

BCA -I Semester-I
COMPUTER FUNDAMENTALS
PAPER NO-3

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Basic Components of Digital Computers: Block Diagram. CPU: Functions of Each Unit: Primary,Memory, ALU and CU, Instruction format. Bus: Data, Control and Address Bus Number Systems: Binary, Octal, Decimal, Hexa Decimal, Their Conversions, Binary Arithmetic.ASCII, BCD, EBCDIC. Language Evolution : Generation of Languages : Machine, Assembly, High Level Languages. Characteristics of Good Language Translators : Compiler, Interpreter and Assembler. Source and Object Program.

UNIT - II : 25 Marks (credit - 01)

Memory: Static & dynamic, RAM, ROM, PROM, EPROM, EEPROM, flash and Cache. Storage Devices: Hard Disk, Zip Disk and Optical Disk. Pen Drive, Blu Ray

UNIT - III : 25 Marks (credit - 01)

Input Devices: Keyboard, Mouse, Light Pen, Touch Screen, Voice Input , MICR, OCR, OMR, Barcode Reader and Flatbed Scanner.Output Devices: VDU, Printers: Dot Matrix, Laser and Inkjet. Plotters: Drum,Flat-Bed and Inkjet.

UNIT - IV : 25 Marks (credit - 01)

Network: Network terminology, Topologies : Linear, Circular, Tree and Mesh.Types of Networks: LAN, WAN, MAN. Repeaters, Bridge, Routers, Broutersand Gateway.Modem for Communication between pc's, Wi-Fi network, Introduction of Bluetooth and Infrareddevices. Network protocols. Architecture :Peer-to-Peer, Client/Server.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.Information technology concepts by Dr. Madhulika Jain, Shashank & Satish Jain, [BPB Publication, New Delhi.]
2. Fundamentals of Information Technology By Alexis And Mathews Leon [Leon Press, Chennai &Vikas Publishing House Pvt Ltd, New Delhi]

BCA -I Semester-I
C PROGRAMMING
PAPER NO-4

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Programming Structure :Sequence, Selection, Iteration and Modular. Problem Solving techniques.Development Tools: Algorithm, Flowcharts and Pseudo code (Definition and its characteristics),Developing Algorithm and Drawing flowcharts

UNIT- II :25 Marks (credit - 01)

C Character set, Tokens, Identifier, Keywords, Variables, Data types, Qualifiers. Operators and Expressions: Arithmetic, Relational, Logical, Bit-Wise, Increment, Decrement, Conditional and Special operators. typedef, Type Conversion, Constants, Declaring Symbolic Constants, Character Strings, Enumerated Data Types, Operator Precedence and Associativity. Library functions. : Maths, string handling Functions. Control Structure: Compound Statement, Selection Statement:if, if-else, Nested if, switch. Iteration statement: for, while, do..while, Nested loops,Jump statement: break, continue, goto. (Special emphasis on problem solving)

UNIT- III:25 Marks (credit - 01)

Arrays: Need, Types: Single and Two Dimensional Array.Strings: Strings Manipulation, Arrays of Strings, Evaluation order,Function: Function Components, Return Data type, Parameter Passing, Return by Reference, Default Arguments, Recursive Functions, Arrays with Functions, Storage Classes.(Special emphasis on problem Solving)

UNIT- IV: **25 Marks (credit - 01)**

Structure: Declaration, Definition, Accessing structure members,Initialization, Nesting of Structures.Union: Unions, Differences between Structure and Union ,Pointer: Introduction, Address Operator (&), Pointer variables, Void pointers, Pointer Arithmetic,Pointers to Pointers.File handling: Hierarchy of File Stream Classes, Opening & closing a file, Testing for errors, File Modes, File pointers and their manipulations, Sequential Access, Random Access, Command Line arguments.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.The Art of programming through flowcharts & algorithm by Anil B. Chaudhari Firewall Media, Laxmi publication, New Publication.
2.Programming in C by E. Balagurusamy TMH Publications.
3.C Programming-KernighenRitche
4.Programming with C – Y. Kanetkar.
5.C Programming – Holzner, PHI Publication.
6.Programming in C – Ravichandran

BCA -I Semester-I
OPERATING SYSTEM
PAPER NO-5

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Structure of Operating System, Operating System functions, Characteristics of Modern OS. Process, Management: Process states, Creation, Termination, Operations on Process, Concurrent process,Processes Threads, Multithreading, Micro Kernels CPU Scheduling: Schedulers, Scheduling Methodology, CPU Scheduling Algorithm: FCFS, SJF, RR, Priority Scheduling.

UNIT – II: 25 Marks (credit - 01)

Performance comparison : Deterministic Modeling , Queuing analysis, Simulators. Deadlock and Starvation: Resource Allocation Graph, Conditions for Dead Lock, Dead Lock Prevention, DeadLock Detection, Recovery from Deadlock.

UNIT - III: 25 Marks (credit - 01)

Memory Management: Logical Vs. Physical Address Space, Swapping, Memory Management Requirement, Dynamic Loading and Dynamic Linking, Memory Allocation Method: Single Partition allocation, Multiple Partitions, Compaction, paging, segmentation, Segmentation with paging. Protection.

UNIT - IV: 25 Marks (credit - 01)

I/O Management: I/O hardware, I/O Buffering, Disk I/O, Raid, Disk Cache. File Management: File Management system, File Accessing Methods, File Directories, File Allocation Methods, FileSpace Management, Disk Space Management, Record blocking. Protection Mechanisms: Cryptography, Digital Signature, User Authentication.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.Operating Systems by P. BalakrishnaPrasad [Scitech Publication]
2.Operating System Concept :Silbershaz (Addision Education)
3.Operating Systems - H.M. Deitel - Addision Wesley.
4.Operating Systems- John J. Donoven.
5.Operating System : A.S.Godbole (TMH)
6.Modern Operating Systems : Tenenenbaum (Pearson Education)
7.Operating System : Peterson.

BCA -I Semester-I
OFFICE AUTOMATION
PAPER NO-6

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Introduction to windows Operating System Advantages of windows operating system, using different windows applications simultaneously, operating with windows, GUI, use of help features,starting an application, essential accessories, creating shortcuts, windows explorer, control panel,my computer, my documents, recycle bin, finding folders and files, changing system settings, system tools, use of run command, setting peripherals, drivers, editing graphics in windows, new features in windows XP/Vista versions.

UNIT-II :- 25 Marks (credit - 01)

Introduction, basics, starting Word, creating document, parts of Word window, mouse andkeyboard operations, designing a document; Formatting- selection, cut, copy, paste; Toolbars, operating on text; Printing, saving, opening, closing of document; Creating a template; Tables, borders, pictures, text box operations; Mail Merge.

UNIT -III:- 25 Marks (credit - 01)

Introduction to MS EXCEL, navigating, Excel toolbars and operations, Formatting;copying data between worksheets; entering formula, chart creation; data forms, datasort; Functions in excelround( ), SQRT ( ), MAX( ), MIN( ), AVERAGE( ), COUNT( ), SUMIF( ), SUMIF( ), ABS( ), ROMAN( ), UPPER( ), LOWER( ), CELL( ), TODAY( ), NOW**( ).** Introduction to MS POWER POINT Working with Power Point Window, Standard Tool Bar, Formatting tool bar, Drawing tool Bar, Moving the Frame, Inserting ClipArt, Picture, Slide, Text Styling, Send to back, Entering data to graph, Organization Chart, Table, Design template, Master Slide, Animation Setting, Saving and Presentation , auto Content Wizard.

UNIT -IV :- 25 Marks (credit - 01)

Google suite: Getting Started with Google G Suite, Navigating Google G Suite, Communicate Using Gmail, Storing Documents Using Google Drive: Adding Folders and Files, Managing Folders and Files, Collaborating Using Google Docs, Slides, and Drawings, Collaborating Using Google Sheets and Forms, Communicating Using Google Hangouts, Managing Schedules Using Google Calendar, Collaborating Using Google Sites: Creating and Editing a Google Site, Sharing and Publishing a Google Site

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. MS Office XP for Everyone By Sanjay Saxena (VikasPubli, Noida)
2. MS-Office 2000(for Windows) By Steve Sagman A First Course in Computers – Sanjay Saxena

BCA -I Semester-I
FUNDAMENTALS OF STATISTICS
PAPER NO-7

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Introduction - Definition of Statistics, Importance and scope of Statistics, Limitations of statistics, Distrust of Statistics. Statistical Data Collection - Primary and Secondary data, Methods of Collecting Primary data, Sources and Secondary Data, Census and Sample Investigation. Presentation of statistical Data - Classification, Tabulation, Frequency Distribution, Diagrams and Graphs.

UNIT- II:25 Marks (credit - 01)

Measures of Central Tendency - Frequency Distribution, Continuous Frequency Distribution, Graphic Representation of a Frequency Distribution Average or Measures of Central Tendency or Measures of Locations, Requisites for an ideal Measure of Central Tendency Arithmetic: Mean Median, Mode, Geometric Mean and Harmonic Mean, Weighted Average, Relationship amongst different Averages

UNIT- III: 25 Marks (credit – 01)

Measures of variation: variance, standard deviation, interquartile range ,Robustness , Histograms and boxplots , Contingency tables , Row and column percentages ,Relative risk, difference between proportions, and odds ratios Relationships in r x c tables. . Scatterplots, Measures of correlation ,Simple linear regression

UNIT- IV: 25 Marks (credit – 01)

Hypothesis Testing ,The logic of hypothesis tests ,Translating a research question into null and alternative hypotheses , p-values; Type I and Type II errors ,Interpretation of statistical results ,Association vs. casual connection , Description of a sample vs. inference about a population ,Statistical significance vs. practical significance ,Common two-sample tests ,For a difference between proportions ,For a difference between means , Mann-Whitney-Wilcoxon Test ,Paired-sample tests , Paired-sample t-test ii. Wilcoxon signed-rank test e. Tests for contingency tables , Fisher's Exact Test for 2x2 tables , Chi-square test

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:

1.SSastry Introduction to Numerical Analysis
2.Y. Rajaraman, Computer Oriented Numerical Methods - Prentice Hall Publication
3.Gupta and Kapoor Fundamental of Mathematical Statistics
4.Brian Flowers Introduction to Numerical Methods in C++ By. (Oxford)
5.E. Balaguruswamy, Numerical Methods - Tata McGraw Hill Publication
6.Srimanta Pal Numerical Methods (Oxford)
7.KSankara Rao Numerical Methods for Scientists & Engineers [PIlI].
8.Manish Goyal Computer Based Numerical And Statistical Techniques (Laxmi)

BCA -I Semester-II
SANSKRIT
PAPER NO-1

Credits-04 **Total Marks 100**

1.SwapnaVasavadattam (Complete)

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:

1.SwapnaVasavadattam – ChaukhambaPrakashan, Varanasi.
2.SwapnaVasavadattam – Prasad Prakashan, Pune. SuyogPrakashan – Amravati.

BCA -I Semester-II
COMMUNICATION ENGLISH
PAPER NO-2

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Basic Grammar – Tense, Forms of the Verb, Preposition, Articles, Punctuation, Single Word for a Group of Words, Sentence Construction, Comprehension.

UNIT- II: 25 Marks (credit – 01)

Business Letter Writing- Enquiries and replies, Placing and fulfilling orders , Complaints and follow-up letters , Sales letters, Circular letters, Application for employment and Resume.

UNIT- III: 25 Marks (credit – 01)

Business Manners- Body Language, Gestures, Telephone etiquette, E-mail etiquette. Textbook: 1) The Bet – Anton Chekov 2) Socrates and the Schoolmaster – F. L. Brayne

UNIT- IV: 25 Marks (credit – 01)

1) An Astrologer's Day – R. K. Narayan 2) The Gift of the Magi – O' Henry 3) With the Photographer – Stephen Leacock

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:

1. Textbook entitled 'Prism: Spoken and Written Communication, Prose & Poetry' published by Orient Longman
2. Orient Longman, Raj N Bakshi 2003-2007.
3. The grammar Tree, MridulaKaul, BeenaSugathan, ArchanaGilani- Oxford university press 2011
4. Grammar for All, N Ramlingam, Himalaya Publishing House, 2nd Edition 2014.
5. John Eastwood, Oxford Practice Grammar with answers
6. High School English Grammar & Composition, Wren & Martin Revised by NDV Prasad Rao, S Chand Publication
7. Business Correspondence & Report Writing, R C Sharma &Krisha Mohan, 3rd Edition, Tata Mcgrall Hill
8. Communication, C S Rayudu, Himalaya Publication July 2008
9. Business Communication, UrmilaRai, S M Rai, Himalaya Publication 9th Edition

BCA -I Semester-II
C++ PROGRAMMING
PAPER NO-3

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Object Oriented Methodology :- Elements of Object Oriented programming, Objects, Classes, OOPs features.Classes & Objects: Specifying a Class, Creating Objects, Accessing Class members, Defining member function, Outside Member Functions as inline, Accessing Member Functions within theclass, Static data member, Access Specifiers: Private, Protected and Public Members.

UNIT - II : 25 Marks (credit - 01)

CONSTRUCTORS & DESTRUCTORS: Introduction, Parameterized Constructors, Constructor Overloading, Constructors with Default Arguments, Copy Constructor, Destructor, Order of Construction and Destruction, Static data members with Constructor and Destructors. OPERATOR OVERLOADING: Definition, Overloadable Operators, Unary Operator Overloading, Unary & Binary overloading, Rules for Operators Overloading.

UNIT - III : 25 Marks (credit - 01)

DYNAMIC OBJECTS: Pointers to Objects, Creating and Deleting Dynamic Objects: New and Delete operators, Array of Objects, Array of Pointers to Objects, Pointers to Object Members, this Pointer. INHERITANCE: Defining, Abstract classes, Single, Multilevel, Multiple, Hierarchical, Hybrid Inheritance, Constructor and Destructor in Derived Classes.

UNIT - IV : 25 Marks (credit - 01)

VIRTUAL FUNCTIONS: Need for Virtual Functions, definition, Virtual Functions, Abstract .Classes, Rules for Virtual Functions. EXCEPTION HANDLING: Exception Handling Model, List of Exceptions, Handling Uncaught Exceptions, Fault Tolerant Design Techniques, Memory Allocation Failure Exception, Rules for Handling Exception Successfully.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.Mastering C++ by K R Venugopal Tata McGraw-Hill , New Delhi.
2.The C++ Programming Language –Bjarne Stroustrup
3.Programming with C++ - Ravichandran
4.Programming with C++ - Robert Lafore
5.Object Oriented Programming with C++ by E. Balagurusamy, McGraw Hill

BCA -I Semester-II
SYSTEM ANALYSIS AND DESIGN
PAPER NO-4

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Introduction :System, Subsystems, Components of Computerized Information System, Systems Analysts, SDLC, Prototyping. Feasibility Study and Analysis: Identifying Problems,Organizing Feasibility Analysis:Economic, Financial, Organizational and Technological. Feasibility Decision, Choice ofa solution.Data Collection: Interviews, Brain Storming, Questionnaires, Document Search, Observation.

UNIT - II : 25 Marks(credit - 01)

Structured tools and techniques of Data analysis : Structured English, Process Charts, SOP, Decision Tables and Decision Trees, Data Flow Diagram, Data Dictionary. (Special emphasis on problem solving)System Design : Input design: Input Validation, Human factor Consideration, Messages, System Tolerance. Output design: Categories of output, Design Principles, Control of Output. Forms: Principles of Form Design, Ways to ensure Quality Forms.Codes: Types, Physical Representation of Codes, Principle of Code Design.

UNIT - III : 25 Marks (credit - 01)

Implementation:Training, Operational Training and Related Activities, Planning to Implement Change, Change Strategies.Testing: Preparation for Testing, Test Execution: Levels of Testing, Component, Function,Subsystem, System, Test Evaluation, Acceptance.Conversion: Cold Turkey, Parallel, Pilot, Modular and Sequential Methods.Conversion PeriodLength. System Evaluation.

UNIT - IV : 25 Marks (credit - 01)

Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, Scheduling:Work

Breakdown Structure, Activity Networks and CPM, Gantt Charts, PERT Charts, ProjectMonitoring and Control. Risk Management, Software Configuration Management:Necessity, Configuring Management Activities. Software Reliability and Quality Management: SoftwareReliability, Software Quality, ISO 9000. Software Maintenance: Characteristics of Software Maintenance, Maintenance Process Models, Estimation of Maintenance Cost.Software Reuse: What can be reused, Why no reuse so far, Basic Issues.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.Information Systems Analysis, Design and Implementation By K. M. Hussain Donna Hussain [Tata McGraw-Hill Publishing Company Ltd, New Delhi]

2.Fundamentals of Software Engineering by RajibMall [PHI Publication]

3.Workbook on Systems Analysis & Design by V. Garg [PHI Publication]

4.System Analysis and Design- Don Yeates, shiebls, Helmy (M).System Analysis & Design - Edward –TMH

5.System Analysis and Design – Satzinger, Robert Jackson and Stephen Burd, Thomson Learning

Introduction to Systems Analysis Design, Igor Hawryszkiewycz, PHI

BCA -I Semester-II
FINANCIAL ACCOUNTING WITH TALLY
PAPER NO-5

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Introduction to Financial Accounting Meaning and Definition of Financial Accounting, Objectives of Accounting, Various users of Accounting Information, Accounting Terminologies, Accounting Concepts and Conventions, Double entry system, Types of Accounts and Golden rules of accounting. Books of Prime Entry, Subsidiary Books and Ledger Creation.

UNIT – II :- 25 Marks (credit - 01)

Preparation of Financial Statements Trial Balance – Meaning, Definition, purpose and features, preparation of Trial Balance. Final Accounts – Introduction, Objectives of Final Accounts, Adjustments before Preparing Final Accounts, Preparation of Trading Account, Profit and Loss Account, Balance Sheet.

UNIT - III : 25 Marks (credit - 01)

Introduction to Tally Tally History and Journey, Difference between manual accounting v/s computerised accounting, Tally features, Tally Fundamentals - Company Data – Gateway of Tally, Creating and Maintaining a Company, Loading a Company, F11: Company Features, F12: Configuration. Voucher Entry, Inventory - Stock Groups, Stock Categories, Stock Items, Units of Measurement, Bills of Materials, Batches & Expiry Dates.

UNIT - IV : 25 Marks (credit - 01)

Report Generation in Tally Printing – Printing Configuration for vouchers, printing reports – Profit and Loss A/C, Balance Sheet, Inventory, Interest Calculations, Day Book etc. Data Management – Backup & restore, Split a Company, Import Data, Export of Data, E-Capabilities, Tally ODBC. Introduction to GST, Objectives of GST.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.Anthony, RN. and Reece. J.S.: Accounting Principles: Richard Irwin Inc.
2. Gupta. R.L.and Radhaswamy. M: Financial Accounting; Sultan Chand and Sons, New Delhi. 3. Shukla. M.C., Grewal T.S., and Gupta, S.C.: Advanced Accounts: S. Chand & Co. New Delhi. 4. Advance Accountancy:- Maheshwari
5. Advance Accountancy:- R.L.Gupta
6. Computerized Financial Accounting Using Tally - Rajan Chougale**.**

BCA -I Semester-II

LINUX OPERATING SYSTEM

PAPER NO-6

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Logging In and Logging Out, Anatomy of Linux OS, Directory Structure, /usr Directory, File Types: User datafiles, System data files, Executable files. Naming files and directories, Spawning Processes. Shell: Creating User Account, Shell Program, bash shell, Changing shell prompt. Commands: Basic Syntax for a command, Exploring the Home Directory, ls, mkdir, rmdir, stat, cat, rm, mv, cp, backup utilities , tail, head , sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, cpio.

UNIT - II : 25 Marks (credit - 01)

Editor: GEDIT editor. Hooking up Hardware Devices: Formatting a Floppy Disk, Gathering importantsystem information. Backing Up and restoring the File System: Simple Backup, gzip, gunzip, tar.Printing files: Print Spool directory, Sending files to Printer.

UNIT - III : 25 Marks (creadit -01)

Sharing Files with other Users: Maintaining User Accounts, Changing Password, Creating Group Accounts, Granting Access to files, Changing File Ownership, Protecting Files, Making a File Read-Only. Working with Processes**:** Types of processes, ps Command, Creating process, killing process, free command and top utility.

UNIT - IV : 25 Marks (creadit- 01)

Managing Disk Space:df, du commands, Creating Additional Free Disk Space, Locating Unused Files, Setting System Clock. Communication Utilities: who, who am i, finger, mesg, write, wall, talk, Creating a message of the day. X Window System, Graphical User Interfaces: KDE and GNOME Desktop Environment.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.SAMS Teach Yourself Linux by Craig and Coletta Witherspoon[Techmedia] 2.LINUX complete reference by Richard Peterson

BCA -I Semester-II
E-COMMERECE
PAPER NO-7

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit – 01)

Introduction to e-Commerce, Scope of electronic commerce, definition, e-Commerce and Trade Cycle, e- Markets, Internet e-Commerce in perspective. Value chain, Supply chain, Porters value chain model, Inter organizational value chains.

UNIT - II : 25 Marks (credit-01)

Business strategy in electronic age: Competitive advantages, Strategy, Porters model, First Movers advantages, Advantages using e-Commerce. Introduction to business strategy, Strategic implications of IT, Technology, Business environment, Business capability, Existing business strategy, Strategy formulation and implementation planning, e-Commerce implementation, e-Commerce evaluation.

UNIT - III : 25 Marks (credit-01)

Business to Business e-Commerce: Inter organizational transactions, The credit transaction trade cycle, A variety of transaction, Pens and things, Electronics Market, Usage of e-Market, Advantages and disadvantages of e-Market, Future of e-Market, EDI, introduction, EDI and Business.

UNIT - IV : 25 Marks (credit-01)

Business to Consumer Electronic Commerce: Consumer trade transaction, Internet e-commerce, eShop, Other e-Commerce technologies, Advantages and disadvantages of consumer e-Commerce. Elements of e-Commerce: elements, e-Visibility, e-Shop, Online payments, Internet e-Commerce security.

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:

1.E-Commerce, Strategy, Technologies and Applications By: David Whiteley Tata McGraw-Hill Edition.

KAVIKULAGURU KALIDAS SANSKRIT UNIVERSITY, RAMTEK

SYLLABUS

Yoga & Ethics (for BCA 1ST YEAR)

(Internal Exam-Grade Pattern)

Credits 02 Total Marks- 50

Unit - I 10 Marks

What is yoga, history & development of yoga, fundamentals of yoga, Traditional Schools of yoga, yogic practices for health & wellness, general guidelines for yoga practice, food for thought.

Unit - II 10 Marks

A. Yama (Ahinsa, Satya, Asteya, Brahmacharya, Aparigraha)

B. Niyama (Shauch, Santosh, Tapa, Swadhyaya, Ishwarpranidhan)

Unit – III 10 Marks

Asana-

A. Standing (Tadasana, Vrikshasana, Pada-Harkasana, Ardha-chakrasana, Trikonasana)

B. Sitting (Bhadrasana, Vtljrasana, Ushtrasana. Shashankasana, Vakrasana)

C. Prone (Makarasana, Bhujangasana, Salabhasana)

D. Supine (Setu Bandhasana, Uttanapadasana, Pavanamuktasana,

Unit - IV 10 Marks

A. Kapalabhati

B. Pranayama - Anuloma-Viloma, Shitali, Bhramari

Unit - V 10 Marks

A. Prayer

B. Dhyana

C. Yoga Geet

Reference Books :

Unit-I, Ill, IV, V - (As per common yoga protocol for International Day of yoga) Ministry of AYUSH

Unit-Il - (As per Patanjala Yogasutra)

1. Yoga Sutra with Bhashya (Marathi) - Shri Rele, Prasad Prakashan, Pune.
2. Yoga Sutra with Bhashya (Hindi) - Darshan Mahavidyalaya, Parsodi, Gujarat.
3. Yogasutra (Marathi) - Shri Kolhatkar, Prasad Prakashan, Pune.

BCA -II Semester-III
DATABASE MANAGEMENT SYSTEM
PAPER NO-1

Credits-04 **Total Marks 100**

UNIT- I:25 Marks (credit - 01)

DBMS : Definition: Databases, DBMS, Problems with traditional file processing system, Objectives of the database systems, Three level architectures of DBMS, Component of DBMS, Database Administrator, Database Users, Data model, Different types of data models, Concepts of Hierarchical, Network Models.

UNIT-II:25 Marks(credit -01)

E-R Models : Basic Concepts, Entity, Attributes, Relation Ship, Mapping, Keys, Weak and Strong Entity Set, Problems on E-R Diagrams, Extended E-R Features: Specialization, Generalization, Aggregation, Problems on Reduction of an E-R Schema to Tables, Tabular representation of Strong, Weak entity Sets and Relationship Sets.

UNIT-III :25 Marks(credit -01)

Relational Model: Structure, Relational Algebra, Fundamental Operations, Set – Intersection, Natural Join, Division and Assignment Operation. Extended Relational Algebra Operations, Aggregate Functions.

UNIT–IV:25 Marks(credit - 01)

Functional Dependency: Functional Dependency, Fully Functional Dependency, Partial Dependency, Transitive Dependency, Multi Valued Dependency. Normalization, Normal Forms (1NF, 2NF, 3NF, BCNF, 4NF, 5NF). Problems on Normal forms. Organization of Database System: Introduction of file, file types, organization of file- heap file organization, serial file organization, sequential, index sequential file, random access file (direct access file), Types of Database System: centralized database system, clientserver system, distributed database system

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Data Base System Concepts By A SilbersChatz By Henry KorthAndS.Sudarshan [Mcgraw-Hill ltd. New Delhi] 3rd Edition.
2. Introduction to Data Base Management by NAVEEN PRAKASH [Tata McGrawHill ltd.]
3. Bipin C. Desai, An Introduction to Database Systems, Galgotia Publications.
4. Raghu Ramakrishnan& Johannes Gerhrke, "Data Base Management Systems", McGraw Hill International Edition, 2000
5. Muzumdar, Introduction to Database Management Systems. TMH

BCA -II Semester-III
ELECTIVE-1
CLOUD COMPUTING
PAPER NO-2

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**

Cloud Computing Overview Origins of Cloud computing – Cloud components - Essential characteristics – On-demand self service, Broad network access, Location independent resource pooling ,Rapid elasticity , Measured service, Comparing cloud providers with traditional IT service providers, Roots of cloud computing.

UNIT- II: **25 Marks (credit - 01)**

Cloud Insights Architectural influences – High-performance computing, Utility and Enterprise grid computing, Cloud scenarios – Benefits: scalability ,simplicity ,vendors ,security, Limitations – Sensitive information - Application development- security level of third party - security benefits, Regularity issues: Government policies.

UNIT- III: 25 Marks (credit - 01)

Cloud Architecture- Layers and Models Layers in cloud architecture, Software as a Service (SaaS), features of SaaS and benefits, Platform as a Service (PaaS), features of PaaS and benefits, Infrastructure as a Service (IaaS), features of IaaS and benefits, Service providers, challenges and risks in cloud adoption. Cloud deployment model: Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing.

UNIT- IV: **25 Marks (credit - 01)**

Introduction to Virtualization Virtualization and cloud computing - Need of virtualization – cost, administration, fast deployment, reduce infrastructure cost – limitations Types of hardware virtualization: Full virtualization - partial virtualization - para virtualization Desktop virtualization: Software virtualization – Memory virtualization - Storage virtualization – Data virtualization – Network virtualization

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter, TATA McGraw- Hill , New Delhi – 2010

2.Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008

3. Cloud computing for dummies- Judith Hurwitz , Robin Bloor , Marcia Kaufman ,Fern Halper, Wiley Publishing, Inc, 2010
4.Cloud Computing (Principles and Paradigms), Edited by RajkumarBuyya, James Broberg, AndrzejGoscinski, John Wiley & Sons, Inc. 201

BCA -II Semester-III
ELECTIVE-2
DATA MINING
PAPER NO-2

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**

Introduction to Data Mining: Why Mine Data? Commercial Viewpoint, Scientific Viewpoint Motivation, Definitions, Origins of Data Mining, Data Mining Tasks, Classification, Clustering, Association Rule Discovery, Sequential Pattern Discovery, Regression, Challenges of Data Mining, Data Mining-Data: What is Data? Attribute Values, Measurement of Length, Types and Properties of Attributes, Discrete and Continuous Attributes, Types of data sets, Data Quality, Data Preprocessing, Aggregation, Sampling, Dimensionality Reduction, Feature subset selection, Feature creation, Discretization and Binarization, Attribute Transformation, Density.

UNIT- I: **25 Marks (credit - 01)**

Data Mining: Exploring Data: Data Exploration Techniques, Summary Statistics, Frequency and Mode, Percentiles, Measures of Location: Mean and Median, Measures of Spread: Range and Variance, Visualization, Representation, Arrangement, Selection, Visualization Techniques: Histograms, , Box Plots, Scatter Plots, Contour Plots, Matrix Plots, Parallel Coordinates, Other Visualization Techniques,

UNIT- I: **25 Marks (credit - 01)**

OLAP : OLAP Operations, Data Mining Classification: Bask Concepts, Decision Trees, and Model Evaluation: Classification: Definition, Classification Techniques, Tree Induction, Measures of Node Impurity, Practical Issues of Classification, ROC curve, Confidence Interval for Accuracy, Comparing Performance of Two Models, Comparing Performance of Two Algorithms

UNIT- I: **25 Marks (credit - 01)**

Data Mining – Frequent Pattern Analysis, Mining Frequent Patterns, Associations and Correlations – Mining Methods- Pattern Evaluation Method – Pattern Mining in Multilevel, Multi Dimensional Space – Constraint Based Frequent Pattern Mining, Classification using Frequent Patterns

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Introduction to Data Mining by Tan, Steinbach, Kumar.

2. Data Mining: Concepts and Techniques by Jiawei Han, MichelineKamber, Morgan Kaufmann
3. Data Mining: Practical Machine Learning Tools and Techniques by Ian H. Witten and Eibe Frank, Morgan Kaufmann, 2nd Edition (2005).
4. Principles of Data Mining: David Hand, HeikkiMannila&Padhraic Smyth, PHP Publication

BCA -II Semester-III
ELECTIVE-3
DIGITAL MARKETING
PAPER NO-2

Credits-04 **Total Marks 100**

UNIT- I:25 Marks (credit - 01)

DIGITAL MARKETING INTRODUCTION: What is marketing? What is Digital Marketing? Understanding Marketing Process Understanding Digital Marketing Process Increasing Visibility, What is visibility?,Types of visibility, Examples of visibility Visitors Engagement, What is engagement?, Why it is important Examples of engagement Bringing Targeted Traffic Inbound and outbound marketing Converting Traffic into Leads, Types of Conversion , Understanding Conversion Process Tools Needed DIGITAL MARKETING VS. TRADITIONAL MARKETING ,Benefits of Traditional Marketing ,The Downside to Traditional Marketing, Benefits of Digital Marketing ,Tools of Digital Marketing, How We Use Both Digital & Traditional Marketing

UNIT- II: 25 Marks (credit - 01)

SEARCH ENGINE OPTIMIZATION: On-Page SEO Keyword Research with Google Keyword Planner. What is the difference between keywords stuffing & KW placement How to Select a Domain Name? Page Naming {URL Structuring} and Folder Naming Image Naming, Image Title and ALT Tags Creation What are Meta Tags, Description. Robots, Keywords, Author Redirection Tags Headings Tags {H1 to H6} What is Content Writing? SEO Friendly Content Writing {Insert keywords in content} Anchor Text, Link Title Internal linking Robots.text file use and creation HTML Sitemap creation XML Site Map Creation Site Tracking Tools (Google Webmaster Tool, Google Analytics Tool) Why is Alexa? Alexa Integration On-Page SEO, Off-Page SEO.

UNIT- III: 25 Marks (credit - 01)

SOCIAL MEDIA MARKETING: What is Social Media? Understanding the existing Social, Media paradigms & psychology, How social media marketing is different than others Forms of Internet marketing, Understanding Facebook marketing ,Creating Facebook page Uploading contacts for invitation ,How to do marketing on fan page ,Payment module- CPC vs CPM vs CPA , Linkedin Marketing, EMAIL MARKETING :What is email marketing?, Challenges in bulk emails ,How to over come these challenges? Types of email marketing- Opt-in & bulk emailing , Setting up email marketing account. Setting up lists & web form Creating a broadcast email.

UNIT- IV: 25 Marks (credit - 01)

ONLINE DISPLAY ADVERTISING What is Online Advertising? Types of Online Advertising Display Advertising Banner ads Rich Media ads Pop ups and Pop under ads Contextual advertising In Text ads In Image ads In video ads In page ads What are Payment Modules? Companies that provide online advertising solution Tracking & Measuring ROI of online adv. Assignment on

allocating funds to various Different Online advertising platforms Creating Banner Ads Using Tools

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.Digital Marketing: Strategy, Implementation & Practice – Dave Chaffey & Fiona Ellis.

2.Art of SEO (3rd edition) – *Eric Enge*

3.The Social Media Bible: Tactics, Tools, & Strategies for Business Success – Lon Safko. ...

4. Epic Content Marketing – Joe Pulizzi.

BCA -II Semester-III
DATA STRUCTURES
PAPER NO-3

Credits-04 **Total Marks 100**

UNIT- I:25 Marks (credit - 01)

LINKED LIST: Linked List, Representation of Single, Double, Header, Circular Single and Double Linked list, All possible operations on Single and Double linked List using Dynamic representation, Polynomial Representation and its Manipulation.

UNIT - II : 25 Marks (credit - 01)

STACKS : Stacks terminology, Representation of Stacks in Memory, Operation on Stacks, Polish Notations, Translation of infix to postfix & prefix expression, Infix to Postfix Conversion, Evaluation of Postfix Expression, Recursion, Problems on Recursion, Quick Sort and Tower of Hanoi Problem.

UNIT - III : 25 Marks (credit - 01)

QUEUE : Representation of Queues in Memory, Circular Queue. Dequeue and Priority Queue. Operations of above Structure using Array and Linked Representation. **SORTING AND SEARCHING:** Selection Sort, Insertion Sort, Merge Sort, Efficiency of Sorting Methods, Big-O Notations. Hash Tables, Hashing Technique, Collision Resolution Technique.

UNIT - IV : : 25 Marks (credit - 01)

TREES : Basic Terminologies, Representation of Binary Trees in Memory, Traversing of Binary tree, Binary Search Tree, Operation on Binary Search Tree, Heap Tree, Operation on Heap Tree, Heap Sort Method **GRAPHS :**Basic Terminologies, Definition and Representation of Graphs in Memory: Linked List and Matrix Representation. Traversing graphs : BSF, DFS Method.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Classical Data Structures : D. Samanta. PHI, New Delhi.
2. DATA STRUCTURE : LIPSCTUZ SCHUM OUTLINE SERIES
3. Data structure Using C++ : Y. Kanetkar
4. Data Structures Using C++: Tennenbaum
5. Data structures by Tremblay Sorenson
6. Data structures by Bhagatsingh Naps

BCA -II Semester-III
WEB TECHNOLOGY-I
PAPER NO-4

Credits-04 **Total Marks 100**

UNIT- I:25 Marks (credit - 01)

Introduction to Internet, History of Internet, Internet users, Internet working, Information on Internet, Requirements for connecting to Internet, Basic Internet Terms, Introduction to world wide web, Evaluation of world wide web, basic features, web browsers, popular web browsers, web servers, HTTP, URL, Search Engines, Search Engines categories, how to use Search Engines, Searching criterion.

UNIT - II: 25 Marks (Credit - 01)

HTML: Introduction, Objective, HTML Browsers, Windows Switching, HTML Command Tags, URLs, links, new web page creation, main body of the text, putting headers, adding paragraph , formatting text in HTML and font mechanism, Color settings, superscripts and subscripts and other manipulations on text and paragraphs, using directory and menu lists, creation of links, inserting graphics, using images, all manipulations on tables and its display, Detailed working with forms, allowing visitors to upload files, active images ,working with frames & framesets, Frames handling, scroll bars, alternatives to frames,

UNIT - III: 25 Marks (Credit -01)

Cascading style sheets :Introduction to css, creating style sheets, common tasks with CSS, Colors, the font family, font metrics ,length units ,absolute units ,relative units ,the pixel unit ,percentages as values ,keywords as values, various properties such as the font -size property, font size property etc, Assigning classes ,tags and attributes for applying classes, applying classes to an HTML tag, applying classes to other document parts ,the layer tag, CSS Tags.

UNIT - IV : 25 Marks (Credit - 01)

Limitations of HTML 4,Introduction and Advantages of HTML 5 ,First HTML5 Document , Overview of New Features of HTML5 , List of HTML 4.01 elements removed from HTML5: Page Layout Semantic Elements, HTML5 Web Forms, SVG API (Circle, Rectangle, Stroke Rounded Rectangle ,Rectangle ,Circle Stroke ,Ellipse , Line ,Polyline ,Text ,Gradients , Fill Patterns)Adding Videos,Audio.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Internet and web design by R Bangia, Second edition , firewall media
2. Multimedia and Wed technology by R Bangia
3. Internet and web designing by ITELS (Macmillan)
4. Web Enabled Commercial Application Development Using HTML, DHTML, JS, Perl by Ivan Bayross
5. Deitel, Deitel& Nieto, Internet and Worldwide Web how to Program, Pearson Education, PHI.
6. InternmetProgramming with VBScript and Java Script. KathhleenKalata, (Thomsaon Publication)
7. Programming the World Wide Web By. Robert W. Sebesta. (Pearson)
8. Web Technology Theory and Practice By: M Srinivasan (Pearson Publication)

BCA -II Semester-III
DISCRETE MATHEMATICS
PAPER NO-5

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**

Set Theory: Set, Subsets operations on set, Venn diagram, algebra on sets, Cartesian product of sets, Binary relations, Properties of binary relation, Relation matrix and the graph of relation, Partial order relations, Equivalence relations, Equivalence Classes, Composition of relations**.**

UNIT- II: **25 Marks (credit - 01)**

Propositional Calculus: Connectives, Negation, conjunction, Disjunction, statement formulas and truth tables, conditional and Bi-conditional, well formed formulas, Tautologies, Equivalence of formulas, duality law, Tautologies implications, Functionally complete set of, other connectives,

UNIT- III: **25 Marks (credit - 01)**

Disjunctive normal forms, connective normal forms, Principal disjunctive normal form, Principal conjunctive normal form.

UNIT- IV: **25 Marks (credit - 01)**

Graph Theory : Basic Concept of Graph Theory, Euler Paths and Circuits, Hamiltonian Paths and Circuits. Trees:- Basic concepts, Libeled trees, Undirected trees,Spanning tree and Minimal Spanning tree,

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:

1. Discrete Mathematical Structures with applications to computer Science By J,P.Tremblay& R. Manohar, (TMH)
2. Discrete Mathematical Structures by Kolman Busby and Ross (pearson)
   3.Discrete Mathematics By Norman Biggs. (Oxford).
4. Logic and Discrete Mathematics : Grassmann, Tremblay (Pearson)
5. Introduction to Automata Theory, Languages, and computation :Hopcroft, Motwani and Ullman(Pearson)
6. An introduction to the theory of computer science , languages and machines : Sudkamp
7. Kenneth H Rosen Discrite Mathematics & it's Applications TMH

BCA -II Semester-IV
SOFTWARE ENGINEERING
PAPER NO-1

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**

Introduction to Software Engineering : The evolving role of software, Changing Nature of Software, Software myths. A Generic view of process : Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

UNIT- II: **25 Marks (credit - 01)**

Process models : The waterfall model, Incremental process models, Evolutionary process models, The Unified process. Software Requirements : Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.Requirements engineering process : Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

UNIT- III: **25 Marks (credit - 01)**

System models : Context Models, Behavioural models, Data models, Object models, structured methods. **Design Engineering :**Design process and Design quality, Design concepts, the design model. Testing Strategies : A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing,Debugging

UNIT- IV: **25 Marks (credit - 01)**

Maintenance: Characteristics, controlling factors, maintenance tasks, side effects, preventive maintenance ,Re Engineering , Reverse Engineering , configuration , management Maintenance tools and techniques. Reliability: Concepts, Errors, Faults, Repair and availability, reliability and availability models. Recent trends and developments.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition.McGrawHill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson education.
3. Software Engineering- K.K. Agarwal &Yogesh Singh, New Age International Publishers
4. Software Engineering, an Engineering approach- James F. Peters, WitoldPedrycz, John Wiely.
5. Systems Analysis and Design- Shely Cashman Rosenblatt,Thomson Publications.
6. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.

BCA -II Semester-IV
SQL & PL/SQL
PAPER NO-2

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit - 01)

CODD'S Rules, Oracle Database Objects, Sub Languages of SQL, Data types, Operators. **DDL Statement**: Creating Tables, Deriving Table from existing table, Altering, Dropping Tables. Integrity Constraints, Specifying Names for the Constraints, Viewing Integrity Constraints, Adding and Dropping Constraints. DML Statements: SELECT statement, Insert, Update, Delete, Working with Sequences and Synonyms. Built-in functions: Arithmetic, Date, Character, Conversion, Single row, Aggregate, Decode. Joins, Set Operators and Sub queries. DCL and TCL Statements: Grant, Revoke, Commit, Rollback and Savepoints.

UNIT - II :25 Marks (credit -01)

VIEWS: Creating Views, Dropping Views, Inserting, Updating and Deleting Data using Views, Types of Views. PL/SQL Programming: PL/SQL Data Types, Identifiers, Operators and Expressions, Iterative Statements, Conditional Statements, emphasis on Problems

UNIT - III :25 Marks(credit -01)

Exception Handling : Predefined Exceptions, User defined Exceptions. Cursors: Declaring Cursors, Opening and Retrieving Records, Closing cursors. Attributes of Explicit and Implicit Cursors, Parameter Passing in Cursors. Procedures : Create and Drop Procedure, Creating Procedures with Parameters, Calling Procedures, Granting the EXECUTE Permission Problems on Exception Handling, Cursors and Procedures.

UNIT - IV :25 Marks (credit -01)

Function: Creating and Dropping Function, Purity Levels in Functions, Executing Functions. **Triggers:** Create Triggers, Type of Triggers, Creating BEFORE and AFTER Triggers, INSTEAD-OF Triggers, Trigger Predicates, Inserting, Updating and Deleting Triggers, Enabling , Disabling and Dropping Triggers. Problems on Functions and Triggers.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1.Understanding ORACLE By Ivan Bayross [BPB Publication]
2.Database System Using Oracle: A Simplified Guide to SQL & PL-SQL: Nilesh Shah, PHI Publication.
3.Database Management Systems (Complete practical approach) by SharadMaheshwari&Ruchin Jain, Firewall media
4.Dr.P.S.Deshpande SQL & PL/SQL for Oracle 10g Black Book
5.Scott Urman Programming PL/SQL TMH

BCA -II Semester-IV
ELECTIVE-1
COMPUTER GRAPHICS
PAPER NO-3

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**
Introduction of computer Graphics and its applications, Overview of Graphics systems, Video display devices, Raster scan display, Raster scan systems, video controller, Raster scan display processor, Random scan display, random scan systems, color CRT monitor, Flat panel display, Interactive input devices, Logical classification of input devices, Keyboard, mouse, Trackball and spaceball, Joysticks, Image scanner, Light pens, Graphics software, Coordinates representations, Graphics functions.

UNIT- II: **25 Marks (credit - 01)**
Line drawing algorithms, DDA, Bresenham's, Circle generating, Mid-point circle algorithm, Ellipse generating, Polygon , Scan-line polygon fill, Boundary fill.

UNIT- III: **25 Marks (credit - 01)**
2D Transformations :**2-D geometrical transforms** : Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

UNIT- IV: **25 Marks (credit - 01)**
2-D viewing : The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrusbeck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. "Computer Graphics Principles & practice", second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education.
2. "Computer Graphics", second Edition, Donald Hearn and M.Pauline Baker, PHI/Pearson Education.
3. Procedural elements for Computer Graphics, David F Rogers, Tata McGraw hill, 2nd edition.
4. "Principles of Interactive Computer Graphics", Neuman and Sproul, TMH.
5. Computer Graphics, Amrendra N Sinha,Arun D Udai TMH
6. Computer Graphics, Steven Harrington, TMH

BCA -II Semester-IV
ELECTIVE-2
INTERNET OF THINGS
PAPER NO-3

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**

IOT concepts , IOT Standards ,Components of IOT System. , Relevance of IOT for the future, IOT Applications ,IOT for smart cities , Challenges in IOT implementation. , Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Communication models & APIs.

UNIT- II: **25 Marks (credit - 01)**

IoT& M2M Machine to Machine, Difference between IoT and M2M, Software define Network. Network & Communication aspects Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination.

UNIT- III: **25 Marks (credit - 01)**

Challenges in IoT Design challenges, Development challenges, Security challenges, Other challenges, Domain specific applications of IoT Home automation, Industry applications, Surveillance applications, Other IoT applications

UNIT- IV: **25 Marks (credit - 01)**

Developing IoTs Introduction to Python, Introduction to different IoT tools, Developing applications through IoT tools, Developing sensor based application through embedded system platform, Implementing IoT concepts with python

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. The Internet of Things: From RFID to the Next-Generation Pervasive Networked Lu Yan, Yan Zhang, Laurence T. Yang, HuanshengNing
2. Internet of Things (A Hands-on-Approach) , Vijay Madisetti , ArshdeepBahga
3. Designing the Internet of Things , Adrian McEwen (Author), Hakim Cassimally
4. “Mobile Computing,” Tata McGraw Hill, Asoke K Talukder and Roopa R Yavagal, 2010.
5. Computer Networks; By: Tanenbaum, Andrew S; Pearson Education Pte. Ltd., Delhi, 4th Edition
6. Data and Computer Communications; By: Stallings, William; Pearson Education Pte. Ltd., Delhi, 6th Edition
7. “Fundamentals of Mobile and Pervasive Computing,” F. Adelstein and S.K.S. Gupta, McGraw Hill, 2009. 8. Cloud Computing Bible, Barrie Sosinsky, Wiley-India, 2010

BCA -II Semester-IV
ELECTIVE-3
R PROGRAMMING
PAPER NO-3

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**

Introduction to R programming: What is R? what is R programming ? R programming and features, Evolution of R?, Installing R and RStudio , RStudio Overview , Working in the Console , Arithmetic Operators , Logical Operations , Using Functions , Getting Help in R and Quitting RStudio.Data structures, variables, and data types : Creating Variables , Numeric, Character and Logical Data , Vectors , Data Frames , Factors , Sorting Numeric, Character, and Factor Vectors , Special Values.

UNIT- II: **25 Marks (credit – 01)**

Descriptive statistics in R: Measures of central tendency , Measures of variability ,Skewness and kurtosis , Summary functions, describe functions, and descriptive statistics by group , Correlations.

UNIT- III: **25 Marks (credit – 01)**

Statistical graphs ,Scatter Plots , Box Plots , Scatter Plots and Boxand-Whisker Plots Together , Histograms, Iteration: while loops ,for loops, Conditional statements , If / else , Boolean logical operators.

UNIT- IV: **25 Marks (credit – 01)**

Data querying: SQL and R , Writing SQL statements in R , Using the Select, From, Where, Is, Like, Order By, Limit, Max, Min SQL functions, Writing functions Reporting ,Creating functions , Calling functions.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Beginning R – The Statistical Programming Language ,Mark Gardener, **Publication:** Wiley, 2013
2.Introductory R: A Beginner's Guide to Data Visualisation, Statistical Analysis and Programming in RRobert KnelL, **Publication:** Amazon Digital South Asia Services Inc, 2013

BCA -II Semester-IV
WEB TECHNOLOGY-II
PAPER NO-4

Credits-04 **Total Marks 100**

UNIT- I: **25 Marks (credit - 01)**

Introduction to JavaScript, SCRIPT and NOSCRIPT tags, Placing JavaScript on a webpage, Using variables, JavaScript FundamentalS Using functions, Operators, Conditionals and loops, Arrays :JavaScript arrays, Properties and methods of arrays ,Associative arrays, Working with Numbers, Dates, and Strings.

UNIT- II: **25 Marks (credit - 01)**

Putting JavaScript to Work: Properties and methods of the DOM (Document Object Model)Working with Forms, Accessing the form element, The form object, Accessibility, Validation, Using form-based navigation

UNIT- III: **25 Marks (credit - 01)**

VB Script: Adding VB Script code to HTML, Adding script to your document ,VBScript Variable Declaration with Data Types: Dim, String, Boolean , VBScript Operators: Logical (AND, OR) Arithmetic, Comparison , VBScript Conditional Statement: IF Else, ElseIF, Select Case , VBScript Loops: Do While, Do Until, While, For Each , VBScript Functions & Procedures, Arrays in script, Messages, Subroutines,

UNIT- IV: 25 Marks (credit - 01)

Web Services: Ev0lution of the concept, Purpose, standards, Use cases, programming models, SOAP Based web services, WSDL,, SOAP, Structure of SOAP messages, REST based Web Services, REST principles, Resource Orientation, SOAP vs. REST. Manage your web site with Task and Reports : Keep track of work eith tasks, Check your site with your web site report, Publishing web site to a WPP host server

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Internet and web design by R Bangia, Second edition , firewall media

2. Multimedia and Wed technology by R Bangia
3. Internet and web designing by ITELS (Macmillan)
4. Web Enabled Commercial Application Development Using HTML, DHTML, JS, Perl by Ivan Bayross
5. Deitel, Deitel& Nieto, Internet and Worldwide Web how to Program, Pearson a.Education, PHI.
6. Internmet Programming with VBScript and Java Script. KathhleenKalata, (Thomsaon Publication)
7. Programming the World Wide Web By. Robert W. Sebesta. (Pearson)
8. Web Technology Theory and Practice By: M Srinivasan (Pearson Publication)

BCA -II Semester-IV
DIGITAL ELECTRONICS
PAPER NO-5

Credits-04 **Total Marks 100**

UNIT- I: 25 Marks (credit - 01)

Number System and Data Representation: **Number System** : Binary, Octal, Decimal and Hexadecimal number system and their interconvertion. ,**Binary Codes :** BCD, Excess3 , Parity, Gray, ASCII, EBCDIC codes and their advantages and disadvantages. **Data Representation:** Positive, negative, maximum and minimum number representation (related to 8 bit number), real number representation, underflow, overflow, range and accuracy. **Binary Arithmetic:** Binary addition, binary subtraction using 1's and 2's compliment.

UNIT - II: (credit -01)

Logic gates: Truth table, properties and symbolic representation of NOT, AND, OR, NOR, NAND, EXOR, EXNOR gates. NOR and NAND gates as a universal gates.Boolean Algebra. : Laws and Identities of Boolean algebra, DeMorgan's Theorem , use of Boolean Algebra for simplification of logic expression, K-Map for 2,3,4 variables, simplification of SOP and POS logic expression using K-Map.

UNIT - III: (credit -01)

Combinational / Sequential Circuits :**Combinational circuits:**Half adder, Full Adder, Parallel adder, Half subtractor, Full Subtractor, 4-bit binary adder subtractor, Multiplexer, Demultiplexer, Decoder, Encoder, Parity detector. **Sequential Circuits:Flip-Flops :**Construction and working of RSFF, CkRSFF, DFF, TFF, JKFF, and JKMSFF . **Counters:** Construction and working of asynchronous, synchronous, up-down counter, shift registers and their types.

UNIT - IV: (credit -01)

Architecture of 8086 and Assembly Language Programming Block diagram of 8086, Pin diagram of 8086, Addressing modes,**Instruction set:** Data transfer, Arithmetic, Logical, String manipulations, Control Transfer, Unconditional branch, Conditional branch, Flag, Processor control. Assembler directives and operators, simple assembly programs.

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:

1. Digital Electronics by Gothman(PHI)
2. Digital and analogue technique by Navaneeth, Kale and Gokhale
3. Modern Digital Electronics by R. P. Jain
4. Microcomputers Systems: The 8086/8088 family by Liu. Gibson
5. Introduction to Microprocessor by Duglas V Hall (McGraw Hill

UNIVERSITY GRANTS COMMISSION

Ability Enhancement Compulsory Course (AECC – Environment Studies)

Credits 02 Total Marks- 50

Unit 01: Introduction to environmental studies

- Multidisciplinary nature of environmental studies;
- Scope and importance; Concept of sustainability and sustainable development.

(2 lectures)

Unit 02 : Ecosystems

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems :
  a) Forest ecosystem
  b) Grassland ecosystem
  c) Desert ecosystem
  d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit 03: Natural Resources :

Renewable and Non---renewable Resources

- Land resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over---exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter---state).
- Energy resources: Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

(8 lectures)

Unit 4 : Biodiversity and Conservation

- Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega---biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity: Habitat loss, poaching of wildlife, man---wildlife conflicts, biological invasions; Conservation of biodiversity: In---situ and Ex---situ conservation of biodiversity.

- Ecosystem and bio diversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

(8 lectures)

Unit 5 : Environmental Pollution

- Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban an industrial waste.
- Pollution case studies.

(8 lectures)

Unit 6 : Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

(7 lectures)

Unit 7: Human Communities and the Environment

- Human population growth: Impacts on environment, human health and welfare.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management: floods, earthquake, cyclones and landslides.
- Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g.CNG vehicles inDelhi).

(6 lectures)

Unit 8 : Field work

- Visit to an area to document environmental assets: river/ forest/flora/fauna, etc.
- Visit to a local polluted site---Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems---pond, river, Delhi Ridge, etc.

(Equal to 5 lectures)

Suggested Readings:

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M. & Guha, R. 1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.)1999. *Globa Ethicsand Environment*, London, Routledge.
4. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science,* 339: 36---37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp. 29---64). Zed Books.
8. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, .P. & Brusseau, M.L.2011. Environmental and Pollution Science. Academic Press.
11. Rao, M.N. & Datta, A.K.1987.*Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt Ltd.
12. Raven, P.H.,Hassenzahl,D.M. &Berg,L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L.2001. *Environmental law and policy in India*. *Tripathi 1992*.
14. Sengupta, R. 2003. *Ecology and economics*: An approach to sustainable development. OUP.
15. Singh,J.S., Singh, S.P. and Gupta, S.R.2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H.(eds).2013. *Conservation Biology*: *Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger*: *A Natural History of the Indian Subcontinent*.
18. Warren,C. E.1971. *Biology and Water Pollution Control*. WB Saunders.
19. Wilson, E. O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
20. World Commission on Environment and Development. 1987.*Our Common Future*. Oxford University Press.

BCA-III Semester-V
CORE JAVA
PAPER-1

Credits-04 **Total Marks 100**

UNIT - I : 25 Marks (credit - 01)

Introduction to Java: -History of Java, features of Java, getting started with Java. **Java programs**:-Introduction of Application & Applets. **Variables**: -Variable naming, variable initialization, assign values, Rules of variables, Scope of variable. **Operators**: Arithmetic, Assignment, Unary, Comparison, Shift, Bit- Wise, Logical, Conditional, New, Special, Relational. Data types:-Integers, Char, String, Float etc. Typecasting: **Tokens**: -Java tokens Order of precedence of operators Streams: - Input and output.

UNIT - II : 25 Marks (credit - 01)

Creating a class & subclass: -Declaring a class, Naming class, Rules to assign Class & Subclass, Creating a new object, Class of an object. **Data members**: -Declaring data member, Naming variables, using class members. **Methods**: -Using data members, Invoke a method, passing arguments to a method, calling method. **Access Specifier & Modifiers**: -Public, Private, Protected, Static & Final. **Overloading**: -Method overloading, Constructor overloading. **Java class library**: - Different types of classes. **Decision making & loops**:-If-then-else, Switch,? : operator, While-loop, do-while loop, for. **Array**: -Creating an array, one-dimensional array, two-dimensional array. **String**: String array, string methods. **Inheritance**: -Single & multiple inheritances **Interfaces**: Defining interfaces, extending interfaces, implementing interfaces.

UNIT - III : 25 Marks (credit - 01)

Packages: -Java API packages, creating packages, accessing packages, adding a class to packages. **Import statement**: - Introduction & implementation of import statement. **Applets**:-Introduction to Applets & Application, how applets application are different creating An applet. Applets life cycle, designing a web page, creating an executable applet, running the applet, applet tags, passing a parameter to applet, HTML tag, Converting applet to application. **Threads**:-Overview of threads, single & multiple threads, lift cycle of threads, stopping &blocking threads, working with threads, priority to thread, synchronization. **Exceptions & Errors**:-Introduction, types of error, exception, syntax of exception, handling techniques, exception for Debugging.

UNIT - IV : 25 Marks (credit - 01)

Event: -Event driven programming**,** handling an (AWT) events**. Graphic class:**Introduction, the graphic classes, drawing & filling of lines, rectangle, circle & ellipse, arcs, polygons, text & fonts, creating a font class, font objects, text, coloring object. **Streams:-**Introduction, Abstract stream classes, file input & output. **AWI Applications**: -Creating a GUI using AWT toolkit, using component class, frames. **Components & Control: -**Textfield, textarea class, label, button, choice, list, checkbox, class, and combo. **Menus: -**Creating a popup menus. **Image**: - Type of image, Properties of an image, Displaying an image. **Layouts**: -Using Window Listener interface,

Different types of Layout, Layout manager, Flow manager, Grid manager. **Container**: -Different types of container (Frame, Dialog, Panel)

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Programming with Java a primer II edition:-E Balaguruswamy(Tata McGraw-Hill)
2. Java Programming (For absolute beginners) Russell PHI
3. Black Book on Java
4. Java-Complete References

BCA-III Semester-V
SOFTWARE TESTING
PAPER-2

Credits-04 **Total Marks 100**

UNIT - I : 25 Marks (credit - 01)

Introduction: Testing as an Engineering Activity, Testing as a Process, testing axioms, Basic Definitions Software Testing Principles, The Tester's Role in a Software Development Organization, Origins of Defects, cost of defects, Defect Classes, The Defect Repository a n d Test Design, Defect Examples, Developer/Tester Support for Developing a Defect Repository, Defect Prevention Strategies.

UNIT - II : 25 Marks (credit - 01)

Test Case Design : Test Case Design Strategies, Using Black Box Approach to Test Case Design, Random Testing, Requirements based testing, Boundary Value Analysis, Decision tables, Equivalence Class Partitioning, State-based testing, Cause-effect graphing, Error guessing, Compatibility testing, User documentation testing, Domain testing .Using White Box Approach to Test design, Test Adequacy Criteria, static testing vs. structural testing, code functional testing, Coverage and Control Flow Graphs, Covering Code Logic, Paths, Their Role in White–box Based Test Design, code complexity testing, Evaluating Test Adequacy Criteria.

UNIT - III : 25 Marks (credit - 01)

Levels Of Testing : The Need for Levels of Testing, Unit Test, Unit Test Planning, Designing the Unit Tests, The Test Harness, Running the Unit tests and Recording results, Integration tests, Designing Integration Tests, Integration Test Planning, Scenario testing, Defect bash elimination. System Testing, Acceptance testing, Performance testing, Regression Testing, Internationalization testing, Ad-hoc testing - Alpha , Beta Tests, testing OO systems, Usability and Accessibility testing, Configuration testing, Compatibility testing, Testing the documentation, Website testing

UNIT - IV: 25 Marks (credit - 01)

Test Management : People and organizational issues in testing, organization structures for testing teams, testing services, Test Planning , Test Plan Components, Test Plan Attachments, Locating Test Items – test management, test process, Reporting Test Results, The role of three groups in Test Planning and Policy Development, Introducing the test specialist, Skills needed by a test specialist, Building a Testing Group.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks

External :10 Marks

Reference Books:

1. Srinivasan Desikan and Gopalaswamy Ramesh, "Software Testing – Principles and Practices", Pearson education, 2006.
2. Ilene Burnstein, "Practical Software Testing", Springer International Edition, 2003.
3. Ron Patton, " Software Testing", Second Edition, Sams Publishing, Pearson education, 2007
4. RenuRajani, Pradeep Oak, "Software Testing – Effective Methods, Tools and Techniques", Tata McGraw Hill, 2004.
5. Edward Kit, "Software Testing in the Real World – Improving the Process", Pearson Education, 1995.
6. Boris Beizer, "Software Testing Techniques" – 2nd Edition, Van Nostrand Reinhold New York, 1990.
7. Aditya P. Mathur, "Foundations of Software Testing – Fundamental algorithms and techniques", Dorling Kindersley (India) Pvt. Ltd., Pearson Education, 2008

BCA-III Semester-V
ASP.NET
PAPER-3

Credits-04 **Total Marks 100**

UNIT - I : 25 Marks (credit - 01)

MS.NET Framework Introduction: The .NET Framework - an Overview, Framework Components, Framework Versions, Types of Applications which can be developed using MS.NET,MS.NET Base Class Library, MS.NET Namespaces, MSIL / Metadata and PE files., The Common Language Runtime (CLR), Managed Code, MS.NET Memory Management / Garbage Collection, Common Type System (CTS), Common Language Specification (CLS), Types of JIT Compilers, Security Manager. ASP .NET Application,Web form Fundamentals, Web Controls,Global.asax Application File,Responding to PostBack Events in ASP .NET.

UNIT - II: 25 Marks (credit - 01)

How to create and run the first ASP.NET application. Understanding the code generated by VS.NET, Example Programs., Understanding AutoPostBack., Types of Server Controls, HTML controls., Web Server Controls. Exploring Server Controls, ASP .NET Validations and Rich Controls: Calendar Control, AdRotator, Advertisement File and AdRotator Class, Server-side Validation, Client –side Validation,Validation Controls Validation RequiredFieldValidator , CompareValidator, RangeValidator, RegularExpressionValidator, CausesValidation Property of Button, Grouping Controls for Validation, Validated Customer Form.Stat Management, Tracing,Logging and Error Handling.

UNIT - III : 25 Marks (credit - 01)

Page Navigation Options Response.Redirect, Server.Transfer, CrossPagePostBack property of Button, Accessing controls of PreviousPage, Accessing Properties of PreviousPage ,PreviousPageType page directive. Creating a Layout Using Master Pages Why Master Pages. Significance of ContentPlaceHolder Tag in MasterPage and Content Tag in, WebForm. How a control of MasterPage can be accessed / programmed in WebForm.,Master.FindControl, Public property in MasterPage and ASP.NET State Management Need for state management, Static members in Webform, Global Class in App_Code folder, ViewState, HiddenField, QueryString, HttpContext, HttpCookie and Cookie DictionarY, HttpSessionState, HttpApplicationState.

UNIT - IV : 25 Marks (credit - 01)

Accessing Data with ADO.NET Relational Databases and SQL,ADO .NET Object model, Working with Data –Bound Controls, Populating a DataGrid, DataList and Repeater, Customizing DataSet and Combining Data Tables,Changing Database records accessing,Updating,Deleting and Creating records, Difference between ADO .NET and XML,Adding Controls, Data binding, Database Connectivity.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Biginning XML By Wrox Press
2. XML how to program By Deitel and Deitel
3. Web Enabled Commercial Application Develeopement using HTML, DHTML, JAVA Script, and PERL-CGI By Ivan Bayross
4. The Complete Reference By Thomas Powell, Tata MacGraw Hill
5. ASP .NET-The Complete Reference, Tata MacGraw Hill

BCA-III Semester-V
PHP
PAPER-4

Credits-04 **Total Marks 100**

UNIT - I : 25 Marks (credit - 01)

Introduction to PHP: What Does PHP Do, A Brief History of PHP, Installing PHP, A Walk Through PHP Language **Basics:** Lexical Structure, Data Types, Variables, Expressions and Operators, Flow-Control Statements, Including Code, Embedding PHP in Web Pages, Installing and Configuring PHP on Windows and Linux Platforms .

UNIT - II: 25 Marks (credit - 01)

Functions: Calling a Function, Defining a Function, Variable Scope, Function Parameters, Return Values, Variable Functions, Anonymous Functions, Strings: Quoting String Constants, Printing Strings, Accessing Individual Characters, Cleaning Strings, Encoding and Escaping, Comparing Strings, Manipulating and Searching Strings, Regular Expressions, POSIX-Style Regular Expressions, Perl-Compatible Regular Expressions,

UNIT - III : 25 Marks (credit - 01)

Arrays: Indexed Versus Associative Arrays, Identifying Elements of an Array, Storing ,Data in Arrays, Multidimensional Arrays, Extracting Multiple Values, Converting , Between Arrays and Variables, Traversing Arrays, Sorting, Acting on Entire Arrays, Using Arrays ,**Reading data in web pages: S**etting Up Web Pages to Communicate with PHP, Handling Text Fields, Text Areas, Check Boxes, Radio Buttons, List Boxes, Password Controls, Hidden Controls, Image Maps, File Uploads. **Handling Buttons:** Making Button Data Persist, Using Submit Buttons as HTML Buttons.

UNIT - IV : 25 Marks (credit - 01)

Sessions - introduction ▪ Start a PHP session , session variables , modify session , destroy session Cookies , Cookies , Start a PHP Cookies , Cookie variables , modify Cookie , destroy Cookie ,Advanced Working with MYSQL Admin , Working with PHP My, Admin Database Connections Managing Database, Connections Performing Queries, Creating Database & Tables Dropping Database & Tables Adding Fields, Selecting Table, Alerting Fields Properties, Insert Record Select Record, Deleting Record, ModifyingRecord.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. PHP 5.1 for beginners by Evan Bayross and Sharman Shah, SPD Publications
2. PHP 5.2 The Complete Reference by Steven Holzner, Mc Graw Hill Edition 2008.
3. Programming PHP by RasmusLerdorf and Kevin Tatroe, Orilly Publications

BCA-III Semester-VI
ANDROID PROGRAMMING
PAPER-1

Credits-04 **Total Marks 100**

UNIT - I : 25 Marks (credit - 01)

Introduction to Android , Overview , History, Features of Android , Architecture of Android , Overview of Stack , Linux Kernel, Native Libraries ,Android Runtime , Application Framework , Applications , SDK Overview ,Platforms , Tools – (JDK, SDK, Eclipse/Android Studio, ADT, AVD, Android Emulator) , Versions 1.6. Creating your first Android Application

UNIT - II : 25 Marks (credit - 01)

Android User Interface , Understanding the components of a screen , Views and ViewGroups , LinearLayout , AbsoluteLayout 10 , TableLayout , RelativeLayout, FrameLayout , ScrollLayout , ScrollView , Adapting to Display Orientation, Anchoring Views , Resizing and Repositioning ,Managing Changes to Screen Orientation , Persisting State Information during Changes in Configuration , Detecting Orientation Changes , Adding Action Items to the Action Bar , Customizing the Action Items and Application Icon

UNIT - III: 25 Marks (credit - 01)

Designing Your User Interface with Views , Using Basic Views , TextView, Button, ImageButton, EditText, CheckBox , ToggleButton, RadioButton, and RadioGroup Views , ProgressBar View ,AutoCompleteTextView View , Using Picker Views , TimePicker View , DatePicker View , Using List Views to Display Long Lists ,ListView View , Using the Spinner View , Understanding Specialized Fragments , Using a ListFragment , Using a DialogFragment , Using a PreferenceFragment. Displaying Pictures and Menus, Gallery and ImageView views , Image Switcher ,Grid View ,Using Menus with Views , Creating the helper methods , Options Menu , Context Menu.

UNIT - IV : 25 Marks (credit - 01)

Displaying Pictures and Menus, Gallery and ImageView views , Image Switcher ,Grid View ,Using Menus with Views , Creating the helper methods , Options Menu , Context Menu.Databases – SQLite , Introduction to SQLite , SQLiteOpenHelper and SQLiteDatabase , Creating , opening and closing database ,Working with cursors, Insert, Update, Delete , Building and executing queries.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks
Internal: 15 Marks
External :10 Marks

Reference Books:

1. Android: A Programming Guide by J.F. DiMarzio
2. Hello, Android: Introducing Google's Mobile Development Platform by Ed Burnett
3. Programming android by Zigurd Mednieks
4. Android User Interface Design: Turning Ideas and Sketches into Beautifully Designed Apps byIan G. Clifton
5. Android Developer Fundamental Course by Google.
6. Advance Android Developer Course by Google.

BCA-III Semester-VI
PYTHON PROGRAMMING
PAPER-2

Credits-04 **Total Marks 100**

UNIT - I : 25 Marks (credit - 01)

Introduction To Python, Python identifiers and reserved words, Lines and indentation, multi-line statements, Comments, Input/output with print and input functions, Command line arguments and processing command line, arguments Standard data types - basic, none, Boolean , numbers Python strings, Data type conversion, Python basic operators (Arithmetic, comparison, assignment, bitwise logical) Python membership operators (in & not in) Python identity operators (is & is not) Operator precedence, Control Statements, Python loops, Iterating by subsequence index, loop control statements (break, continue, pass) Mathematical functions and constants (import math), Random number functions

UNIT - II: 25 Marks (credit - 01)

Python strings Concept, escape characters, String special operations, String formatting operator, Single quotes, Double quotes, Triple quotes, Raw String, Unicode strings, Built-in String methods. Python Lists - concept, creating and accessing elements, updating & deleting lists, basic list operations, reverse Indexing, slicing and Matrices, built-in List functions, Functional programming tools - filter(), map(), and reduce(), Using Lists as stacks and Queues, List comprehensions.

UNIT - III : 25 Marks (credit - 01)

Functions Defining a function (def), Calling a function, Function arguments - Pass by value, Keyword Arguments, default arguments , Scope of variable - basic rules , Documentation Strings,Variable Number of Arguments, Call by Reference, Order of Anonymous functions Recursion, Treatment of Input and Output Arguments, Unpacking argument lists, Lambda forms, Function Objects, function ducktyping & polymorphism , Generators (functions and expressions) andNiterators, list comprehensions .

UNIT - IV: 25 Marks (credit - 01)

Python Classes / Objects Object oriented programming and classes in Python , creating classes, instance objects, accessing members Data hiding (the double underscore prefix), Built-in class attributes, Garbage collection : the constructor, Overloading methods and operators, Inheritance - implementing a subclass, overriding methods, Recursive calls to methods, Class variables, class methods, and static methods, Python Exceptions Exception handling : assert statement, Except clause - with no exceptions and multiple exceptions, Try- finally, raising exceptions, user-defined exceptions.

Theory: 80 Marks
Internal Assessment : 20 Marks
Practical –I :25 Marks

Internal: 15 Marks
External :10 Marks

Reference Books:

1.Introducing Python- Modern Computing in Simple Packages – Bill Lubanovic, O„Reilly Publication
2. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress
3. Practical Programming: An Introduction to Computer Science Using Python 3, Paul Gries, et al., Pragmatic Bookshelf, 2/E 2014
4. Introduction to Computer Science Using Python- Charles Dierbach, Wiley Publication Learning with Python ", Green Tea Press, 2002

BCA-III Semester-VI
CYBER SECURITY
PAPER-3

Credits-04 **Total Marks 100**

UNIT - I : 25 Marks (credit - 01)

Introduction to Cyber Security, Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace,Cyber Security Concepts, Essential Terminologies: CIA, Risks, Breaches, Threats, Attacks, Exploits. Information Gathering

UNIT - II: 25 Marks (credit - 01)

Cyber Security Vulnerabilities and Cyber Security Safeguards, Cyber Security Vulnerabilities-Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness. Cyber Security Safeguards- Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

UNIT - III : 25 Marks (credit - 01)

Securing Web Application, Services and Servers, Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges. Intrusion Detection and Prevention, Intrusion, Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.

UNIT - IV : 25 Marks (credit - 01)

Cryptography and Network Security, Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography. Overview of Firewalls- Types of Firewalls, User Management, VPN Security Security Protocols: - security at the Application Layer- PGP and S/MIME, Security at Transport Layer- SSL and TLS, Security at Network Layer-IPSec. Cyberspace and the Law.Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards.

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Theory: 80 Marks

Internal Assessment : 20 Marks

Reference Books:
1.William Stallings, "Cryptography and Network Security", Pearson Education/PHI, 2006.
2. V.K. Jain, "Cryptography and Network Security", Khanna Publishing House.
3. Gupta Sarika, "Information and Cyber Security", Khanna Publishing House, Delhi
4. Atul Kahate, "Cryptography and Network Security", McGraw Hill.

BCA-III Semester-VI
DATA COMMUNICATION AND NETWORK
PAPER-4

Credits-04 **Total Marks 100**

UNIT - I : 25 Marks (credit - 01)

Introduction to data communication and networking: Why study data communication?, Data Communication, Networks, Protocols and Standards, Standards Organizations. Line Configuration, Topology, Transmission Modes, Categories of Networks Internet works. Study of OSI and TCP/IP protocol suit: The Model,Functions of the layers,TCP/IP Protocol Suites.
Types of transmission media: Guided Media, Unguided Media, Transmission Impairments, Performance Wavelength , Shannon Capacity , Media Comparison, PSTN , Switching

UNIT - II : 25 Marks (credit - 01)

Study of Signals: Analog and Digital, Periodic and Aperiodic Signals, Analog Signals, Time and Frequency Domains ,Composite Signals , Digital Signals, Study of Digital transmission: Digital to Digital Conversion, Analog to Digital Conversion, Study of Analog transmission: Digital to Analog Conversion, Analog to Analog Conversion.

UNIT - III : 25 Marks (credit - 01)

Study of Multiplexing: Many to one/one to Many, Frequency division Multiplexing, Wage division Multiplexing, Time division Multiplexing, Multiplexing applications, ypes of transmission media: Guided Media, Unguided Media, Transmission Impairments, Performance Wavelength , Shannon Capacity , Media Comparison, PSTN , Switching.

UNIT - IV: 25 Marks (credit - 01)

Error Detection and Correction: Types of Errors, Detection, Parity Check, Vertical Redundancy Check Longitudinal Redundancy Check, Cyclic Redundancy Check, Checksum, Error Correction.Introduction to networks and devices: Network classes,Repeaters, Hub, Bridges , Switches, Routers, Gateways Brouters Routing Algorithms, Distance Vector Routing , Link State Routing.

Theory: 80 Marks
Internal Assessment : 20 Marks

Reference Books:

1. William Stalling, Data and Computer Communication, PHI Publication.
2. Forouzan, Data Communication and Networks, Tata McGraw Hill. 3.Godbole, Data Communication and Network, TMH
4. Tanenbum, Computer Networks, PHI Publication.
5. Comer Internetworking with TCP/IP Vol-1, PHI Publication

USG. Ill Year

FOUNDATION COURSE

B A CHOICE BASED CREDIT SYSTEM (SEMESTER SCHEME)

w.e.f. 2014-2015

HUMAN RIGHTS AND INDIAN CONSTITUTION

(Compulsory Paper) for all U. G. Courses

Credit 2 Marks 50

Chapter I : Indian Constitutional Philosophy and Union and State Executive, Legislature and Judiciary

a) Feature of the Constitution and Preamble
b) Fundamental Rights and Fundamental Duties
c) Directive Principals of State Policy
d) Union Parliament and State Legislature: Power and Functions
e) President, Prime Minister and Council of Ministers
f) State Governor, Chief Minister and Council of Ministers
g) The Supreme Court and High Court: Power and Functions

25 Marks 2 Credit

Chapter Il : Concept and Development of Human Rights and Human Rights in India

a) Meaning Scope and Development of Human Rights
b) United Nations and Human Rights - UNHCR
c) UDHR 1948, ICCPR 1996 and ICESCR 1966
d) Protection of Human Rights Act, 1993 (NHRC and SHRC)
e) First, Second and Third Generation Human Rights
f) Judicial Activism and Human Rights

READINGS

Durga Das Basu, Introduction to the Constitution of India, Prentice — Hall of India Pvt. Ltd. New Delhi

SubashKashyap, Indian Constitution, National Book Trust

J.A. Siwach, Dynamics of Indian Government & Politics

D.C. Gupta, Indian Government and Politics

H.M. Sreevai, Constitutional Law of India, 4 th edition in 3 volumes (Universal Law Publication)

V. N. Shukla, Constitution of India (Eastern Book co)

J.C. Johari, Indian Government and Politics Hans
J. Raj Indian Government and Politics
M. V. Pylee, Indian Constitution

Durga Das Basu, Human Rights in Constitutional Law, Prentice — Hall of India Pvt. Ltd. New Delhi

Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right), Challenges to Civil Right Guarantees in India, Oxford University Press 2012

S.R. Kapoor, Human Rights