B.C.A. Part-I,
II & Final

Prospectus No.20101221

संत गाडगे बाबा अमरावती विद्यापीठ

SANT GADGE BABA AMRAVATI UNIVERSITY

(विज्ञान विद्याशाखा)

(FACULTY OF SCIENCE)

PROSPECTUS

OF

DEGREE OF BACHELOR OF COMPUTER APPLICATION

Part-I,II & Final Examinations - Summer 2010

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SANT GADGE BABA AMRAVATI UNIVERSITY

SPECIAL NOTE FOR INFORMATION OF THE STUDENTS

(1) Notwithstanding anything to the contrary, it is notified for general information and guidance of all concerned that a person, who has passed the qualifying examination and is eligible for admission only to the corresponding next higher examination as an ex-student or an external candidate, shall be examined in accordance with the syllabus of such next higher examination in force at the time of such examination in such subjects papers or combination of papers in which students from University Departments or Colleges are to be examined by the University.

(2) Be it known to all the students desirous to take examination/s for which this prospectus has been prescribed should, if found necessary for any other information regarding examinations etc., refer the University Ordinance Booklet the various conditions/provisions pertaining to examination as prescribed in the following Ordinances.

Ordinance No. 1	:	Enrolment of Students.
Ordinance No. 2	:	Admission of Students
Ordinance No. 4	:	National cadet corps
Ordinance No. 6	:	Examinations in General (relevent extracts)
Ordinance No. 18/2001	:	An Ordinance to provide grace marks for passing in a Head of passing and Inprovement of Division (Higher Class) and getting Distinction in the subject and condonation of defficiency of marks in a subject in all the faculties prescribed by the Statute NO.18, Ordinance 2001.
Ordinance No. 9	:	Conduct of Examinations (relevent extracts)
Ordinance No. 10	:	Providing for Exemptions and Compartments

Ordinance No. 19	:	Admission of Candidates to Degrees.
Ordinance No. 109	:	Recording of a change of name of a University student in the records of the University.
Ordinance No. 138	:	For improvement of Division/Grade.
Ordinance No.19/2001	:	An Ordinance for Central Assessment Programme, Scheme of Evaluation and Moderation of answerbooks and preparation of results of the examinations, conducted by the University, Ordinance 2001.

J.S.Deshpande
Registrar
Amravati University.

PATTERN OF QUESTION PAPER ON THE UNIT SYSTEM

The pattern of question paper as per unit system will be boradly based on the following pattern.

(1) Syllabus has been divided into units equal to the number of question to be answered in the paper. On each unit there will be a question either a long answer type or a short answer type.

(2) Number of question will be in accordance with the unit prescribed in the syllabi for each paper i.e. there will be one question on each unit.

(3) For every question long answer type or short answer type there will be an alternative choice from the same unit. However, there will be no internal choice in a question.

(4) Division of marks between long answer and short answer type question will be in the ratio of 40 and 60.

(5) Each short answer type question shall Contain 4 to 8 short sub question with no internal choice.

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B.C.A.Part-I,II & Final Examination

(Prospectus No.20101221)

Syllabus for First Year

Bachelor of Computer Application

Paper-1 : Computer Fundamentals and DOS

Unit-I : Computer Basics :

Algorithms, A simple model of Computer, Characteristics of Computer.

Data Representation :

Representation of characters in computer, representation of integer. Hexadecimal representation.

Input / Output Units :

Description of computer Input units, Floppy disk, Video terminal, MICR, OMR, OCR, Bar coding, Output units : Printers, Chain printer, serial printer, latter quality printer, plotter, laser printer, graphic display device, VDU.

Computer Memory :

Memory cell, memory organization, read only memory, serial access memory, semiconductor flip flop, magnetic surface recording, magnetic hard disk, floppy disk drives.

Unit-II : Computer Architecture and Operating System :

Interconnection units, rpocessor to memory communication, I/O to processor communication, interrupt

structure, multiprogramming.

Operating System :

Why do we need operating system?, Batch operating system, multiprogramming operating system, Time sharing operating system, on line and real time operating system.

Unit-III : Computer generation and classification :

First generation, second generation, third generation, fourth generation and fifth generation Computers, Mini, super-mini, midi, maxi computer.

Definition of file, file names, Booting from floppy and HDD, warm boot, cold boot, Internal DOS commands (DIR, MD, RD, TREE, PATH, DATE, TYPE, TIME, COPY, RENAME, DEL,PROMPT, LABEL, VOL) wild cards.

Unit-IV : External DOS Commands : ATTRIB, XCOPY, FORMAT, FIND SYS, BACKUP, RESTORE, CHKDSK, DISKCOPY.

Configuration and batch file commands : Configuration : FILES, BUFFERS, COUNTRY, DEVICE, SHELL, LASTDRIVE Batch file : ECHO, PAUSE, REM, IF, ERRORLEVEL, CONDITION==, EXIST, GOTO, CALL.

Unit-V : DOS utility commands : MEMMAKER, MSAV, DBLSPACE, MOVE, DEFRAG, DELTREE, SCANDISK, UNDELETE, UNFORMAT.

TEXT BOOKS :

1. Fundamentals of Computer - V.Rajaraman - PHI

2. Teach yourself DOS - AL.Stevens - BPB

*****

Paper-2 : Digital Electronics

Unit-I : Number System :

Binary, Octal, Hexadecimal, Decimal to binary, decimal to octal, decimal to hexadecimal, binary to decimal, octal to decimal, hexadecimal to decimal, binary to hexadecimal, binaty to octal, hexadecimal to binary and octal to binary conversions. Addition and Subtraction in binary subtraction in binary, octal and hexadecimal 1's and 2's compliment method of binary substraction.

Logic operaters and logic gates :

OR, AND, NOT, NAND and EX-OR operators. OR, AND, NOT, NAND, NOR, EX-OR and EX-NOR gates.

Unit-II : Boolean algebra :

Boolean laws, Boolean identities, Demorgans theorems.

Implementation of Boolean equations :

SOP, POS, Simplification of Boolean equation using Boolean laws & theorems, simplification of boolean equation using K-map (Upto 4 variable K map).

Unit-III : Arithmetic Logic Unit :

Half adder, Half subtractor, Full adder, Full subtractor, 4-bitbinary parallel adder, subtration using 1's & 2's complement method, Controlled 4-bit parallel adder/subtractor (1's & 2's Complement), study of ALU IC-74181.

Decoder, Demultiplexer and multiplexer :

Basics of decoder, 2:4 decoder, 3:8 decoder, 4:16 decoder, extension of decoder to demultiplexer, Basics of Multiplexer, 2:! mux, 4:1 mux, and 16:1 multiplexer.

Unit-IV : Flip-Flops :

RS latch, clocking methods, RS, FF, JK, FF, JK m/s FF, O FF and T FF.

Registers :

Buffer register, shift register (left, right), controlled shift left/right register, controlled buffer/shift left/ shift right register.

Unit-V : Counters :

Asynchronous counters (mod 8, 10, 16), synchronous counters (mod 8, 16), mixed countars (5x2 and 2x5)

Digital memories : ROM, RAM.

D/A, A/D converters :

Op-Amp basics, Basic D/A converter, ladder method, A/D converter : Succesive approximation method.

TEXT BOOKS :

1. Digital Electronics and Microcomputer - R.K.Gaur-Dhanpati publications.
2. Digital fundamentals - Floyd - Universal Book stall, Delhi.

*****

Paper-3 : The 8086 Microprocessor

Unit-I : Introduction of the microprocessor an computer :

A historical background, microprocessor based personal computer system, number system, computer data formats.

The microprocessor and its architecture :

Internal microprocessor architecture, real mode memory addressing, protected mode memory addressing, memory paging.

Unit-II : Addressing modes :

Data addressing modes, program memory addressing mode, stack memory addressing mode.

Data movement Instructions :

MOV revisited, PUSH/POP, load effective address, string data transfer, miscellaneous data transfer instructions, segment override prefix, assembler details.

Unit-III : Addition, subtraction and comparison, multiplication and division, BCD and ASCII arithmetic, basic logic instructions, shift and rotate, string comparison.

Program control instructions :

The jump group, controlling the flow of an assembly language program, procedures, introduction to interrupts, machine control and miscellaneous instructions.

Unit-IV : Programming the microprocessor :

Modular programming, using the keybnoard and video display, data conversions, disk files, example programs, interrupt hooks.

Unit-V : 8086/8088 hardware specifications :

Pin-outs and pin function, clock generator, bus buffering and latching, bus timing, ready and wait state, minimum mode versus maximum mode.

TEXT BOOKS :

1. The Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 804, pentium and pentium pro processors - Barry B.Brey (Fourth Edition) - PHI (Chp. 1 to 8)
2. Microprocessor & Interfacing - Programming & Hardware - Douglas V. Hall - TMH

*****

Paper-4 : C Programming

Unit-I : C Fundamentals :

The C character set, identifiers and keywords, data types, constants, variables and arrays, declarations, expressions, statements, symbolic constants.

Operators and expressions :

Arithmetic operators, unary operators, relational and logical operators, assignment operators, conditional operator, library functions.

Unit-II : Data input and output :

Single character input-getchar function, single character output-putcher function, entering input data - scan f function, more about, scanf function, writing output data-printf function, more about printf function, gets & puts functions, interactive programming.

Control statements :

The while statement, do-while statement, for statement, nested loops, if-else, switch, break, continue statements, comma operator, goto statement.

Unit-III : Functions :

Defining function, accessing function, passing arguments to a function, specifying argument data types, function prototypes, recursion.

Arrays :

Defining an array, processing an array, passing array to a function, multidimensional array, arrays and strings.

Unit-IV : Pointers :

Fundamentals, pointer declarations, passing pointers to a function, pointers and one dimensional arrays, operations on pointers, pointers and multidimensional arrays, arrays of pointers.

Unit-V : Structure and Unions :

Defining a structure, processing a structure, user defined data types (typedef), structures and pointers,

passing structures to a function, self referential structure, unions.

Data files :

Opening and closing a file, creating a data file, processing a data file, unformatted data files.

TEXT BOOKS :

1. Programming with C - B.S.Gottfried - Schaum's outline series - McGraw - Hill

2. Programming in ANSI C - E.Balguruswamy-second edition - Tata McGraw Hill

*****

Paper-5 : Numerical Methods

Unit-I : Introduction : A simple mathematical model, algorithm design.

Approximation and round-off errors, truncation errors.

Unit-II : Root of equations :

a) Breaking methods : Graphical methods, Bisection method, false position method.

b) Open methods : Simple fixed point iteration, Newton-rapson method, secant method,successive approximation method.

Unit-III : Linear Algebric Equation :

a) Gauss elimination : Solving small number of equations, Naive gauss elimination, pitfalls of elimination method, technique for improving solution, non-linear system of equations, Gauss Jordan, LU, Crout decomposition, matrix inverse.

b) Special matrix for gauss - Seidel : Special matrix, Gauss-Siedel.

Unit-IV : Curve Fitting :

Least-square regression : Linear regression, polynomial regression, multiple linear regression, general linear least square, non-linear regression.

Unit-V : Interpolation :

Newton divided difference interpolation, Lagrange interpolating polynomials, inverse interpolation, spline interpolation.

TEXT BOOKS :

1) Numerical Methods for Engineers : S.C.Chapra, R.P.Canale-McGraw Hill

2) Numerical Methods - E.Balguruswamy

*****

Paper-6 : Discreate Mathematics

UNIT-I : Functions and Relations.

1. Elementary Counting principles
   - (i) Functions and counting.
   - (ii) Combinatorial argument
   - (iii) Principle of inclusion and Exclusion.
   - (iv) Infinite sets and countability.

2. Generating Functuions

   - (i) Ordinary and Exponetial generating functions.
   - (ii) Basic properties of Generating Functions.

(iii) Enumerators

(iv) Azilication to partitions, Ferrer's Grap, dual partitions

(v) Probability generating functions.

(vi) Applications to solving recurrence relation

3. Recurrence Relations

(i) Introduction

(ii) Linear recurrent relation with constant coefficient

(iii) Homogeneous solution and total solutions.

(iv) Particular solution and total solutions

UNIT-II : Boolean Algebra :

(i) Logic

(ii) Partial Order relations.

(iii) Lattices -definition and elementary properties.

(iv) Principle of duality

(v) Lattices as algebric systems

(vi) Distributive and complemented lattices

(vii) Uniqueness of finite Boolean algebras

(viii) Boolean Functions and Boolean expressions.

(ix) Disjunctive normal forms and simplification.

UNIT-III : Graoph Theory (a) :

(i) Definition and elementary results.

(ii) Types of Graphs

(iii) Isamorphism

(iv) Adjancency and incidence matrix

(v) Degree sequence and Havel-Halcimi theorem (without proof)

(vi) Subgraphs, induced subgraphs.

(vii) Complement of a graph, self-complementrary graphs

(viii) Union, intersection, ring-sum of two graphs.

(ix) Connected, disconnected graphs

(x) Edge sequences, Trail, path, circuits definitions and elementary results.

UNIT-IV : Graoph Theory (b) :

(i) Isthmus, cutvertex

(ii) Vertex and edge connectivity

(iii) Menger's theorem (without proof)

(iv) Dijkstra's shortest path algorithm.

(v) Eulerian graphs, Definitions and examples

(vi) Characterisation of Eulerian graphs in terms of degree.

(vii) Hamiltonian graph, definition and examples.

(viii) Sufficient conditions for Hamiltonian graphs (without proof)

UNIT-V : Graph Theory (c)

(i) Definition of a tree and equavalent characterisation elementary results.

(ii) Centre of a tree

(iii) Spanning trees, fundamental circuits and cut sets.

(iv) Binary treesnd elementary results

(v) Kruskal's algorithm for weighted spanning tree.

(vi) Different types of directed graphs

(vii) Connectedness

(viii) Directed trees, arborescence ad\nd polish notion

(ix) Networks and flows : definition, exaples & construction of flows only.

BOOKS :

1) Elements of Discrete Mathematics by C.L.Liu

2) Discrete mathematics by Olympia Nicodemi

3) Discrete mathematical Structures for Computer Science by Alan Doerr and Kenneth Lavassuer.

4) Discrete Mathematics with Applications by H.F.Mottson Jr.

5) Discrete and Combinatorial mathematics by A.P.Hillmon. C.L.Alexanerson and R.M.Grassl

6) A first step in Graph Tehory by Raghunathan, Numkar and Solappurkar

7) Graph Theory with Applications to Computer Science and Engineering by Narsingh Deo.

8) Discrete Mathematical structures for Computer Science by B.Kolman and R.S.Busby

9) Foundation of Discrete Mathematics by K.D.Joshi (New International Ltd. Publisher, 1996 (Reprint)

10) "Boolean Algebra and Swithching circuits" by Medelson, Tata McGraw Hill Publication Co-Ltd, 4/ 12 Asaf Ali Road, New Delhi.

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Paper-7. Communication skills

Total Marks : 100

THEORY MARKS :- 75 AND PRACTICAL MARKS :- 25

UNIT I : Comprehension Skills **25 Marks**

1.1	Skimming for general ideas	5
1.2	Contextual vocabulary	5
1.3	Error detection	5
1.4	Note making and Location of argument from text (Precis)	5
1.5	Ability to answer inferential,factual and personal response	5

UNIT II Writing Skills **25 Marks**

2.1	Paraphrasing of poems and /or passages	5
2.2	Paragraph development	5
2.3	Report writing	5
2.4	Essay writing	10

UNIT III Forms of written communication **25 Marks**

3.1	Letter writing	5
3.2	Preparation of Curriculum - Vitae	5
3.3	Composing messages-telegrams, telex,fax and e-mail	5
3.4	Writing memos,agendas and notices of meetings	5
3.5	Preparing advertisements	5

UNIT IV **Group discussion and Interview** **25 Marks**

techniques (Practicals)

4.1	Voice modulation and logical argument
4.2	Comprehension of text at normal reading speed
4.3	Listening skill and timely response
4.4	Participation and contribution to discussion
4.5	Command over language
4.6	Formal and informal style of communication
4.7	Body language

The theory paper shall consist of Unit,I,II,III carrying 25 marks per unit of total 75 marks. There will be one question from each unit with sub-questions based on the syllabus. There will be no internal choice, but external choice may be given.

For reference the following books are recommended :-

1) Current English for Colleges by N.Krishnaswamy, T.Sriraman

2) Developing Communication Skills by Krishna Mohan, Meera Banerji

3) English for Practical Purposes by Z.N.Patil, B.S.Valke, Ashok Thorat, Zeenat Merchant

LIST OF PRACTICALS PAPERS :

Pract.P-I (Digital & DOS) :

1. Study of logic gates : OR, AND, NOT, NAND, NOR, EX-OR, Ex-NOR
2. Implementation of logic equation using gates.
3. Half adder and Full adder
4. 4-bit binary parallel adder
5. Controlled 4-bit binary parallel adder/subtractor using 1's complement.
6. Controlled 4-bit binary parallel adder/subtractor using 2's complement
7. Study of 3:8 decoder & demultiplexer
8. Study of 4:1 or 8:1 multiplexer

9. Study of JK m/s, D-type and T-type flip flops.
10. Study of buffer register and shift registers
11. Study of asynchronous counter (mod-8, mod-16 & mod-10)
12. Study of counter synchronous (mod-8, mod-16)
13. Study of D/A converter
14. Study of A/D converter
15. Study of ROM
16. Study of RAM
17. Study of internal and external DOS commands.

Pract.P-II (Microprocessor) :

Using Kit :

1. Program for data transfer a)reg. to reg. b) reg. to mem. c) men to reg.
2. Addition of 8-bit no. with a) result in 8-bit b) result in more than 8-bit.
3. Addition of 16-bit no. with a) result in 16-bit b) result in more than16-bit.
4. Multiplication of a) 8-bit numbers b) 16-bit numbers.
5. Factorial of number
6. Largest number from three numbers.
7. Addition of array
8. A) Smallest number from array b) largest number from array
9. Sorting of array numbers in ascending order.
10. Sorting of array numbers in descending order.

Using assembler :

11. Program for data transfer a) reg. to reg. b) reg. to mem .c) mem. to reg
12. Addition of 8-bit no. with a) result in 8-bit b) result in more than 8-bit
13. Addition of 16-bit no. with a) result in 16-bit b) result in more than 16-bit
14. Multiplication of a) 8-bit numbers b) 16-bit numbers.
15. Factorial number
16. Largest number from three numbers
17. Addition of erray

18. A)Smallest number from array b) largest bnumber from array
19. Sorting of array numbers in ascending order
20. Sorting of array numbers in descending order.

Pract.P-III (C Programms) :

1. Evaluations of expressions
2. Solution of quadratic equation with all possible roots.
3. Program for temperature conversion
4. Program for finding largest of three numbers.
5. Program for average of n numbers.
6. Program for nested loops.
7. Evaluation of series values (sinx and cosx series)
8. Evaluation of series values by defining function for power & factorial.
9. Program of recursion
10. Program for sum and average of n numbers stored in and array
11. Program for sorting of array elements (string and number)
12. Addition of two matrices
13. Subtraction of two matrices.
14. Multiplication of two matrices.
15. Inverse of matrix
16. Example on passing pointers to function.
17. Recording list of numbers using pointers.
18. Addition of two tables of numbers using array of pointers
19. Example on definition and use of structures
20. Example on passing structures to functions
21. Example on Union
22. Example for reading of a file
23. Example for writting data in the file
24. Example for appeding date in the file
25. Example for reading & writting data in existing file

Pract.P-IV (Numerical methods) :

1. Program to find roots of equation using bisection method.
2. Program to find roots of equation using false position method.
3. Program to find roots of equation using Newton-rapson method.
4. Program to find roots of equation using Secant method.
5. Program to find roots of equation using Successive approximation method.
6. Program for Solution of simultaneous equation by Gauss- elimination method.
7. Program for Solution of simultaneous equation by Gauss- Seidal method.
8. Program for Solution of simultaneous equation by Gauss-Jorden method.
9. Program for curve fitting using least square fit method.
10 Program for interpolation using divided difference method
11. Program for Largrange interpolation method.

Pract.P-V (M.S.Office)

1. Any five practicals on MS-Word
2. Any five practicals on MS-Excel
3. Any five practicals on MS-Access
4. Any five practicals on MS-Powerpoint.

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Syllabus for Second Year
Bachelor of Computer Applications.

Paper-8 : Data Structures :

Unit-I: Data Structures :

Introduction :

Information & Meaning, Arrays and structures C.

Stack :

Defination and example representing stacks in C. Implementation fInfix, Postfix & Prefix using stack.

Unit-II: Recursion :

Recursione definitions and processes. Recursion in C using recursion for Tower of Hanoi and

Translation from prefix to postfix simulatins recursion.

Unit-III: Queues and lists :

Queus and its sequential representation linked lists, Circular list, stack as circular list, primitive.

Unit-IV:Trees : Binary Trees & their representation. Representing list as binary tree.

Unit-V: Sorting : Exchange sort, selection & Tree sorts, Insertion sorts. Merge & Radix sorts.

Searching : Tree searching, General Search Trees, Hashing.

BOOKS :

1. Data Structures using C & C++ by Langsam, Augesstein & Tenenbavm (PHZ)
2. Data Structure by Trambley and Sorcnson.
3. Data Structure by Horowoitz & Sahani.
4. An Introduction to data base systems - Bipin C Desai, Gelgotia Pub.
5. Database Management Systems - Korth.

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PAPER-9 : PROGRAMMING IN C++

Unit-I: C++ Introduction to OOPS :

Concept of OOPS, Advantages and Characteristics of OOPS.

C++ PROGRAMMING BASICS :

Basic Program construction, I/O students, preprocessor Directives and comments, variable declarations, Type conversion, operators, Library functions.

Unit-II: LOOPS and Decision :

for loop, do loop, if statement, if....else statement, else....if statement, switch statement. Conditional operators, logical operators, break, continue and goto statements.

Structures :

Defining and accersing structueres, enumerated data types.

Functions :

Simple functions, passing argument to functions, Returning value from function, Reference arguments, overloaded functions inline function, Default argument, variables and storage classes.

Unit-III: Objects and Classes :

A simple class, C++ objects as physical objects and data types. Constructors, object and function argument, returning object from function, structures and classes, classes objects and memory, Static class data.

Arrays :

Fundamental, Arrays and class member data, Array as object, strings.

Unit-IV: Operator Overloading :

Overloading unary operator and binary operator, multiple overloading, data conversion, pitfalls of operators overloading.

Inheritance :

Derived class and Base class, Derived class constructors, Overriling member function. Class Hierarchies, Public and private Inheritance, level of Inheritance, multiple inheritance, Ambiquity in multiple inheritance.

Unit-V: Pointers :

Addresses and pointers, pointers and array, pointers and functions, pointers and strings, memory management using new and delete, pointers to objects, pointers to pointers.

Virtual function :

Virtual and Friend function, static function, Assignment and copy-

Initialization this pointer.

Files and streams :

Stream, string I/O, Characters I/O, Object I/O, I/O with multiple objects file pointers, Disk I/Owith member function, error handling, Redirection Command line arguments, printer output.

Reference Books :

1. Objects Oriented programming in Turbo C++ by Robert Lafore Galgotia Publications.

2. C++ Programming by Balguruswamy.

PAPER-10 : DATABASE MANAGEMENT SYSTEM

Unit-I: Basic Concepts :

Data modeling for Database, Records and files, abstraction & data inteqaragratiar. Three -level architecture proposal for DBMS, Components of DBMS, advantages and dis-advantages.

Data Models :

Data Associations, Data Models Classification Entity Relationship model, Relational data model.

Unit-II: Relational model. :

Relational Database, Relational Algebra, Relational Calculus.

Unit-III: Relational Database manipulation :

SQL, DML, DDL, VIEWS is SQL, QUEL, Data Manipulation in QUEL.

Unit-IV: Relational Database Design :

Anomalios is Database, Universal Relation, functional Dependancy, Relational database design.

Unit-V: Normalization :

Normalization Through synthesis, First, Second, Third, Fourth and Boyle-codd Normal form Domain key Normal form, Project join normal form.

Books :

1) An Introduction to data base systems - Bipin C.Desai, Galgotia Pub.

2) Database Management Systems - Korth

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PAPER-11 : OPERATING SYSTEMS

Unit-I: Operating Systems :

- Introduction

- Process Management

Process Concept - Definition of procers states, procers state Transitions, Procers Control Block, suspend and reserve.

Unit-II: Asynchronous Concurrent Processors :

Parallel procersors, A control structure for indicating parallelism - Parbegin/Parend. Mutual exclusion primitives and their implementation. Dekkers & petorsons algorithm. N-procers synchronization with scmaphore Implementing semaphores P and V.

Concurrant Programming :

Critical Regions and Conditional critical region monitors path expresions, message passing.

Unit-III: Deadlock Indifinite postponement :

Resource concept. four modification for deadlock, Dead lock prevention, Banker's Algorithm, Deadlock Detection. Deadlock Recovery.

Unit-IV: Storage Management :

Real Storege :Storage Organization, Stroage Management storage Hierarchy. Storage Management sttrategies contigious 4 non-contigious storage allocations. Single UGC contigious storage allocation,fixed 4 variable partition moltiprogramming, multiprogramming with storage swapina.

Virtual Storage Management :

Virtual storage management strategies, page replacement strategies, localitu, working sets, page fault - frequency page replacement/ Demand Papging, page Release page size.

Unit-V: Processor Management :

JOB & Processor Scheduling : Introduction, Scheduling levels, objectives and criteria, Preempative vs.Non-premptive schduling HRN, Schuduling Multilevel feedback Queues fair share schduling.

Case Studies : UNIX System, MS-DOS

BOOKS :

1) Operating Systems - H.M.Deitel - Addision Wesley

2) Operating Systems - John J.Donoven

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Paper-12 : Systems analysis design & MIS

Unit-I: System Analysis & Design :

Introduction, Scuessful systems, systems developments. role of analyst and designer, better system development. Introduction to approaches for SAD, Traditional and structured approaches. Yourdon, Jaclesar, Information Engg, SSHPM, Merise, Euromethod, OOP.

Introduction to Communicating with people, types of communication, improving skills.-Building better systems, quality concepts, cost & quality, ISO90000 quality in structured life.

Understanding the business, business analysis, constraints.

Unit-II: Project Management :

Introduction, stages of system development, project planning, estimation, monitoring and control.

Systems Analysis :-

Concepts : Introduction, structured approach, Planning the approach : Introduction, objectives, constraints, feasibility study. Asking questing and collection data.

Recording the information :

Introduction, case tools, FD, entity models. Interprecting the information collected : Introduction,modeling, ELH, ECD. Speciflyling the requirements : Introduction from Analysis to design.

Unit-III: System Design :

Protecting the system : Introduction, various damages, protection.Human computer I/F : O/P design, I/P Design, dialogue design.

System Interfaces : Introduction

Logical Data Design : Introduction

Files & Databases :

Introduction Physical Data design & program design : DAD, IRC, STD

Unit-IV: MIS :

Introduction. System Implementation MIS frame work. Importance,

concepts, management, information system.

Definition, IT, Nature & Scope. Characteristics, function, Structure & Classification : Physical Components, processing functions, decision support, classification of MIS, DSS, ESS, OAS, RES, various information system.

Decision making and MIS : Types, Lovel, Utility

Management of Information system :

Implementation, planning, organisation &development, user training, testing, changeover, procedures, evaluation.

Unit-V: Information System Planning :

Mission, objectives, strategies, policies, resource allocation, project planning.

Case Study : P Vehicle booking information system, Network of Technology Institute.

BOOKS :

1) System Analysis and Design - Don Yaeatesm, Shields, Helmy-(M)

2) Management Information Systems _ Goyal (M)

3) Workbook on system analysis & Design - Garg & Srinivasan - PHI

4) System Analysis & Design Igor H. - PHI

5) Information System for Modern Management - Murdicle, Ress, Clagett - TMH

6) Managing with information - Kanter - PHI

7) System Analysis & Design - Edward - TMH

8) Information Systems - Hussain & Hussain - TMH

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Paper-13 : Accountancy and Financial Management

Unit-I: Financial Accounting :

Measuring and Nature,

Accounting Principles underlysing the Preparation of Financial Statements.

Preparation of financial statements :

A synoptic view profit and loss account,

Balance sheet.

Unit-II: Financial Statement Analysis :

Ratio Analysis

Statement of charges in financial position-working capital basis.

Unit-III: Conceptual framework of Cost Accounting.

Meaning Nature and need of cost accounting.

Elements of cost, preparation of cost shett.

Cost Concept : fixed & variable costs, sunk costs, out of Rocket Costs,

Relevant and irrelevant costs. Opportunity and inputed costs.

Unit-IV: Cost-Volume profit (CVP) relationship :

Break even analysis

Determination of sales volume to attain desired profits.

Cash break even / point

Graphic presentation of CVP relationship

Assumptions and limitation of break-even analysis.

Unit-V: Budgetory :

Definition and objective

Preparation of various types of budgets including cash budget fixed and flexible budgets.

Cost accumulation system : Job and procedure.

Variable and absarption costing systems:

Comparison for income determination

Variable costing as a tool of decission making.

BOOKS :

1) Management Accounting - Second Edn. Tata McGraw by M.Y.Khan, A.K.Jain

2) Management - Accounting Principles - R.N.Anthory & J.S.Reece

3) Finance and Accounting for Managerial Competitiveness - Wheeler Publ. Allahabad 93.

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P6 : (DATA STRUCTURE)

Use C/C++ for implementation.

1. Stack Infix to post fix conversion
2. Infix to Post fix conversion
3. Tower of Hanoj program
4. Queue
5. Singly linled list
6. Doubly linked list
7. Exchange sort
8. Insertion sort
9. Binary search
10. Tree search.

- Data Structures using C & C++ by Lanqsan, Augesstein & Tanenbavm (PHZ)
- Data Structures by Trambley and Sorcnson
- Data Structure by Horowoitz & Sahani.

P 7 : (Programming in C++)

C++ Programming : Perform atleast two assignments on each poic from Chapter 2 in the syllabus.

P 8 : (DBMS)

1. Creating database in MS/ACCERS\ORACLE using SOLs create table command with attributes.
2. Select query examples in MS, CCESS/Oracle.
3. Create a simple single form application is MS access of oracel.
4. Display the data using select in select query.
5. Create a application in MSACCESS or Oracle using form in form ex 3 for students personal data management.

- An introduction to database systems by Bipin C.Desai Galgotia publications.
- Database Management systems by Korth.

P 9 (Operating System)

1. Theory Assignment - DOS Internals (Layers in DOS)
2. Theory Assignment - UNIX Internals.

3. Simulation/Implementation of Dekkers and pertor sons Algorithm.
4. Implement of Bankers Algorithm for Deadlock.
5. Implement any 4 storage management strategies.
6. Implement any 2 job schduling strategies.

(Use any programming languages for implementation/simulation.)

P 10 : (SAD & MIS)

Min 5 Case Studies on board on System Analysis.

CASE Tools System Design

System Implementation MIS

Using appropriate tools.

P 11 : (Accountancy & Financial Management)

Student should performed at least two assignments/Problems search chapter in the syllabus.

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ENVIRONMENTAL STUDIES

Total Marks : 100

PART-A

SHORT ANSWER PATTERN **25 Marks**

1. The Multidisciplinary nature of environmental studies

. Definition, scope and importance.
. Need for public awareness.

(2 lecture hours)

2. Social Issues and the Environment

. From Unsustainable to Sustainable development
. Urban problems related to energy
. Water conservation, rain water harvesting, watershed management
. Resettlement and rehabilitation of people; its problems and concerns. Case studies.
. Envionmental ethics : Issues and possible solutions.
. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
. Wasteland reclamation.
. Consumerism and waste products.
. Environment Protection Act.
. Air (Prevention and Control of Pollution) Act.
. Water (Prevention and Control of Pollution) Act.
. Wildlife Protection Act.
. Forest Conservation Act.
. Issues involved in enforcement of environmental lesislation.
. Public awareness. (7 lecture hours)

3. Human Population and the Environment

. Population growth, variation among nations.
. Population explosion - Family Welfare Programme.
. Environment and human health.
. Human Rights.
. Value Education.
. HIV / AIDS.
. Women and Child Welfare.
. Role of Information Technology in Environment and human health.
. Case Studies. (6 lecture hours)

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PART-B

ESSAY TYPE WITH INBUILT CHOICE **50 Marks**

4. Natural resources :

. **Renewable and non-renewable resources :**
  . Natural resources and associated problems.
    - Forest resources : Use and over exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
    - Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
    - Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
    - Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer - pesticide problems, water logging, salinity, case studies.
    - Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, Case studies.
    - Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
  . Role of an individual in conservation of natural resources.
  . Equitable use of resources for sustainable lifestyles. (8 lecture hours)

5. Ecosystems

. Concept of an ecosystem.
. Structure and function of an ecosystem.
. Producers, consumers and decomposers.
. Energy flow in the ecosystem.
. Ecological succession.
. Food chains, food webs and ecological pyramids.
. Introduction, types, characteristic features, structure and function of the following ecosystem :-
  - Forest ecosystem
  - Grassland ecosystem
  - Desert ecosystem
  - Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lecture hours)

6. Biodiversity and its conservation

. Introduction - Definition : genetic, species and ecosystem diversity.
. Biogeographical classification of India.
. Value of biodiversity : consumptive use, productive use, social, ethical,

aesthetic and option values.

. Biodiversity at global, National and local levels.

. India as a mega-diversity nation.

. Hot-spots of biodiversity.

. Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.

. Endangered and endemic species of India.

. Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity. (8 lecture hours)

7. Environmental Pollution

. Definition

. Causes, effects and control measures of :-

- Air pollution
- Water pollution
- Soil pollution
- Marine pollution
- Noise pollution
- Thermal pollution
- Nuclear hazards

. Solid Waste Management : Causes, effects and control measures of

. Role of an individual in prevention of pollution.

. Pollution case studies.

. Diaster management : floods, earthquake, cyclone and landslides.

(8 lecture hours)

PART-C

ESSAY ON FIELD WORK 25 Marks

8. Field work

. Visit to a local area to document environmental assets - river / forest / grass land / hill / mountain

. Visit to a local polluted site - Urban / Rural / Industrial / Agricultural

. Study of common plants, insects, birds.

. Study of simple ecosystems - pond, river, hill slopes, etc.

(5 lecture hours)

(**Notes :** i) Contents of the syllabys mentioned under paras 1 to 8 shall be for teaching for the examination based on Annual Pattern.

ii) Contents of the syllabys mentioned under paras 1 to 4 shall be for teaching to the Semester commencing first, and

iii) Contents of the syllabys mentioned under paras 5 to 8 shall be for teaching to the Semester commencing later.

LIST OF REFERENCES :-

1) Agarwal, K.C., 2001, Environmental Biology, Nidi Publ. Ltd., Bikaner.
2) Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad - 380 013, India, Email : mapin@icenet.net **(R)**
3) Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p.
4) Clark R.S., Marine Pollution, Clanderson Press Oxford **(TB)**
5) Cunningham, W.P.Cooper, T.H.Gorhani, E & Hepworth, M.T., 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p.
6) De A.K., Environmental Chemistry, Wiley Eastern Ltd.
7) Down to Earth, Certre for Science and Environment **(R)**
8) Gleick, H.P. 1993, Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press. 473p.
9) Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural Histroy Society, Mumbai **(R)**
10) Heywood, V.H. & Watson, R.T. 1995, Global Biodiversity Assessment, Ca mbridge Univ. Press 1140p
11) Jadhav, H & Bhosale, V.M. 1995, Environmental Protection and Laws, Himalaya Pub. House, Delhi. 284 p.
12) Mckinney, M.L. & Schoch, R.M. 1996, Environmental Science Systems & Solutions, Web Enhanced Edition. 639 p.
13) Mhaskar A.K., Matter Hazardous, Techno-Science Publications **(TB)**
14) Miller T.G.. Jr., Environmental Science, Wadsworth Publishing Co. **(TB)**
15) Odum, E.P., 1971, Fundamentals of Ecology, W.B.Saunders Co., U.S.A., 574p.
16) Rao M.N. & Datta A.K.,1987, Waste Water Treatment, Oxford & IBH Publ. Co. Pvt. Ltd. 345 p.
17) Sharma B.K., 2001, Environmental Chemistry, Goel Publ. House, Meerut.
18) Survey of the Environment, The Hindu **(M)**
19) Townsend C., Harper J., and Michael Begon, Essentials of Ecology, Blackwell Science **(TB)**
20) Dr. Deshpande A.P., Dr. Chudiwale A.D., Dr.Joshi P.P. & Dr. Lad A.B. : Environmental Studies, Pimpalapure & Company Pub., Nagpur.
21) डॉ. विट्ठल घारपुरे : पर्यावरणशास्त्र, पिंपळापुरे ॲन्ड कंपनी पब्लिशर्स, नागपूर.
22) Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media **(R)**
23) Trivedi R.K. and P.K. Goel, Introduction to Air Pollution, Techno-Science Publications **(TB)**
24) Wagner K.D., 1998, Environmental Management, W.B.Saunders Co., Philadelphia, USA 499p.

(M) Magazine
(R) Reference
(TB) Textbook

25) Environmental Studies : R. Rajgopalan, Oxford University Press, New Delhi, 2005.

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Syllabus for Final Year Bachelor of Computer Application.

Paper No. 14: Data Communication Network:

Unit-I: Introduction : Communication System, Analog data, Digital Data, Communication Channels, synchronous and asychronous data.

Transmission media : - Twin Wire, coaxial cable , Radio, VHF and microwaves, Satellite link optical fiber.

Unit-II: Data modems : Concept of modulation, Amplitude shift, Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), Quadrature PSK, Differential PSK.

Unit-III: Multichannel Data Communication : - Circuits, Channels and Concept of multichannelling, PCM,

Frequency Division multiplexing, time Division multiplexing, CODECS.

Data Networks : Circuit Switching, Packet Switching, PABX, Network topologies.

Unit-IV: Network Protocals : OSI model, Data link protocals Local network: Internet and token rings, X.25 protocal, satellite networks, ISDN.

Unit-V: Fibre-optic Communication : Optical Source, Propagation in fibre, Light detector, FDDI-fibre distributed data interface.

Data Communication System: Fascimule (FAX), Satellite Communication, Digital Telephony.

Text Books:

1. Introduction to Digital and Data Communication, Michal A Miller, JAICO publising.
2. Telecomunications and the Computer , James Martin, Prentice Hall.
3. Data Communications and distributed Networks-V.B.Black, Prentice Hall.

Paper 15: Software Engineering.

Unit-I: Software Engineering Fundamentals:

Definition of Software, S/W Engineering & Software Product:

Software development paradigms.

Software myths.

Software Processes:

Software Development process: Models : Waterfall, Protolyking, Iterative Enhancement and spiral Model.

Project Management Process.

Processes Management process.

Unit-II: Software Cost and time estimation:

Issue in Software cost estimation.

Function point.

Algorithmic cost models (COCOMO , Putnam-Slim, Watson and Felik)

Other approaches to software cost and size.

Software requrements analysis & specifications:

Need for software requirements specification, (SRS) and its standards.

Problem Analysis :

Analysis issue.

Structured analysis.

Object oriented modeling and other modeling approach,

Requirement Specification characteristics, component, structure and tools.

Unit-III: Software Design :

Design principles : Problem partitioning, Abshaction,

Modularity, Top-down & bottom up, Modularity, coupling & coherion.

Idealized and constrained design.

Process Oriented design (Gane & saroson and youradon notation).

Data oriented design (Warnier, Or, & ER Modelling).

Object Oriented design (Booch approach).

Design Metrics and documentation studies.

Unit-IV: Coding & programming :

Choice of Programming languages

Mixed language programming & call semantics.

Coding standards.

Unit-V: Software quality and testing :

Software quality assurance.

Types of software testing (White box,black box,unit, integration etc.)

Debugging and reliablility analysis.

Program complexity analysis.

Software quality and metrics.

CASE TOOLS :

Role of CASE Tools:

Highend & Low-end (CASE Tools).

BOOKS :

1) Software Engineering : A Practitioners. Approach - Pressman Roger,Tata Mcraw Hill.

2) An Integrated approach to software Engineers : Jalote Pankaj 3rd / 4th Edition.

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Paper 16 : Visual Basic

Unit-I: Introduction : Event-driven programing model, visual Basic Environment, Variables, Constrants, Arrays, Operators, String manipulation, Logical Expressions Decision structures & Looping.

Unit-II: Objects and Classes in VB : Visual design, VB projects, Creating and using the classes, Collection

Class, Windows Common Controls. Active X Components: Creating & testing.

OLE : basics, terminologies, automation, working with text and graphics in VB, common dialog control, Image control, picture box control, displaying text, line and shape controls, the printer objects.

Unit-III: Files and their Management in VB, reading & writing the files in VB, Sequential and Random Access

files, binary files, objects oriented file management, file related controls.

Unit-IV: Internet Programming : Active X-controls for the web, Internet transfer control for HTTP, & file

transfer protocol, web frowser control.

Unit-V: Database programming : VB database tools, ODBC, ADO, DAO &

RDO, Data object model,

Data- aware controls, Designing database applications. Forms design, Client/Server concept using

COM/DCOM.

BOOKS:

1. Peter Atkins Visual Basic 6 (Comdex)
2. VB Unleashed (Techmedia)
3. Dan Appleman COM/Active x using VB6 (Techmedia)
4. Visual Basic 6 Garry Connel - TMH
5. Teach Yourself Vb6 - Scott Warner - TMH
6. SQL From Groundup - Mary Pye Finch -TMH

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PAPER NO. 17 : Computer Graphics and Multimedia

Unit-I: Introduction to multimedia :

Hardware, Networking, Software-applications, Environment.

CDROM, WORM Optical Drives,

Flat panel displays.

Non temporial Media:

Text, Hypertext

Images, Image operations

CCD Cameras, Scanners, Frame Grabbers, Formats.

Unit-II: Audio:

Digital audio, wave files,

fourier transformation

Music, MIDI.

Unit-III: Graphics Animation:

Tweeking, Morphing

Simulating Aceleration, motion specification.

Unit-IV: Video:

Analog Video: Operations.

Digital Video : Compression, MPEG, JPEG, Operations.

Unit-V: Multimedia : On Internet : IP/TCP Protocols HTTP.

Multimedia Authoring Systems.

Books:

1. Multimedia Systems Design : Prabhat K. Andleigh and Kiran Thakur, Prentice Hall PTR, 1996.
2. Multimedia Programming-Objects, Environment and Framework, S.J.Gibbs and D.C.Tsichritzis, Addison-Wesley, 1994.

*****

PAPER NO. 18 : Advanced Database Management Concepts

Unit-I: Introduction : Review of Database Concepts, File Organization concepts, Normalization.

Physical Database Design and Tuning. Index Selection, Overview of Database Tuning, Choices in

Tuning the conceptual schema. Choices in Tuning Queries and views, DBMS Benchmarking.

Security.

Unit-II: Concurrency Control Transactions and schedules, Serializability, Lock based councurrency control Lock Management, Sepecialized locking Techniques, control without locking.

Crash Recovery, Inroductin to crash recovery, Log, Check pointing, Recovery from a system crash.

Unit-III: Parallel and distributed databases.Architecutres for parallel databases, Parallel query Evaluatin and optimization, Parallelizing individual operations, Introduction to distibuted databases, Architecture, Fragmentation and Replication, Catalog management, Distributed Query processing, updating distributed data, Distributed transaction management, Distributed Concurrency control, Distributed recovery.

Unit-IV: Object database systems : Objects, Indentity, inheritance, Database Design for an ORDBMS, Storage and access methods, Query processing and optimization, Comparing RDBMS with OODBMS and ORDBMS.

Unit-V: Data Warehousing

Introduction, DSS and OLTP, Metadata Management in Data Warehouse. Related data structures, OLAP and Data Warehousing environment.

Data Mining

Introduction and Application areas.

Books:

1. Database Management System-Raghu Ramkrishna McGraw-Hill, International editions.
2. Introductions to Database System-By C.G. Date.

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PAPER NO. 19 : (WEB APPLICATION DEVELOPMENT)

Unit-I: The Web environment: Designing for a variety of displays, web design principles for print designers, Servers, Using Unix, File naming conventino, FTP, MIME.

Unit-II: HTML Overview, editing tools,document structure, HTML tags, Good HTML Style,colours in HTML.

Structured HTML tags, settings up an HTML documents, global. Setting,using meta tags,

Formatting text, HTML text, font, list layout Techniques.

Unit-III: Creating links, links, linking tags, Hypertext links, Adding immages.Object placement tags, Adding Java applet to page.

Introduction to Tables: Table Tags, Introduction to Frames: frame tags introduction to forms, form tags.

Using Graphics: GIF; Compression, JPEG Compressin, PNG Compression the Web pallette, using

Animated GIFs.

Unit-IV: Audio tools overview, Adding Video to HTML documents.

Using Java Script: Basics, Sample Script, Handling multiple Brousers.

Using XML: Introduction DTD, Syntax, Example.

Unit-V: Using JSP: Introduction, Syntax, Examples, Using Beans, JSPs & XML.Using Servlets:

Introduction, Basics Servlet example.Using VB: Use of VB for Web Page Development, Active-X controls.

Books :

1) Web Designing in a Natsheel-Jennifer Nie Derst - SPD Reilly)
2) Java Script - Frentzen & Sobotka - TMH
3) Java Servlets - Karl Moss- TMH

4) Dynamic HTML - Jeff Pule - Awl.

5) ASP/MTS/ADSI - Richard Harrison - AWL

6) Server side Java Script - Husted & Kuslich - AWI.

7) XML & Java - Development Web Applications - Maruyasma, Tamura, Veamoto-AWL.

8) Java Server & Servlets - Rossbach, Schirieiber-AWL.

9) Inside Servlets; D.R.Collaway- AWL

10) Java Server Pages - L Rekowsky - AWL.

P 12: (Data Communication and Networks)

Study of following networking systems

1) Transmisson Media.

2) Modems

3) Data Networks

4) Internet

5) X-25 Protocol

6) Fibre optics

7) Fax

8) Digital Telephony System

P 13 :(Software Engineering)

Students should Perform Case studies on project planning , Designing coading and tesiting by considering any S/W development problem.

P 14 :(Visual Basic)

Minimum Twenty programms on following :

1) Using Arrays and Strings.

2) Logical Expression

3) Decision Structures

4) Looping

5) Creating Active- X Controlles

6) Visual Basic objects and classes.

7) Working with: Text, Graphics, Dialogue, Control, Image control,

Picture Box,Control, Line & Shape

Controles, Printer Objects, File handling, Web browser Control, Database handling.

P 15 : (Computer Graphics and Multimedia)

Any application development comprising of -

1) Text

2) Hiper Text

3) Images

4) Audio file

5) Wave files

6) Music and Midi files

7) Animated graphics

8) Creating Multimedia CD

9) Implementing on Internet.

P 16 : (Advanced Data Based Concept)

Advanced Database Management Concepts:

At least two Practical/Programm on each chapter using latest and relevant S/W tools.

P 17 : (Web Application Development)

Minimum twenty programms based on

HTML : Tags, Colors, Text formating, Links, Tables, Graphics.

DHTML: Simple Modules.

*****

@Ordinance No. 17 of 2003

Examinations leading to the Degree of Bachelor of Computer Application (Yearly Pattern - 3 Year Degree Course) Ordinance, 2003.

Whereas it is expedient to prepare a new Ordinance for Examinations leading to the Degree of Bachelor of Computer Application (Yearly Pattern - 3 Year Course) for the purposes hereinafter appearing; the Management Council is hereby pleased to make the following Ordinance.

1. This Ordinance may be called, "Examinations leading to the Degree of Bachelor of Computer Application (Yearly Pattern - 3 Year Degree Course) Ordinance, 2003."

2. This ordinance shall come into force w.e.f. the date of its approval by the Management Council.

3. (i) The following shall be the examinations leading to the Degree of Bachelor of Computer Application, namely -

   (a) The Bachelor of Computer Application Part-I Examination,

   (b) The Bachelor of Computer Application Part-II Examination,

   (c) The Bachelor of Computer Application Final Examination ; and

   (ii) The duration of teaching for each part of examination shall be one Academic Year.

4. The Examination specified in the preceding paragraph shall be held twice a year at such places and on such dates as may be appointed by the Board of Examinations.

5. Subject to their compliance with the provisions of this Ordinance and of other Ordinances in force from time to time, the following persons shall be eligible for admission to the examination, namely :-

   (a) A student of a College who has prosecuted a regular course of study for not less than one academic year prior to that examination;

   (b) A teacher in a Educational Institution eligible under the provisions of Ordinance No. 18; and

   (c) A women candidate who has not pursued a regular course of study.

@ Approved by M.C. in its meeting held on 24.07.2003

Provided that in the case of the persons eligible under clauses (b) and (c) an applicant to the examination shall have attended a full course of laboratory instruction in a college in the subject in which laboratory work is prescribed. The candidate shall submit a Certificate to that effect signed by the Principal.

6. Every applicant for admission to examination shall-

A. In the case of the Bachelor of Computer Application Part-I Examination, have passed not less than one academic Year previously the 12th standard Examination of the Maharashtra State Board of Secondary and Higher Secondary Education with English and other Modern Indian Languages together with Mathematics or three years diploma course in Electronics and Computer Engg. or +2 level minimum competancy vocational course in Electronics Technology or students passing the 12th standard Examination of the Maharashtra State Board of Secondary and Higher Secondary Education and offering Vocational stream with Mathematics shall be eligible for admission to the Bachelor of Computer Application Part-I course or an Examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed.

B. In the case of the Bachelor of Computer Application Part-II Examination, have passed not less than one academic year previously the Bachelor of Computer Application Part-I Examination of the University or an examination recognised as equivalent thereto,

and

C. In the case of the Bachelor of Computer Application Final Examination, have passed not less than one academic year previously the Bachelor of Computer Application Part-II Examination of the University or an Examination recognised as equivalent thereto ;

7. Without prejudice to the other provisions of Ordinance No.6 relating to the Examinations in General, the provisions of Paragraph 5,8,10 and 31 of the said Ordinance shall apply to every collegiate candidate.

8 (A) The fee for the examination shall be -

(a) For the Bachelor of Computer Application Part-I Examination - i) For Theory Part Rs. 100.00

and ii) For Practical Examination Rs.25.00 in each practical.

(b) For the Bachelor of Computer Application Part-II Examination i) For Theory Part Rs. 100.00

and ii) For Practical Examination Rs. 25.00 in each practical.

(c) For the Bachelor of Computer Application Final Examination -

i) For Theory Part Rs. 100.00

and ii) For Practical Examination Rs.25.00 in each practical.

8(B) The fee structure for B.C.A. course shall be -

1. Tution Fee for Bachelor of Computer Application I,II and Final shall be as per Govt. rules.

2. College Laboratory fee for Bachelor of Computer Application I,II and Final shall be Rs.5000/- per Annum.

3. Other Fees as per Govt. and Universitry Rules. Above mentioned fees shall be subject to change by the Management Council from time to time.

9. The scope of the subjects of Bachelor of Computer Application Part-I, part-II and Final shall be as indicated in the respective syllabi in force from time to time. The medium of instruction and examination shall be English.

10. The papers and practicals in which an examinee is to be examined,the maximum marks for these and the minimum pass marks which an examinee must obtain in order to pass in the subjects and the examination shall be as per Regulation.

11. Successful examinees at the Bachelor of Computer Application Final Examination who obtain not less than 60% marks in aggregate of Bachelor of Computer Application Part-I, Part-II and Final Examination taken together shall be placed in the First Division, those obtaining less than 60% but not less than 45 % in the Second Division, and all other successful examinees in the Third Division.

12. There shall be no classification of succesful examinees at the Bachelor of Computer Application Part-I and Bachelor of Computer Application Part-II Examinations.

13. An examinee successful in the minimum prescribed time for the examination, obtaining not less than 75% of the maximum marks prescribed in the subject shall be declared to have passed the examination with Distinction in the subject -

Explanation :

1. Distinction at the Bachelor of Computer Application Final Examination shall be awarded on the basis of the marks obtained at the Bachelor of Computer Application Part-I, Part-II and Final Examination taken together.

2. Distinction shall be awarded only in Science subjects.

3. Distinction shall not be awarded to an examinee availing of the provision of the exemptions and compartments at any of the examinations.

14. Provisions of Ordinance No.18/2001 Providing grace marks for passing in a head of passing & Improvement of Division (Higher Class) and getting Distinction in the subject and condonation of deficiency of marks in a subject in all the faculties shall apply to the examinations under this direction. .

15. As soon as possible after the examination, the Board of Examinations shall publish a list of successful examinees at the Bachelor of Computer Application Part-I, Part-II and Final Examinations. Such list at the Bachelor of Computer Application Final Examination shall be arranged in three Divisions. The names of the examinees passing the examination as a whole in the minimum prescribed period and obtaining the prescribed number of places in First or Second Division shall be arranged in order of merit as provided in the examinations in general ordinance No. 6.

16. No person shall be admitted to Bachelor of Computer Application Part-I, Part-II and Final Examination, if he has already passed the corresponding or an equivalent examination of any other statutoryUniversity.

17. Successful examinee at the Bachelor of Computer Application Part-I and the Bachelor of Computer Application Part-II Examinations shall be entitled to receive a certificate signed by Registrar and successful examinee at the Bachelor of Computer Application Final Examination shall on payment of the prescribed fee, receive a degree in the prescribed form, signed by the Vice-Chancellor.

*Regulation No. 40 of 2003.

Examinations leading to the Degree of Bachelor of Computer Application Regulation, 2003.

Whereas it is expedient to frame Regulation in respect of Examinations leading to the Degree of Bachelor of Computer Application for the purposes hereinafter appearing the Management Council is hereby pleased to approve the following Regulation :-

1. This Regulation may be called Regulation in respect of "Examinations leading to the Degree of Bachelor of Computer Application Regulation, 2003".

2. This Regulation shall come into force from the date of its approval by the Management Council.

3. Statement of papers and schemes of Examinations of B.C.A. Part-I, B.C.A. Part-II & B.C.A. Final shall be as shown under Appendix-A, Appendix-B & Appendix-C respectively appended with this Regulation.

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* Approved by Management Council in its meeting held on 24.07.2003

Appendix-A

Bachelor of Computer Application (B.C.A.)

T : Theory

Three Year Degree Course

P : Practical

FIRST YEAR

Paper No.	Name of Paper	Teaching Scheme			Examination Scheme						
		T	P	Total periods per week	Duration of Paper (Hrs)		Max.Marks		Min.Pass Marks		Total Marks
					T	P	T	P	T	P	
1.	Computer Fundamental & DOS	3	-	3	3	-	100	-	35	-	100
2.	Digital Electronics	3	-	3	3	-	100	-	35	-	100
3.	The 8086 Microprocessor	3	-	3	3	-	100	-	35	-	100
4.	C Programming	3	-	3	3	-	100	-	35	-	100
5.	Numerical Methods	3	-	3	3	-	100	-	35	-	100
6.	Discrete Mathematics	3	-	3	3	-	100	-	35	-	100
7.	Communication Skills	3	-	3	3	-	100	-	35	-	100
P-1	Practical-I Based on Paper 1 & 2	-	3	3	-	4	-	100	-	35	100
P-2	Practical-II Based on Paper 3	-	3	3	-	4	-	100	-	35	100
P-3	Practical-III Based on Paper 4	-	3	3	-	4	-	100	-	35	100
P-4	Practical-IV Based on Paper 5	-	3	3	-	4	-	100	-	35	100
P-5	Practical-V Based on Paper Ms-Office	-	3	3	-	4	-	100	-	35	100
	Total	21	15	36	-	-	700	500	-	-	1200

* The strength of Batch of Practical and Tutorial for Under Graduates classes shall be 16 with an addition of 10% with the permission of Hon'ble Vice-Chancellor.

Appendix-B

Bachelor of Computer Application (B.C.A.)

T : Theory

Three Year Degree Course

P : Practical

SECOND YEAR

Paper No.	Name of Paper	Teaching Scheme			Examination Scheme						
		T	P	Total periods per week	Duration of Paper (Hrs)		Max.Marks		Min.Pass Marks		Total Marks
					T	P	T	P	T	P	
8.	Data Structure	3	-	3	3	-	100	-	35	-	100
9.	Programming in C++	3	-	3	3	-	100	-	35	-	100
10.	Data Base Management System	3	-	3	3	-	100	-	35	-	100
11.	Operating System	3	-	3	3	-	100	-	35	-	100
12.	SAD & MIS	3	-	3	3	-	100	-	35	-	100
13.	Accountancy & Financial Management	3	-	3	3	-	100	-	35	-	100
P-6	Practical-VI (Based on Paper-8)	-	3	3	-	4	-	100	-	35	100
P-7	Practical-VII (Based on Paper-9)	-	3	3	-	4	-	100	-	35	100
P-8	Practical-VIII (Based on Paper-10)	-	3	3	-	4	-	100	-	35	100
P-9	Practical-IX (Based on Paper-11)	-	3	3	-	4	-	100	-	35	100
P-10	Practical-X (Based on Paper -12)	-	3	3	-	4	-	100	-	35	100
P-11	Practical-XI (Based on Paper-13)	-	3	3	-	4	-	100	-	35	100
	Total	18	18	36	-	-	600	600	-	-	1200

* The strength of Batch of Practical and Tutorial for Under Graduates classes shall be 16 with an addition of 10% with the permission of Hon'ble Vice-Chancellor.

Appendix-C

Bachelor of Computer Application (B.C.A.)

T : Theory

Three Year Degree Course

P : Practical

FINAL YEAR

Paper No.	Name of Paper	Teaching Scheme			Duration of Paper (Hrs)		Examination Scheme Max.Marks		Min.Pass Marks		Total Marks
		T	P	Total periods per week	T	P	T	P	T	P	
14.	Data Communication Network	3	-	3	3	-	100	-	35	-	100
15.	Software Engineering	3	-	3	3	-	100	-	35	-	100
16.	VISUAL BASIC	3	-	3	3	-	100	-	35	-	100
17.	Computer Graphics & Multimedia	3	-	3	3	-	100	-	35	-	100
18.	Advanced Database Management Concepts	3	-	3	3	-	100	-	35	-	100
19.	Web Application Development	3	-	3	3	-	100	-	35	-	100
P-12	Practical-XII (Based on Paper-14)	-	3	3	-	4	-	100	-	35	100
P-13	Practical-XIII (Based on Paper-15)	-	3	3	-	4	-	100	-	35	100
P-14	Practical-XIV (Based on Paper-16)	-	3	3	-	4	-	100	-	35	100
P-15	Practical-XV (Based on Paper-17)	-	3	3	-	4	-	100	-	35	100
P-16	Practical-XVI (Based on Paper -18)	-	3	3	-	4	-	100	-	35	100
P-17	Practical-XVII (Based on Paper-19)	-	3	3	-	4	-	100	-	35	100
	Total	18	18	36	-	-	600	600	-	-	1200

* The strength of Batch of Practical and Tutorial for Under Graduates classes shall be 16 with an addition of 10% with the permission of Hon'ble Vice-Chancellor.

%SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI
ORDINANCE NO. 42 OF 2005

Examination in Environmental Studies leading to Bachelor Degree, Ordinance, 2005

Whereas it is expedient to frame an Ordinance relating to Examination in Environmental Studies leading to Bachelor Degree level, hereinafter appearing, the Management Council is hereby pleased to make the following Ordinance.

1. This Ordinance may be called "Examination in Environmental Studies leading to Bachelor Degree, Ordinance, 2005."

2. This Ordinance shall come into force from the Academic session 2005-06.

3. In this Ordinance and in other ordinances relating to the examination, unless there is anything repugnant in the subject or context :-

   (i) "Academic session" means a session commencing on such date and ending with such date of the year following as may be appointed by the Management Council.
   (ii) "Admission to an examination" means the issuance of an admission card to a candidate in token of his having complied with all the conditions laid down in the relevant ordinance, by a competant officer of the University.
   (iii) "Applicant" means a person who has submitted an application to the University in the form prescribed for admission to an examination.
   (iv) "Candidate" means a person who has been admitted to an examination by the University.
   (v) "Regular Candidate" means an applicant who has applied for admission to a Univeristy examination through an affiliated college, Department or Institute in which he/she has prosecuting a regular course of study.
   (vi) "Examinee" means a person who present himself/herself for an examination to which he/she has been admitted.
   (vii) "Examination" means an examination prescribed by the University under the relevant Ordinance.
   (viii) "External Candidate" means a candidate who is allowed to take a University examination in accordance with the provision of Original Ordinance No. 151.
   (ix) " Non-Collegiate Candidate" means a candidate who is not a collegiate candidate.

% Amended by Ordinance No. 7 of 2006, and 10 of 2007.

   (x) An "Ex-student" is a person who having once been admitted to an examination of this University, is again required to take the same examination by reason of his failure or absence thereat and shall include a student who may have joined a college, Department or Institute again in the same class.
   (xi) "Bachelor Degree Examination" means a examination leading to Bachelor Degree of the University.
   (xii) "Previous Year" means a year following by final year of Bachelor Degree.

4. Save as otherwise specifically provided, the conditions prescribed for admission to the examination under this Ordinance shall apply to all persons who wish to take the examination to the Degrees of the University mentioned in para 5 below.

5. The conditions prescribed for admission to examination under this Ordinance shall apply to following degrees of the University :-

   1) Bachelor of Arts
   2) Bachelor of Performing Arts
   3) Bachelor of Fine Arts
   4) Bachelor of Mass Communication
   5) Bachelor of Social Work
   6) Bachelor of Commerce
   7) Bachelor of Business Administration
   8) Bachelor of Science
   9) Bachelor of Computer Science
   10) Bachelor of Computer Applications
   11) Bachelor of Pharmacy
   12) Bachelor of Science (Home Science)
   13) Bachelor of Technology (Cosmetics)
   14) Bachelor of Engineering
   15) Bachelor of Engineering (Part Time) (Civil)
   16) Bachelor of Textile
   17) Bachelor of Technology (Chemical Technology)
   18) Bachelor of Technology (Chemical Engg.)
   19) Bachelor of Architecture, and
   20) Bachelor of Laws (Five Year Course)

6 i) Environmental Studies shall be a compulsory subject for a previous year examination of the following Bachelor Degrees of the University,
   1) Bachelor of Arts

2) Bachelor of Performing Arts
3) Bachelor of Fine Arts
4) Bachelor of Mass Communication
5) Bachelor of Social Work
6) Bachelor of Commerce
7) Bachelor of Business Administration
8) Bachelor of Science
9) Bachelor of Computer Science
10) Bachelor of Computer Applications
11) Bachelor of Pharmacy
12) Bachelor of Science (Home Science)
13) Bachelor of Technology (Cosmetics)
14) Bachelor of Engineering (Part Time) (Civil)

ii) Environmental Studies shall be a compulsory subject for IIIrd & IVth Semester of the following Bachelor Degrees of the University,

1) Bachelor of Engineering
2) Bachelor of Textile
3) Bachelor of Technology (Chemical Technology)
4) Bachelor of Technology (Chemical Engineering)
5) Bachelor of Architecture, and

iii) Environmental Studies shall be a compulsory subject for Vth & VIth Semester of the Degree of Bachelor of Laws (Five Year Course)

iv) Students admitted to Second Year/Third Year/IVth Semester Vth Semester of various degree examination courses in different faculties n the academic session 2005-06 or thereafter shall have to appear for examination in the subject Environmental studies.

7. The main Examination leading to Environmental Studies shall be held in Summer and Supplementary examination in Winter every year, at such places and on such date as may be appointed by the Board of Examinations.

Explanation :- Examination shall be conducted on the basis of one common question paper for all Bachelor Degree examination courses irrespective of annual or semester pattern.

8. Scope of the subject for annual pattern examination and or semester pattern examination shall be as provided under the syllabus.

9. Common question paper for all courses covered under this Ordinance alongwith answer books shall be supplied by the University to the Colleges, Departments and Institutes for conducting the examination of the subject.

10. Valuation of the answer books relating to this subject shall be done at College/Department/Institution level only. Remuneration for valuation of answer books shall not be paid by the University.
Provided that prescribed evaluation fee for evaluation of each answer Book/s of an external examinee/s appeared from the examination centre shall be paid to each examination centre.

11. It shall be obligatory on the part of the College/Department/Institute to submit candidate wise following information to the University on or before the date as may be prescribed by the University :-

Sr. No.	Grade/Category	Marks secured
1.	"A"	- 60 and above
2.	"B"	- 45 to 59
3.	"C"	- 35 to 44
4.	"D"	- 25 to 34
5.	"Fail"	- 24 and below
6.	"Absent"	

12. For the purposes of teaching, learing and examination, the Committee consisting of three teachers shall be appointed by the Principal/ Head of the Department/Head of the Institution under his/her Chairmanship/ Chairpersonship. While appointing three teachers on the said committee, the Principal shall take care that the teachers to be appointed on the committee, if necessary, shall be from different faculty.

13. i) Duration of theory examination of this subject shall be three hour.
ii) For all Bachelor Degree examinations, common question paper of 100 marks shall be provided by the University.
iii) Distribution of these 100 marks shall be as follows :-

a) Part-A, Short Answer Pattern	-	25 Marks
b) Part-B, Essay type with inbuilt choice	-	50 Marks
c) Part-C, Essay on Field Work	-	25 Marks

14. Medium of instruction shall be English or Marathi or Hindi. Question paper shall be supplied in English and Marathi and Hindi. A candidate shall have option to write answers in English or Marathi or Hindi.

15. Examination for the subject Environmental Studies shall be compulsory for external candidates appearing as a fresh candidate at Winter and/or Summer examination.

16. For teaching of the subject, there shall be atleast two hour per week.
For teaching the subject to the regular candidates, a full time approved teacher of the University and or a person having Postgraduate Degree in any faculty with second class shall be considered elligible.

17. For teaching of the subject, additional fee to be charged to regular candidate shall be as prescribed by the University.

18. Every College/University Teaching Department shall Charge addtional fee of Rs. 100/- to every student of the subject Environmental Studies. Out of this Rs.100/-, the College/University Teaching Department shall have to pay Rs.25/- to the University as an examination fee of each candidate for the subject Environmental Studies.

19. The Grade secured by an examinee in the examination of this subject shall not be considered for providing the facility of A.T.K.T. in next higher class.

20. The provisions of Ordinance No. 18/2001 shall not be applicable for securing a grade or higher grade in the examination of this subject.

21. Result of the Final Year of the respective Degree shall not be declared of an examinee unless he/she secures any one of the grade in the examination of subject.

    Provided an examinee admitted to Five Year LL.B. course desiring not to continue his/her education beyond Sixth Semester of the said course shall have to secure any one of the grade in the examination of the subject otherwise his/her result of Sixth Semester for awarding B.A. degree shall not be declared.

22. Certificates shall be issued, to the successful examinees in the subject Environmental Studies, after the examination.

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DIRECTION

No.:5/2005. Date : 3/6/2005

Subject : Fees to be charged to the students of the subject Environmental Studies as a compulsory subject at Bachelor Degree level

Whereas the Academic Council in its meeting held on 24/8/2003, vide Item No. 65, considered the letter received from Dr. Narendra Jain, Joint Secretary, University Grants Commission, New Delhi, dtd. 31st July, 2003, alongwith a copy of "Six month module Syllabus for Environmental Studies for Undergraduate courses" of all branches of Higher Education and resolved to refer the letter alongwith module Syllabus to all faculties for their considerations and recommendations threon. The Council further resolved that the said recommendations be placed before the joint meeting of the Deans for further recommendations to the Academic Council,

AND

Whereas the joint meeting of Deans of faculties under the Chairmanship of Hon'ble Vice-Chancellor held on 16th July, 2004 has considered the recommendations of the faculties in the University regarding "Six month module Syllabus for Environmental Studies for Undergraduate courses" and resolved to recommend the decisions taken by it in respect of the subject Environmental Studies to the Academic Council,

AND

Whereas Academic Council in its meeting held on 16-08-2004 on considering Item No. 46 on the Agenda, resolved to accept the minutes of the joint meeting of Deans of the faculties in the University,

AND

Whereas as per decision of the Academic Council, the subject Environmental Studies is to be appointed as a compulsory subject for the previous year of the Bachelor Degree from the Academic session 2005-2006 excluding the Bachelor Degrees in the faculty of Education and LL.B. Three Year Course,

AND

Whereas the Management Council in its meeting held on 21/05/2005, vide Item No.167 has accepted fees to be charged to the students of the subject Environmental Studies as a compulsory subject at Bachelor Degree level,

AND

Whereas the matter is required to be regulated by an Ordinance and making amendment in the existing Ordinance is time consuming process,

Now, therefore, I, Dr. S.N.Patil, Vice-Chancellor of Sant Gadge Baba Amravati University in exercise of powers conferred upon me under sub section (8) of Section 14 of the Maharashtra Universities Act, 1994, do hereby issue the following direction :-

1) This direction shall be called "Examination in Environmental Studies leading to Bachelor Degree, Direction, 2005"
2) This direction shall come into force from the date of its issuance.
3) Every College / University Teaching Department shall charge additional fee of Rs.100/- to every student of the subject Environmental Studies.Out of this Rs.100/-, the College / University Teaching Department shall have to pay Rs. 25/- to the University as an examination fee of each candidate for the subject Environmental Studies.
4) Answer books of external examinee shall be evaluated at the examination centre where the examinee has been examined for the subject Environmental Studies. Each examination centre shall be paid prescribed evaluation fee for evaluation of each answer book of external examinee appeared from that examination centre.

Amravati — Sd/-
Date :03/06/2005. — (Dr. S.N.Patil)
Vice-Chancellor

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