SARVEPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL

Yearly Scheme for BCA (Bachelor of Computer Application)

Second Year Scheme

With Effect from Session 2017-18

Subject code	Subject Name	Internal Assessment		Theory		Practical	Grant Total
			Total		Total		
2BCA1	Foundation Course (Paper I)	10	20	30	80		100
2BCA2	Foundation Course (Paper II)	05		30			
2BCA3	Foundation Course (Paper III)	05		25			
2BCA4	System Analysis and Design	10	15	40	85		100
2BCA5	Operating System	10		40			
2BCA6	Programming in C ++	10	15	40	85	50	150
2BCA7	Data Base Management System	10		40			
2BCA8	Mathematics 1	10	15	40	85		100
2BCA9	Mathematics 2	10		40			
2BCA10	ASP.Net & C#					50	50
Grant Total		65		335		100	500

Practical Group		
2BCA6	Programming in C ++	50
2BCA7	Data Base Management System	
2BCA10	ASP.Net & C#	50
Total		100

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Paper I: 2BCA4-SYSTEM ANALYSIS AND DESIGN

Max Marks: 40 **Min Marks: 15**

UNIT-I

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. System Planning: Base for planning a system, Dimensions of Planning.

UNIT-II

Initial Investigation: Determining users requirements and analysis, fact finding process and techniques. Feasibility study: Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, and identification of system objectives, feasibility report. Cost/Benefit Analysis: Data analysis, cost and benefit analysis of a new system. Categories determination and system proposal.

UNIT-III

Tools of structured Analysis: Logical and Physical models, context, diagram, data dictionary, data diagram, form driven methodology, IPO and HIPO charts, Gantt charts, system model, pseudo codes, Flow charts- system flow chart, run flow charts etc., decision tree, decision tables, data validation, Input/ Output and Form Design: Input and output form design methodologies, menu, screen design, layout consideration.

UNIT-IV

Management standards – Systems analysis standards, Prgramming standards, Operating standards. Documentation standards – User Manual, system development manual, programming manual, programming specifications, operator manual. System testing & quality: System testing and quality assurance, steps in system implementation and software maintenance. System security: Data Security, Disaster/ recovery and ethics in system development, threat and risk analysis. System audit.

UNIT-V

Organisation of EDP: Introduction. Job Responsibilities & duties of EDP Personnels- EDP manager, System Analyst, Programmers, Operators etc. Essential features in EDP Organization. Selection of Data Processing Resources: purchase, lease, rent-advantages and disadvantages. Hardware and software procurement – In-house purchase v/s hiring and lease.

Text & Reference Books:
System Analysis & Design by V K Jain, Dreamtech Press
Modern System Analysis &Design by A Hoffer, F George, S Valaciah Low Priced Edn. Pearson Education.
Information Technology & Computer Applications, by V.K.Kapoor, Sultan Chand & Sons, New Delhi.

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Paper: 2BCA5 OPERATING SYSTEM

Max Marks: 40 **Min Marks: 15**

UNIT–I

Definitions, functions and types of operating system, System components, Operating system Services, System Calls, System programs, System structure.

UNIT–II

Process Concepts, process state & process control block, Process Scheduling, Scheduling Criteria, Scheduling Algorithms, MultipleProcessor Scheduling Real-Time Scheduling, Threads, Threads in Linux.

UNIT–III

Critical Section Problem , Semaphores, Classical Problem Of Synchronization, , Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Process Scheduling in Linux.

UNIT–IV

Logical versus physical address space, Swapping, Contiguous Allocating, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms, Memory Management in Linux

UNIT–V

Disk Scheduling, Disk Management, Swap Space Management, Disk reliability, Stable Storage Implementation. File Concepts Directory structure, Protection, File system in Linux. TEXT &

REFERENCE BOOKS:-

Operating System Concepts by Silberschatz & Galvin, Addison Wesley Publication 6th Edition.
Operating System Concepts & Design by Milan Milen Kovic, TMH Publication

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Paper: 2BCA6 Programming in C ++

Max Marks: 40 **Min Marks: 15**

UNIT-I

Overview of C++: Object oriented programming, Concepts, Advantages, Usage. C++ Environment: Program development environment, the language and the C++ language standards. Introduction to various C++ compilers, C++ standard libraries, Prototype of main() function, Data types. Creating and compiling C++ Programs using IDE and through command line, IDE features for compiling, debugging, tracing and testing the C++ program in Turbo C++/Borland C++ /Micro Soft VC++ / GNU C++ compiler. Classes & Objects : Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members, Static data member, Static member function, Passing objects to function, Returning objects, Object assignment.

UNIT-II

Array, Pointers References & The Dynamic Allocation operators : Array of objects, Pointers to object, Type checking C++ pointers, The This pointer, Pointer to derived types, Pointer to class members, References: Reference parameter, Passing references to objects, Returning reference, Independent reference, C++ 's dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects. Constructor & Destructor: Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Default Argument, Destructor.

UNIT-III

Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation (i.e. +=,-= etc), Operator overloading restrictions, Operator overloading using friend function, Overloading New & Delete, Overloading some special operators, Overloading [ ], ( ), -, comma operator, Overloading << .

UNIT-IV

Inheritance : Base class Access control, Protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes . Virtual functions & Polymorphism: Virtual function, Pure Virtual functions, Early Vs. late binding

UNIT-V

The C++ I/O system basics : C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O: Formatting using the ios members, Setting the format flags, Clearing format flags, An overloaded form of setf ( ), Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O, Creating your own manipulators.

TEXT & REFERENCE BOOKS :

- Herbert Schildt, "C++ The Complete Reference " - TMH Publication
- R. Subburaj, "Object Oriented Programming With C++ ", Vikas Publishing House, New Delhi
- E. Balguruswamy, "C++ ", TMH Publication
- M Kumar "Programming In C++", TMH Publications
- R. Lafore, "Object Oriented Programming C++ "
- Ashok . N. Kamthane, "Object Oriented Programming with ANSI & Turbo C++", Pearson Education Publication

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Paper: 2BCA7 Data Base Management System

Max Marks: 40 **Min Marks: 15**

UNIT-I

Operational data, Purpose of database system, Views of data, Data models: Relational, Network, Hierarchical, Instances & Schemes, Data Dictionary, Types of Database languages : DDL, DML, Structures of a DBMS, Advantages & Disadvantages of a DBMS,3- level Architecture Proposal : External, Conceptual & Internal Levels, Entity Relationship Model as a tool of conceptual design : Entities & Entity set, Relationship & Relationship set, Attributes, Mapping Constraints, Keys, Entity-Relationship diagram (E-R diagram) : Strong & weak entities, Generalization, Specialization, Aggregation, Reducing ER diagram to tables

UNIT-II

Set theory concepts and fundamentals: Relations, Domains, Attributes, Tuple, Concepts of Keys: Candidate key, Primary Key, Alternate Key, Super Key, Foreign Key, Fundamental integrity rules: Entity integrity, Referential integrity, Extension & Intention Functional Dependencies, Good & Bad Decomposition, Anomalies as a database: A consequences of bad design, Universal Relation, Normalization: 1NF, 2NF, 3NF, BCNF, 4NF 5NF.

UNIT-III

Relational Algebra: Select, Project, Cross product, Different types of joins i.e. theta join, equi-join, natural join, outer join, set operations . Structured query language(SQL),Using MS Access, Implementing SQL Functions, Integrity, Indexing, View Using MS Access. DBA – Role, Functionality and Importance.

UNIT-IV

Failure Classification, The Storage Hierarchy, Transaction Model, Storage and File Structure, RAID, Storage Access, File Organization, Organization of Records in File, Data Dictionary storage.

UNIT-V

Database functionality and Importance. Database system architectures-centralized system, client server system, parallel system, distributed system. Overview Database on Web-concepts of ODBC, DSN.

TEXT & REFERENCE BOOKS:

- "Database Management System" bY Leon & Leon, Vikas Publications
- "Database System Concepts" by Henry F.Korth & Abraham Silberschatz .
- "An introduction to database system" by Bipin C.Desai
- "An Introduction To Database System" by C.J.Date

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Second Year
Paper: 2BCA8 ASP.NET & C#

Max Marks: 40 **Min Marks: 15**

UNIT – I

Overview of ASP.NET framework, Understanding ASP.NET Controls, Applications Web servers, installation of IIS. Web forms, web form controls -server controls, client controls, web forms & HTML, Adding controls to a web form ,Buttons, Text Box , Labels, Checkbox, Radio Buttons, List Box, etc. Running a web Application, creating a multiform web project.

UNIT-II

Form Validation: Client side validation, server Side validation, Validation Controls : Required Field Comparison Range. Calendar control, Ad rotator Control, Internet Explorer Control. State management- View state, Session state, Application state,

UNIT-III

Architecture of ADO.NET, Connected and Disconnected Database, Create Connection using ADO.NET Object Model, Connection Class, Command Class, DataAdapter Class, Dataset Class. Display data on data bound Controls and Data Grid. Database Accessing on web applications: Data Binding concept with web, creating data grid, Binding standard web server controls. Display data on web form using Data bound controls.

UNIT-IV

Writing datasets to XML, Reading datasets with XML. Web services: Introduction, Remote method call using XML, SOAP, web service description language, building & consuming a web service, Web Application deployment.

UNIT-V

Overview of C#, C# and .NET, similarities & differences from JAVA, Structure of C# program. Language features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serialization, Delegates, and Reflection.

TEXT BOOKS & REFERENCE BOOKS

- VB.NET Black Book by steven holzner–dreamtech
- ASP.NET Unleashed C# programming –wrox publication
- C# programming Black Book by Matt telles

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Paper: 2BCA9 Mathematics

Max Marks: 40 **Min Marks: 15**

UNIT-I

Statements, logical connectives, truth tables. tautologies, contradictions, logical equivalence. Applications to everyday reasoning.

UNIT–II

An axiom system for the sentence calculus. Truth tables as an effective procedure for deciding logical validity. Relation of sentence calculus to Boolean algebra.

UNIT-III

Quantifiers: Universal and existential quantifier. Predicate calculus. Axiom system for predicate calculus. Application to everyday reasoning.

UNIT-IV

Sets and classes. Relations. Equivalence relation and equivalence classes. Partial order relation, lub and glb. Trees and lattices. Mappings: injective, surjective and bijective mappings. Cardinality. Finite and infinite sets.

UNIT-V

Definition and basic properties of: semigroups and groups, rings, integral domains, and fields.

TEXTS AND REFERENCE BOOKS:-

S.S.SASTRY, “Engineering Mathematics”, Prentice Hall of India

Bernard Kolman, Robert C.Busby, Sharon Ross, “Discrete Mathematical Structures Engineering Mathematics ”

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Paper: 2BCA10 Numerical Methods

Max Marks: 40 **Min Marks: 15**

UNIT –1

Representation of a computer on a computer, difference between floating point and real arithmatics, different types of errors, Error in the approximation of a function, Error in series approximation.

UNIT-2

Solution of algebric and trancendental equation using bisection method, regularfalse method, newtonraphson method. Solution of simultaneous linear equations using gaussblimination method, jacobi' siterative method,gaussseidel iterative method.

UNIT-3

Interpoiation: finite difference and operators,newton forward,newton backward, games forward,games backward,stirling'sinterpolation divided difference formula

UNIT-4

Numerical differenciation , formula for derivatives maxima and minima of a tabulated Numerical integration: newton-cotes formula, tapezoidal rule, simpson's rule, weddle's rule.

UNIT-5

Solution of ordinary differential equation using picard's method,taylor'series method, euler,s method, modified euler's method, runge_knutta method, predictor-corrector method.

TEXT & REFF. BOOKS

- Numerical methods in engg & science b.s.grawal
- Numerical method –s.s sastry