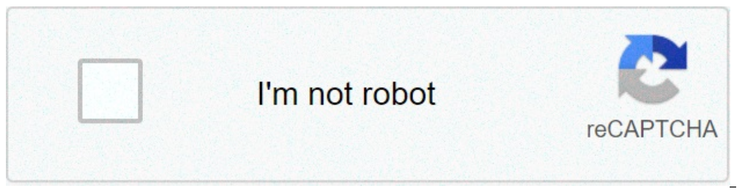

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Computer and programming fundamentals by sushil goel

Anita Goel and Ajay Mittal's Computer Fundamentals and Programming in C, published by Pearson Education, is a comprehensive book that discusses fundamentals of C Programming. With its plentiful, extensive chapters end questions and unique pedagogy designed to address the challenges faced by beginners as well as practitioners, the book serves as a reliable guide. It has a rich collection of solved examples and exercises. About Pearson Education Pearson Education has been publishing books of all genres like science, technology, law, business, humanities and others, and has been educating more than a hundred million people across the world. Their books have not only been helping students in learning, but are also aiding teachers and professionals. Some of the books published by Pearson are Decision Support and Business Intelligence systems, Electromagnetic Field Theory, Computer Architecture and Organization, Managing Business Process Flows and A Critical Companion to Compulsory English. Something went wrong. Wait a moment and try again. You're Reading a Free Preview Pages 16 to 33 are not shown in this preview. You're Reading a Free Preview Pages 47 to 91 are not shown in this preview. You're Reading a Free Preview Pages 106 to 107 are not shown in this preview. You're Reading a Free Preview Pages 120 to 142 are not shown in this preview. You're Reading a Free Preview Pages 147 to 149 are not shown in this preview. You're Reading a Free Preview Pages 154 to 166 are not shown in this preview. You're Reading a Free Preview Pages 187 to 222 are not shown in this preview. You're Reading a Free Preview Pages 231 to 244 are not shown in this preview. You're Reading a Free Preview Pages 253 to 271 are not shown in this preview. You're Reading a Free Preview Pages 280 to 295 are not shown in this preview. You're Reading a Free Preview Pages 311 to 342 are not shown in this preview. You're Reading a Free Preview Pages 350 to 359 are not shown in this preview. You're Reading a Free Preview Pages 371 to 372 are not shown in this preview. You're Reading a Free Preview Pages 380 to 405 are not shown in this preview. You're Reading a Free Preview Pages 418 to 426 are not shown in this preview. 1. PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA) (Estd. under the Panjab University Act VII of 1947 — enacted by the Govt. of India) FACULTY OF SCIENCE SYLLABI FOR Bachelor of Computer Applications First, Second & Third Year Examinations, 2014 --: o :-- © The Registrar, Panjab University, Chandigarh. All Rights Reserved. 2. GUIDELINES REGARDING CONTINUOUS ASSESSMENT FOR REGULAR STUDENTS OF B.A./B.SC./B.COM. /B.C.A. COURSES IMPORTANT NOTE (i) In order to incorporate an element of continuous assessment of students, the Colleges will conduct two mandatory House Tests in theory papers – one in the month of September/October and the other in December/January every year. (ii) (a) For September Test, there will be only one paper of one hour's duration in each subject, and for December Test, there will be paper/s on the pattern of annual examination conducted by the University. There will be a Special Test for those students who could not fulfil the conditions of eligibility. It will not be held to provide an opportunity to all students to improve their earlier score. Those students who are exempted by the Principal of the College from appearing in the House Test/s in September and/or December/January will also be allowed to appear in the Special Test; this Test will determine their eligibility for admission to the examination as well as their score for Internal Assessment. (b) With a view to meet the grievance of students, if any, on account of scores obtained by them, the answer-books will be shown to them. Difference of opinion on the issue, if any, will be sorted out with the help of respective Heads of departments as well as the Principal of the College. (iii) Whereas the September House Test will carry weightage of 40 per cent, the December House Test will have weightage of 60 per cent in each subject/paper. The total weightage for both the Tests taken together shall be 10 per cent of the total marks in each theory subject/paper. The weightage of 10 per cent marks shall be added to each paper of B.A./B.Sc./B.Com./B.C.A. I, II and III Year which will, henceforth, carry weightage of only 90% marks as against 100% marks at present. A candidate will have to pass in theory and practical/s separately. For private candidates and students of the University School of Open Learning, the question paper shall, as usual, have weightage of 100% marks each. (iv) The record of marks secured by the students in the two House Tests will be sent by the respective th Colleges so as to reach the office of Controller of Examinations latest by 15 March, failing which the result of the students shall be shown as 'RLA' and the entire responsibility for this would lie with the Principal/s of the College/s. (v) The Colleges will continue to forward the internal assessment of the students for Practicals. Projects and similar other activities, wherever applicable, to the Controller of Examinations, as usual, so as to reach this office latest by 15th March. (i) 3. SYLLABUS FOR BACHELOR OF COMPUTER APPLICATIONS SPECIAL NOTE : (i) Each theory question paper will be set out of the marks allotted to each theory paper and 10% marks of the maximum marks of each paper will be internal assessment. (ii) For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment. (iii) It will not be mandatory for the students to separately pass in the internal assessment. (ii) 4. OUTLINES OF TESTS, SYLLABI AND COURSES OF READING FOR BACHELOR OF COMPUTER APPLICATIONS FOR THE EXAMINATIONS OF 2014 Scheme of Examination, 2014 LT/Week Theory Marks Internal Assessment Exam. Hours Paper Code FIRST YEAR 1. English (C) 4 90 10 3 BCA-01 2. Panjabi/History & Culture of Punjab 4 90 10 3 BCA-02 3. *Environment & Road Safety Education 70 1½ (based on Class Tests and Field Work/Report) 4. Mathematics 5 90 10 3 BCA-03 5. Personal Computing Software 5 90 10 3 BCA-04 6. Computer Organisation & System Maintenance 5 90 10 3 BCA-05 7.. Computer Programming & Problem Solving Through "C" 5 90 10 3 BCA-06 8. Computer Lab.1: Based on BCA-04 6 90 10 4 BCA-07 9. Computer Lab.2: Based on BCA-06 6 90 10 4 BCA-08 SECOND YEAR 1. Project Management & System Development 4 90 10 3 BCA-09 2. Computer Based Numerical & Statistical Methods (Using C) 4 90 10 3 BCA-10 3. Data Structure Using C 5 90 10 3 BCA-25 4. Client Server Computing using ORACLE 5 90 10 3 BCA-12 5. Object Oriented Programming (Using C++) 5 90 10 3 BCA-13 6. Unix Operating System 5 90 10 3 BCA-14 7. Computer Lab.1: Based on BCA-12 and BCA-14 6 90 10 4 BCA-15 8. Computer Lab.2: Based on BCA-13 and BCA-25 6 90 10 4 BCA-16 * _ _ This is a compulsory qualifying paper, which the students have to study in the st B.A./B.Sc./B.Com./B.C.A.1 year. The students are required to qualify this paper either in the first year, second year and third year of the course. The examination will be conducted by the University. 5. 2 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS THIRD YEAR 1. Enterpreneurship Development Programme 4 90 10 3 BCA-17 2. Data Communication & Networks 5 90 10 3 BCA-18 3. Computer Graphics & Multimedia Applications 5 90 10 3 BCA-19 4. Internet Programming 5 90 10 3 BCA-20 5. Discrete Mathematics 5 90 10 3 BCA-27 6. Project and Seminar 6 85 15 7. Computer Lab.1: Based on BCA-19 5 90 10 4 BCA-23 8. Computer Lab.2: Based on BCA-20 5 90 10 4 BCA-24 BCA-21 6. 3 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS FIRST YEAR BCA-01 : ENGLISH (Compulsory) Outlines of Tests, Syllabi and Courses of Reading Max. Marks Theory Internal Assessment Time Book Prescribed : : : : : 100 90 marks 10 marks 3 Hours Colour of Expression by Harbhajan Singh, Published by Publication Bureau, Panjab University, Chandigarh. SECTION-A (i) Story : One essay type question on Summary/Character/Incident (one out of two with internal choice) 15 marks (ii) Prose : Long essay type question on Summary/Theme (one out of two with internal choice) 15 marks Poetry : 15 marks (iii) Summary (one out of two with internal choice) : 05 marks Central Idea --do-- : 05 marks Reference to the Context --do-- : 05 marks SECTION–B 10 marks (i) Word formation from Prose and Stories and their use in sentences (5 out of 8) (ii) Use of textual words and idioms in sentences (5 out of 8) 05 marks (iii) Translation from English to M.I.L. OR FOR FOREIGN STUDENTS (Paraphrase of poetry passage) 10 marks (iv) Official, business and letters to the editors. 10 marks (v) Transformation of all types (10 out of 10) 10 marks Note : Minimum six periods a week for the study of the subject. For composition, there should be Groups of 25-30 students. ------------------ 7. 4 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS i kph gz ikph bk˜wh F phH;hHJ∂ H - 02 phH;hHJ∂ H Gkr gfjbk (2014) d/ fJwfsjkB bJh e[Zb nzeL 50 fET{ohL 45 g/goFJ/ fJzNoBb n;?;w?ANL 5 ;wKL 3 xzN/ f;b/p; 1. nkX[fBe gzikph ethnK dhnK u'DthnK eftsktK dk nfXn?B 2. u'DthnK gzikph ejkDhnK dk nfXn?B 3. u'Dt/A gzikph b/yeK dk ;zy/g ihtB s/ ouBk $:'rdkB e'o ; 1. nkX[fBe ekft ;zrw, ;zgL vkH n?;Hn?;H B{o, gqekÙeL gzikp :{Bhtof;Nh gpbhe/ÙB fpT{o', uzvhrVQ 2. eEk p'X (In Katha Bodh only 12 Chapters 1, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 17 will be in the syllabus while Chapter Nos. 2, 4, 5, 15, 16 & 18 be considered deleted), gqekÙeL gzikp :{Bhtof;Nh gpbhe/ÙB fpT{o', uzvhrVQ :{ fBN ns/ Ehw 1. nkX[fBe ekft ;zrw g[;se ftZu'A gq;zr ;fjs ftnkfynk (uko ftu'A d') 5+5=10 nze 2. d' eftsktK dk ;ko ns/ e/Adoh Gkt (uko ftu'A d') 5+5=10 nze 3. eEk p'X ftu'A gq;zr ;fjs ftnkfynk (uko ftu'A d') 5+5=10 nze 4. fJe ejkDh dk ;ko (eEk p'X ftu'A) 5. fJe b/ye dk ihtB, ouBk ns/ :'rdkB (d'FfJe eth, fJe ejkDheko ftu'A fJe) gzit/A :{fBN bJh d'jK g[;seK ftu'A j/m fby/ b/ye fBoXkos jBL GkJh tho f;zx, g{oB f;zx, gq'H w'jB f;zx, nzfwqsk gqhsw, fÙt e[wko, ;zs f;zx ;/y'A, e[btzs f;zx ftoe ns/ ;zs'y f;zx Xho. 5 nze 10 nze 8. 5 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS og/ g o- ph e[Zb nzeL 50 fET{ohL 45 fJzNoBb n;?;w?ANL 5 ;wKL 3 xzN/ f;b/p; 1. b/y 15 nze 2. g?ok gVQ e/ gqÙBK d/ T[Zso d/Dk 10 nze 3. Ùpd ouBk s/ tke ouBk 15 nze 4. w[jkto/ 5 nze :{ fBN ns/ Ehw 1. b/y (500-600 Ùpd) (;wkie, ;fGnkukoe ns/ nkw tkech tkb/) 2. g?oQk gVQ e/ gqÙBK d/ T[Zso d/Dk (fJ; ftZu 3 gqÙB g[ZS/ ikDr/ F g?oQ/ dk f;ob/y, uko T[bhe/ ÙpdK d/ noE pko/ gqÙB ns/ g?oQ/ Bkb ;zpzXs d' j'o gqÙB) 3. (T) Ùpd Ù[ZXh (n) tke Ù[ZXh 4. w[jkto/ ;[M kJhnK g[;seKL 1 gzikph ;zuko :'rsk nfGnk;, gzikp ;N/N :{Bhtof;Nh N?e;N p[Ze p'ov, uzvhrVQ. 2. ekbi gzikph ftnkeoD, joehos f;zx, gzikp ;N/N :{Bhtof;Nh N?e;N p[Ze p'ov, uzvhrVQ.. ------------------- 9. 6 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS OR BCA-02 : HISTORY AND CULTURE OF PUNJAB Max. Marks Theory Internal Assessment Time : : : : 100 90 marks 10 marks 3 hours General Instructions : 1. In all, nine questions will be set. Each question will carry 18 marks. 2. First question shall be Short Answer type containing 15 short questions spread over the whole syllabus. Candidates will attempt nine out of the fifteen questions in about 25 to 30 words each. Each short question will carry 2 marks totalling 9×2 = 18 marks. The first question is compulsory. 3. Rest of the paper shall contain 4 units. Each unit shall have two essay type questions and the candidates shall attempt one question from each unit–4 in all. 4. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment. The paper-setter must put note (4) in the question paper. HISTORY AND CULTURE OF PUNJAB 1200-1849 A.D. Unit-I 1. Society in the Punjab during the Afghan rule. 2. The Punjab under the Great Mughals. 3. Salient features of the Bhakti movement and Sufism in the Punjab. Unit-II 4. Guru Nanak : His teachings; concept of Langar and Sangat. 5. Development of Sikhism (1539-1581) : Contributions of Guru Angad Dev, Guru Amar Das and Guru Ram Das for the development of Sikhism. 6. Transformation of Sikhism : Compilation of Adi-Granth; Martyrdom of Guru Arjan Dev; Guru Hargobind's New Policy. 10. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS 7 Unit-III 7. Martyrdom of Guru Tegh Bahadur; foundation of the Khalsa by Guru Gobind Singh. 8. Banda Bahadur and his achievements; Sikh struggle for sovereignty from 1716 to 1765; role of Dal Khalsa, Rakhi, Gurmata and Misls. 9. Ranjit Singh's rise to power; civil and military administration; relations with the British. Unit-IV 10. Social change with special reference to the position of women. 11. New developments in language, literature, architecture in the Punjab during the Medievel period. 12. Famous Folk tales of Medieval Punjab. Suggested Readings : 1. Singh, Kirpal, History and Culture of the Punjab, Part II (Medieval period), Publication Bureau, Punjabi University, Patiala, 1990 (3rd edn.). N.B. : The required detail and depth would conform to the treatment of the subject in the above survey. (This book will also form the basis of the short answer questions). 2. Grewal, J.S., The Sikhs of the Punjab, The New Cambridge University History of India, Orient Longman, Hyderabad, 1990. 3. Singh, Khushwant, A History of the Sikhs, Vol. I: 1469-1839, Oxford University Press, Delhi, 1991. 4. Singh, Fauja (ed.), History of the Punjab, Vol. III, Punjabi University, Patiala, 1972. 5. Chopra, P.N., Puri, B.N. and Das, M.N., A Social, Cultural & Economic History of India, Vol. II, Macmillan, Delhi, 1947. ________________________________ Note : The following categories of the students shall be entitled to take the option of History & Culture of Punjab in lieu of Punjabi as compulsory subject : (a) That the students who have not studied Punjabi upto class 10th. (b) Ward of/and Defence Personnel and Central are transferable on all India basis. Foreigners. (c) --------------- Government employee/employees who 11. 8 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS ENVIRONMENT & ROAD SAFETY EDUCATION (25 hr. course) UNIT I (ENVIRONMENT) 1. Environment Concept : Introduction, concept of biosphere—lithosphere, hydrosphere, atmosphere; Natural resources—their need and types; principles and scope of Ecology; concepts of ecosystem, population, community, biotic interactions, biomes, ecological succession. 2. Atmosphere : Parts of atmosphere, components of air; pollution, pollutants, their sources, permissible limits, risks and possible control measures. 3. Hydrosphere : Types of aquatic systems. Major sources (including ground water) and uses of water, problems of the hydrosphere, fresh water shortage; pollution and pollutants of water, permissible limits, risks and possible control measures. 4. Lithosphere : Earth crust, Soil—a life support system, its texture, types, components, pollution and pollutants, reasons of soil erosion and possible control measures. 5. Forests : Concept of forests and plantations, types of vegetation and forests, factors governing vegetation, role of trees and forests in environment, various forestry programmes of the Govt. of India, Urban forests, Chipko Andolan. 6. Conservation of Environment : The concepts of conservation and sustainable development, why to conserve, aims and objectives of conservation, policies of conservation; conservation of life support systems—soil, water, air, wildlife, forests. 7. Management of Solid Waste : Merits and demerits of different ways of solid waste management—open, dumping, landfill, incineration, resource reduction, recycling and reuse, vermicomposting and vermiculture, organic farming. 8. Indoor Environment : Pollutants and contaminants of the in-house environment; problems of the environment linked to urban and rural lifestyles; possible adulterants of the food; uses and harms of plastics and polythene; hazardous chemicals, solvents and cosmetics. 9. Global Environmental Issues : Global concern, creation of UNEP; Conventions on climate change, Convention on biodiversity; Stratospheric ozone depletion, dangers associated and possible solutions. 10. Indian Laws on Environment : Indian laws pertaining to Environmental protection : Environment (Protection) Act, 1986; General information about Laws relating to control of air, water and noise pollution. What to do to seek redressal. 11. Biodiversity : What is biodiversity, levels and types of biodiversity, importance of biodiversity, causes of its loss, how to check its loss; Hotspot zones of the world and India, Biodiversity Act, 2002. 12. Noise and Microbial Pollution : Pollution due to noise and microbes and their effects. 13. Human Population and Environment : Population growth and family welfare programme, Human Health, HIV/AIDS, Human rights. 12. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS 9 14. Social Issues : Environmental Ethics : Issues and possible solutions, problems related to lifestyle, sustainable development; Consumerisms and waste generation. Local Environmental Issues : Environmental problems in rural and urban areas, Problem of Congress grass & other weeds, problems arising from the use of pesticides and weedicides, smoking etc. 15. Practicals : Depending on the available facility in the college, a visit to vermicomposting units or any other such non-polluting eco-friendly site or planting/caring of vegetation/trees could be taken. Note : Above 15 topics to be covered in 25 hour lectures in total, with 2 lectures in each topics from 2 to 11 and one each for the topics 1 and 12 to 15. UNIT II (ROAD SAFETY) 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. Concept and Significance of Road Safety. Role of Traffic Police in Road Safety. Traffic Rules. Traffic Signs. How to obtain Driving License. Traffic Offences, Penalties and Procedures. Common Driving mistakes. Significance of First-aid in Road Safety. Role of Civil Society in Road Safety. Traffic Police-Public Relationship. Examination Pattern : • Seventy multiple choice questions (with one correct and three incorrect alternatives and no deduction for wrong or un-attempted question). • • The paper shall have two units: Unit I (Environment) and Unit II (Road Safety). Unit I shall comprise of 50 questions with minimum of 2 questions from each topics 1, and 12 to 15 and minimum of 4 questions from topics 2 to 11. Unit II shall comprise of 20 questions with minimum of 1 question from each topics 1 to 10. • • The entire syllabus of Unit I is to be covered in 25 hours and that of Unit II is to be covered in 10 hours. • • All questions are to be attempted. Qualifying Marks 33 per cent i.e. 23 marks out of 70. • Duration of examination : 90 minutes. • The paper setters are requested to set the questions strictly according to the syllabus. Suggested Readings 1. The Motor Vehicle Act, 1988 (2010), Universal Law Publishing Co. Pvt. Ltd., New Delhi. 2. Road Safety Signage and Signs (2011), Ministry of Road Transport and Highways, Government of India. Websites: (a) www.chandigarhpolice.nic.in (b) www.punjabpolice.gov.in (c) www.haryanapolice.gov.in (d) www.hppolice.nic.in 13. 10 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-03 Mathematics 90 Number of Lectures : 100 (45 minutes duration) Objectives : To provide basic mathematical foundation required for various computer science courses. (i) The syllabus of this paper has been divided into four sections. (ii) Note : Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. The students are required to attempt one question from each Section and the entire Compulsory question. All questions carry equal marks, unless specified. (iii) (iv) SECTION-A 1. Fundamental Principles of Counting : Concept of c (n, r). Binomial Theorem: Statement only for positive index, general and middle terms. Binomial Theorem for any index (Without Proof) applications of Binomial Theorem for approximation and properties of Binomial Coefficients. 2. Trigonometry-I : 3. 4. 5. 6. 7. Trigonometric Ratios of allied angles, Trigonometric ratios of Compound angles or addition and subtraction formulae. (No. of Periods : 25) SECTION-B Trigonometry-II : Transformation Formulae, Trigonometric ratios of multiple angles. Limit and Continuity : Rules for finding Limits, Infinite Limits, Continuity at a point, Rules of continuity, Continuity on an Interval. (No. of Periods : 25) SECTION-C Derivatives : The derivative of a function, Calculating derivatives from the definition, Differentiability on an interval, Differentiation Rules, Rates of Change, Derivatives of Trigonometric Functions, The Chain Rule, Derivative of Implicit, Rational, and Exponential Functions. Rolle's theorem, Lagrange Mean Value Theorem. Integration-I : Indefinite Integrals, Integration by substitution, Integration of Transcendental Functions: Inverse Functions, Natural Logarithm, The Exponential Function. (No. of Periods : 25) SECTION-D Integration-II : Integration by parts, Definite Integrals, Properties, Area under the curve. 8. Matrix Operations : Introduction and definition of matrix, types of matrices, Matrix addition, Subtraction and scalar multiplication, Matrix multiplication, Transpose of a matrix, adjoint of a matrix and inverse of a matrix, solution of system of linear equations, definition and properties of a determinant. (No. of Periods : 25) References : 1. Schaum Series, 1982 : 2. Grimaldi, Ralph P., 2003 : 3. Rao, G. Shanker, 1999 : Theory & Problem of Essential Computer Mathematics, McGraw Hill, New York. Discrete and Combinational Mathematics, Pearson Education, Singapore. Mathematics for Computer Science, Kalyani Publishers, New Delhi. 14. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-04 Personal Computing Software 90 11 Number of Lectures : 100 (45 minutes duration) Objectives : The objective of this course is to familiarize students with concepts of Fundamentals of it and its applications. (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Computer Appreciation: Introduction, characteristics of computer; History of computers; classification of computers on size, architecture and chronology; Applications of computers; commonly used terms–Hardware, Software, Firmware. Types of software; system and application software Computer Architecture and organisation; Input, Process and Output; Representation of information; BIT, BYTE, Memory, Memory size; Units of measurement of storage; Input/Output devices; Secondary storage devices; Programming Languages: Generation of Languages; Translators - Interpreters, Compilers, Assemblers and their comparison. DOS : Versions of DOS; Booting sequence; Warm and Cold reboot; Concept of File and directory, Redirecting command input and output pipes, Wildcard characters, Types of DOS commands; Internal and External. Internal Commands: DIR, MD, CD, CLS, COPY, DATE, DEL, PATH, PROMPT, REN, RD, TIME, TYPE, VER, VOL External Commands: XCOPY, ATTRIB, BACKUP, RESTORE, FIND, SYS, FORMAT, CHKDSK, DISKCOPY, LABEL, MOVE, TREE, DELTREE, DEFRAG, SCANDISK, UNDELETE Introduction to line editor. Batch Files: Introduction to simple batch files; Batch files commands: ECHO, PAUSE, REM; Batch files with command line arguments; Single and multiple command line parameters, Introduction to CONFIG.SYS and AUTOEXEC.BAT files. (No. of Periods : 25) SECTION-B 2. Graphical User Interface: Fundamentals of windows, types of windows, anatomy of windows, Icons, Recycle bin Operations on window: Opening a Window, Minimizing and Maximizing a window, Moving window, Resizing Window, Closing the window windows explorer Folders: Creating and deleting folders, copying, renaming folders, folder properties. Control panel. Word Processing Package: Basics of Word Processing; Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Finding and replacing text, Printing of word document, Formatting of text; Margin setting, Adding Borders and shading, Adding Headers and Footers, Setting up Multiple columns, Working with tables, Spell check, Grammar facility, Retrieving often used text; Autotext character formating, language setting and thesaurus; Mail merging. (No. of Periods : 25) [15. 12 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS SECTION-C 3. Spreadsheet Package : Worksheet Basics, Data Entry in Cells : Entry of numbers, text and formulae, Moving data in a worksheet, Moving around in a worksheet, Selecting Data Range, Using the interface (Toolbars, Menus), Editing Basics, Working with workbooks, Saving and Quitting, Cell referencing; Formatting and Calculations : Calculations and worksheets - using Autofill, Working with Formulae, Efficient Data Display with Data formatting (number formatting, date formatting etc.), Working with Ranges, Worksheet Printing; Working with Graphs and Charts : Adding/Formatting Text Data with Autoformat, Creating Embedded Chart using charwizard, sizing and moving parts, updating charts, Changing chart types, Creating separate charts, Chart wizard, Adding Titles, Legends and Gridlines, Printing Charts; Database Management; Finding records with Data form, Adding/Deleting Records, Filtering Records in a worksheet; Functions and Macros: Worksheet with worksheet function using function-wizard, Creating Macros, Record Macros, Running Macros, Assigning Macros to Buttons, Defining Macros from Scratch. Multiple worksheets and scanners. Presentation Packages: Basics, General Features, Creating a presentation (No. of Periods : 25) SECTION-D 4. Internet and www : Evolution of Internet services provided on Internet, Access Methods, Future of Internet, Evolution of www. Fundamentals of www. HTML : Introduction to HTML, Building blocks of HTML, lists, links, images, tables, frames, layers, HTML editor, forms, Introduction to cascading style sheets (CSS), defining and applying CSS. (No. of Periods : 25) References : 1. Mathur Rajiv, 1995 : DOS 6.2 Quick Reference, Galgotia. 2. Mathur Rajiv, 1996 : Learning Word 6 for Windows Step-by-Step, Galgotia. 3. Mathur Rajiv, 1996 : Learning Excel 5 for Windows Step-by-Step, Galgotia. 4. Jamsa, Kris A., 1993 : Rescued by Windows 3.1, Galgotia. 5. Basandra, S.K., 1995 : Computers Today, Galgotia. 6. Kasser, Barbara, 1998 : Using the Internet, PHI, 4th ed., New Delhi. 7. Wall, David A. & Others, 1996 : Using the World Wide Web, PHI, 2nd ed., New Delhi. 16. 13 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-05 Computer Organisation and System Maintenance 90 Number of Lectures : 100 (45 minutes duration) Objectives : This course will enable the student to understand the basic organization of computer system and system maintenance. (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Computer Organisation : Evolution of Computers, Stored program concept and Von Neumann Architecture, Information representation and codes, Combinatorial Blocks : Gates, Multiplexers, Decoders, Encoders Sequential Building blocks : Flip Flops, Registers, Counters, Arithmetic algorithms : Addition and substraction for sign magnitude and 2's complement numbers, integer multiplication using shift and add, Booth's algorithms, integer division, floating representation. (No. of Periods : 25) SECTION-B 2. Architecture of a Simple Processor : An instruction set, Addressing Modes, Instruction formats, Instruction execution in terms of Microinstructions, Concept of interrupt and simple I/O organisation, I/O organization : Strobe based and Handshake based communication, Vector and priority interrupts, DMA based data transfer; CPU organisation with large registers, Stacks and handling of interrupts and subroutines, Instruction pipelining: Stages, Hazards and methods to remove hazards. Concept of Bus, data movement among registers, data movement from/to memory. (No. of Periods : 25) SECTION-C 3. Memory Organisation : RAM, Basic cell of static and dynamic RAM, Building large memories using chips, Associative memory, Cache memory organisation, Virtual memory organisation. Assembly Language Programming : Machine and assembly language, Pseudo operations, subroutines in assembly language, Register Transfer Language and micro-operations; Language to represent conditional data transfer, Arithmetic and logical operations along with register transfer. (No. of Periods : 25) SECTION-D 4. System Maintenance, Physical Inspection of a PC and internal cards, Diagnostics on a PC, Functional description of various modules and cards. Installing a software, Viruses, Types of viruses, Detection of viruses and protection on a PC. (No. of Periods : 25) 1. M. Morris Mano, 1993. : References : Computer System Architecture, Prentice Hall International, 3rd Ed., 2. P. Pal Choudhri, 1994. : Computer Organisation and Design, Prentice Hall of India. 3. Biswal, Sadasiva, 2001 : Basic Electronics, Pub-Atlantic, New Delhi. 4. B. Govindarajalu, 1994. : IBM-PC and Clones - Hardware Troubleshooting and Maintenance, Tata-McGraw-Hill. 17. 14 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-06 Computer Programming & Problem Solving Through "C" 90 Number of Lectures : 100 (45 minutes duration) Objectives: The objective of this course is to make the student understand programming language concepts, mainly control structures, reading a set of data, stepwise refinement, function, control structure and arrays. After completion of this course, the student is expected to analyze the real life problem and write a program in 'C' language to solve problem. The main emphasis of the course is on problem solving aspect that is, developing proper algorithms. (i) The syllabus of this paper has been divided into four sections. (ii) Note: Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. The students are required to attempt one question from each Section and the entire Compulsory question. All questions carry equal marks, unless specified. (iii) (iv) SECTION-A 1. Algorithm and Programming Development: Steps in development of a program, Flow Charts, Algorithm Development, Program Debugging, Compilation and Execution. Overview of C: History of C, Importance of C, Structure of a C Program. Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant. Input/output: Unformatted & formatted I/O function in C, Input functions viz. scanf(), getch(),getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts(). (No. of Periods : 25) SECTION-B 2. Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity. Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement. Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue Functions: Introduction to Functions, Function Declaration, Function Categories, Standard Functions, Parameters and Parameter Passing, Call – by value/reference, Recursion, Global and Local Variables, Storage classes. (No. of Periods : 25) SECTION-C 3. Arrays: Introduction to Arrays, Array Declaration, Single and Multidimensional Array, Memory Representation, Matrices, Strings, String handling functions. Structure and Union: Declaration of structure, Accessing structure members, Structure Initialization, Arrays of structure, nested structures, Unions. (No. of Periods : 25) SECTION-D 4. String: Introduction of string, declaring and initializing string variables, reading and writing strings, string handling functions. Pointers: Introduction to Pointers, Address operator and pointers, Declaring and Initializing pointers, Assignment through pointers, Pointers and Arrays Files: Introduction, Creating a data file, opening and closing a data file, processing a data file. (No. of Periods : 25) References : 1. 2. Byron S. Gottfried, 1996 Salaria, R. S. : : 3. 4. 5. Kanetkar Yashwant, 2010 Balaguruswami, C., 2008 Somashekara, M.T. , 2008 : : : Programming in C, McGraw Hills Publishers, New York. Test Your Skills in C, Khanna Book Publishing Co. (P.) Ltd., New Delhi. Let us Exploring C, BPB Publications, New Delhi. Programming with C Language, Tata McGraw Hill, New Delhi. Programming in C, Prentice Hall of India. 18. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code : BCA-07 Paper Title : Computer Lab.-1 Based on BCA-04 Theory Marks : 90 Paper Code : BCA-08 Paper Title : Computer Lab.-2 Based on BCA-06 Theory Marks : 90 15 19. 16 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS SYLLABI AND COURSES OF READING FOR BACHELOR OF COMPUTER APPLICATIONS FOR THE EXAMINATION OF 2014 Paper Code Paper Title Theory Marks : : : SECOND YEAR BCA-09 Project Management and System Development 90 Number of Lectures : 100 (45 minutes duration) Objectives : Define the characteristics of a project. Explain the need for project management. Compare and contrast the roles of project managers in organizational environments. Describe the systems development cycle. Explain the roles of systems analysis and systems management in the life cycle of a project. • • • • • (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Concept of a Project, Project Life Cycle Phases, Tools & Techniques of Project Management, Roles & Responsibilities of a Project Manager, Feasibility Report, Types of Feasibility, Financing Arrangements, Preparation of Cost Estimates, Project Implementation Schedule, Evaluation of Project Profitability. (Total No. of Periods – 25) SECTION-B 2. Working & Design of Systems, Project Work System Design & Execution Plan, Work Breakdown Structure, Project Procedure Manual, Planning, Scheduling & Monitoring, Project Direction & Coordination, Communications in a Project, Project Control- (Progress, Performance, Schedule & Cost Control), Performance Indicators & Performance Improvement, Project Management Environment. (Total No. of Periods – 25) SECTION-C 3. Report Writing : Characteristics, Types, Structure, Importance & Style of Reports, Case StudiesDesigning Illustrative Reports. Introduction & Objectives of Software Specification & Requirement Analysis, SRS, Software Specification Documents & Attributes, Software Development Life Cycle, Data Dictionary, Decision Support Tools, Data Flow Diagrams, Finite State Machine, Petri- Nets, Mathematical Logic, Operational Timeliness (Total No. of Periods – 25) 20. 17 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS SECTION-D 4. Compilers, Linkers, Code-Generators, Debuggers, Program Design Languages, Workbenches, CASE Tools, Ideal Software Development Plan, Software Design Process, Design Levels and their objectives, Design Tools, Various approaches to design, Preparing Software Design Specifications, Designing of an information system. Fundamentals of Coding, Features & Selection of Programming Languages, Programming Style & Quality, Introduction to Software Testing, Testing Process, Module & System level testing methods, Debugging, Software Maintenance & Maintainability. (Total No. of Periods – 25) References : 1. Choudhary, S., 1988 : Project Management, Tata McGraw-Hill Publishing Company Limited, 1988 (Recommended as a text-book for the syllabus contents-6). 2. Sharma, R.C., and Krishna Mohan, 1996 : Business Correspondence and Report Writing, Second Edition, Tata McGraw-Hill Publishing Company Ltd., 1978, Reprinted in 1996 (Pages 129-230). 3. 4. Gopalakrishnan, P. & Rama Moorthy, V.E., 1993. Harrison, F.L., 1992. : Text Book of Project Management, Mac Million India Ltd. : Advanced Project Management, A Structured Approach (Third Edition), Metropolitan. 5. Srinath, I. S., 1989. : PERT & CPM, Principles and Applications, Third Edition, Affiliated East-West Press Pvt. Ltd. 6. Rodrigues, M.V., 1992 : Effective Business Communication, Company, 1992 (Pages 411-436). 7. : Develop Communication Skills, MacMillian India Ltd. : 9. Krishna Mohan & Banerji Meera, 1990. Behforooz, Ali and Hudson Frederick,1996. Kanter, J.,1984 : Software Engineering Fundamentals, Press. Management Information Systems, PHI. 10. Gill, Nasib Singh : Software Engineering, Khanna. 11. Rajib Mall, 2004 : Fundamentals of Software Engineering, PHI. 12. Pressman, Roger S., 2010 : Software Engineering, Tata McGraw Hill. 13. Jagdeep Singh : System Analysis and Design, Kalyani. 14. Awad, Elias M., 1993 : System Analysis and Design, Galgotia. 15. Kaur, Kirandeep : Project Management and Technical Report Writing, Kalyani. 8. Concept Oxford Publishing University 21. 18 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS [Paper Code Paper Title Theory Marks : : : BCA-10 Computer Based Numerical and Statistical Methods (Using C) 90 Number of Lectures : 100 (45 minutes duration) Objectives: To Teach implementation numerical and statistical methods. (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A Numerical Methods : Computer Arithmetic : Floating Point Numbers, operations, normalizations and their consequences, Errors and its types. Iterative Methods : Bisection, False-Position, Newton - Raphson Methods, Zeros of a polynomial using Birge – Vieta Method. (No. of Periods : 25) SECTION-B Simultaneous Linear Equations : Solution of Simultaneous Linear Equations Using Gauss Elimination, Gauss-Jordan and Gauss-Seidal Methods, Concept of Pivoting. Interpolation: Lagrange, Newton forward, Newton Backward, Divided Difference, Newton forward difference, Newton Backward difference, Numerical Integration: Trapezoidal, Simpson's 1/3, Simpson's 3/8, Weddle and Runga–Kutta Methods: 2nd order & 4th order. (No. of Periods : 25) Note : Log tables may be provided. 22. 19 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS SECTION-C Statistical Methods : Measures of Central Tendency : Preparing Frequency distribution table, Arithmetic mean, Geometric mean, Harmonic mean, Median and Mode. Measures of Dispersion, Skewness and Kurtosis, Range : Mean deviation, Standard deviation, Coefficient of variation, Moments, Skewness and Kurtosis. (No. of Periods : 25) SECTION-D Correlation : Least square fit, Polynomial and curve fittings. Regression Analysis : Linear regression and non linear regression algorithms. Development of Programs for Statistical Methods using C. (No. of Periods : 25) References : 1 Salaria, R.S. : Computer Oriented Numerical Methods, Khanna Book Publishing Co. (P.) Ltd., New Delhi. 2. Rajaraman, V., 2004 : Computer Programming in C, Prentice Hall of India. 3. Krishnanmurthy, Sen, S. K., 1984 : Computer Based Numerical Algorithms, East West Press. 4. Rajaraman, V., 1980 : Computer Oriented Numerical Methods, 3rd Ed., Prentice Hall, India. 5. Balaguruswami, E., 2000 : Computer Oriented Statistical and Numerical Methods, Million. 6. Gupta, M. K., Goon, A.M., Dasgupta, B., 1978 : Fundamentals of Statistics, Pub. Calcutta, World Press Kolkatta. 7. Affi, A.A, 1979 : Statistical Analysis : A Computer Oriented Approach, Academic Press, Inc. 8. Salaria, R.S. : Simplified Text-cum-Workbook on Computer Oriented Numerical Methods : A Programming Approach, Khanna. 9. Gupta, S.P., 2003 : Statistical Methods, S. Chand. E.V. & -------------------- Mac 23. 20 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-25 Data Structure Using C 90 Number of Lectures : 100 (45 minutes duration) Objectives : The basic algorithms related to handling data like stack, lists, queue, trees and graphs are introduced in this subject. The implementation of these algorithms will be taught using previously learned C programming language. (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Basic Concepts and Notations, Data Structure and Data Structure operations. Applications of Data Structure. Basic data Structures: Arrays: Introduction, Types of Array, Memory representation, Applications and operations. Linked List: Introduction, memory representation, Applications and operations Stacks and queue: Introduction, memory representation, Applications and operations (No. of Periods : 25) SECTION-B 2. Trees – Definition and Basic concepts, Representation in Contiguous Storage, Binary Tree, Binary Tree Traversal, Searching, Insertion and deletion in Binary trees, Binary Search tree, AVL trees. (No. of Periods : 25) SECTION-C 3. Graphs and their application, Sequential and Linked representation of Graph-adjacency, Matrix, Operations on Graph, Traversing a graph. (No. of Periods : 25) SECTION-D 4. Searching: Binary and Linear Search. Sorting: Bubble sort, Insertion sort, Selection sort, Merge Sort, Radix sort, Quick sort, Shell sort. (No. of Periods : 25) References : 1. Lipschuitz L. Seymour, 2001 : Data Structure, Schaum Outline Series, TMH, New Delhi. 2. Tannenbaum, Aaro M., 1990 : Data Structure Using C, Pearson. 3. Salaria, R. S. : 4. Salaria, R. S. : Data Structures & Algorithm Using C, Khanna Book Publishing Co. (P.) Ltd., New Delhi. Test Your Skills in Data Structures, Khanna Book Publishing Co. (P.) Ltd., New Delhi. 5. Sofat Sanjeev : Data Structure with C and C++, Khanna Book Publishing Co. 6. Patel, R.B. : Expert Data Structure in C, Khanna Book Publishing Co. 24. 21 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-12 Client Server Computing Using ORACLE 90 Number of Lectures : 100 (45 minutes duration) Objectives : This course aims at giving the students the insight of Client Server Computing and Creating Applications using the Oracle Web Server. (i) (ii) Note : (iii) (iv) The syllabus of this paper has been divided into four sections. Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. The students are required to attempt one question from each Section and the entire Compulsory question. All questions carry equal marks, unless specified. SECTION-A 1. Introduction to DBMS, Advantages and disadvantages of DBMS, introduction to RDBMS, The 12 Rules (Codd's Rule) for RDBMS, Difference b/w DBMS and RDBMS. Data Models and their types (Hierarchical, Networking, Relational). Introduction to Client-Server Computing. Architecture of Client-Server Computing, Advantages of Client-Server Computing. Introduction to SQL *Plus : Introduction to SQL, Oracle Data types, Starting SQL *Plus, Data Manipulation and Control-I : Data Definition Language (DDL), Creating Tables, Creating a Table with data from another table, Inserting Values into a Table, Updating Column(s) of a Table, Deleting Row(s) from a Table, Dropping a Column, Querying database tables, Conditional retrieval of rows, Working with Null Values, Matching a pattern from a table, Ordering the Result of a Query, Aggregate Functions, Grouping the Result of a Query, ROLLUP Operation: Getting Sub Totals, CUBE Operation : Getting Cross Tabs, Command Summary of SQL *Plus Editor. (No. of Periods : 25) SECTION-B 2. Functions : Arithmetic Functions, Character Functions, Date Functions, General Functions; Group Functions. Introduction to VIEWs, Manipulating the Base table(s) through VIEWs, Rules of DML Statements on Join Views, Dropping a VIEW, Inline Views, Materialized Views. Querying Multiple Tables : Collating Information: Equi Joins, Cartesian Joins, Outer Joins, Self Joins. ;Set Operator : Union, Intersect, Minus; Nested Queries. Data Manipulation and Control-II : Database

Security and Privileges, GRANT Command, REVOKE Command, Application Privileges Management, Enhancing Performance, Sequences, Maintaining Database Objects, COMMIT and ROLLBACK. (No. of Periods : 25) SECTION-C 3. 4. PL/SQL-I : Introduction to PL/SQL, The Advantage of PL/SQL, PL/SQL Block Structure, PL/SQL Architecture, Fundamentals of PL/SQL, PL/SQL Data Types, Variables and Constants, Scope and Visibility of a Variable, Assignments and Expressions, Operator Precedence, Referencing NonPL/SQL Variables, Built-in-Functions, Conditional and Iterative Control, SQL Within PL/SQL, Writing PL/SQL Code, Composite Datatypes. (No. of Periods : 25) SECTION-D PL/SQL-II: Cursor Management in PL/SQL, Cursor Manipulation, Implicit Cursor Attributes, Exception Handling in PL/SQL; Predefined Exceptions, User Defined Exceptions. [1. 2. Advanced PL/SQL: Subprograms in PL/SQL, Advantages of Subprograms, Procedure, Functions, Actual versus Formal Parameters, Argument Modes, Stored Packages, Advantages of Packages, Dropping a Procedure, Dropping a Function, Dropping a Package, Using Stored Function in SQL Statements, Database Trigger, Types of Triggers, Dropping Triggers, Storage for Triggers. (No. of Periods : 25) References : James T. Perry, Joseph, : Understanding ORACLE, BPB Publications, B-14, Connaught G. Lateer, 1989 Place, New Delhi - 110001. Mukhi Vijay, 1992 : Mastering Oracle 6.0, BPB Publications. _____ 25. 22 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-13 Object Oriented Programming (Using C++) 90 Number of Lectures : 100 (45 minutes duration) Objectives : By the end of the course, students will be able to write C++ programs using the more esoteric language features, utilize OO techniques to design C++ programs, use the standard C++ library, exploit advanced C++ techniques (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Concepts of Object Oriented Programming : Introduction to OOP, Difference between OOP and Procedure Oriented Programming, Object, Class, Encapsulation, Abstraction, Polymorphism, Inheritance. Structure of a C++ Program and I/O streams. Classes and Objects Class Declaration : Data Members, Member Functions, Private and Public members, Creating Objects, Accessing class data members, Accessing member functions Class Function Definition: Member Function definition inside the class declaration and outside the class declaration, friend function, inline function, static function. (No. of Periods : 25) SECTION-B 2. 3. Scope resolution operator, Private and Public member function, Nesting of member functions, Arrays within a class. Arrays of Objects, Objects as function arguments : Pass by value, Pass by reference, Pointers to Objects. Constructors and Destructors : Declaration and Definition, Types of Constructors, (Default, Parameterized, Copy Constructors). Destructors: Definition and use. (No. of Periods : 25) SECTION-C Function Overloading & Operator Overloading. Inheritance - Extending Classes Concept of inheritance, Base class, Defining derived classes, Visiblity modes :Public, Private, Protected ; Single inheritance : Privately derived, Publicly derived; Making a protected member inheritable, Access Control to private and protected members by member functions of a derived class, Multilevel inheritance, Nesting of classes. (No. of Periods : 25) SECTION-D 4. Polymorphism : Definition, Application and demonstration of Data Abstraction, Encapsulation and Polymorphism. Early Binding, Polymorphism with pointers, Virtual Functions, Late binding, pure virtual functions. File Processing : Opening and closing of file, stream state member functions, Binary file operations, structures and file operations, classes and file operations, Random file processing. (No. of Periods : 25) References : 1. Bjarna Stroustrup, 2009 : The C++ Programming Language, Addison-Wesley Publishing Company. 2. Robert Lafore, 2003 : Object Oriented Programming in Turbo C++, Galgotia Pub. 3. E. Balaguruswamy, 2008 : Object Oriented Programming with C++, TMH. 4. Salaria, R. S. : Object Oriented Programming Using C++, Khanna Book Publishing Co. (P.) Ltd., New Delhi. _____ 26. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-14 Unix Operating System 90 23 Number of Lectures : 100 (45 minutes duration) Objectives : - Work comfortably in the UNIX environment, Edit and manage files and user-level security for UNIX development, - Use standard UNIX development tools for C or C++. (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Introduction to Operating Systems, its needs and services, Simple batch Systems, Multiprogrammed batched systems, Time sharing systems, Parallel systems, Distributed systems and Real-time systems. (No. of Periods : 15) 2. Overview of UNIX : History, Features of UNIX, Comparison between UNIX and Windows. (No. of Periods : 05) 3. Structure of UNIX Kernel, Shell, Command execution. 4. (No. of Periods : 05) SECTION-B UNIX directory system. UNIX Commands : User Access and User ID Commands, Directory commands, Editors Commands, File Manipulation Commands, Security and Protection Commands, Inter-User and Inter-Machine Communication, Process Management Commands I/O Redirection and Piping Commands, Shell Commands, Vi editor, File Handling commands, and grep. (No. of Periods : 25) SECTION-C 5. Administering UNIX Systems : Introduction to System Administration, Functional activities of System Administration - Starting up the system, Maintaining the Super User Login, Shutting down the system, recovering from system crash, Taking backups, Managing disk space, Mounting and Un-mounting file system, Adding and removing users, Changing groups and password, Maintaining security, Monitoring system activity, Accounting of system usage and billing, Setting up remote communication, Installing printers and peripheral devices. (No. of Periods : 25) SECTION-D 6. Shell Programming : Executing a shell program, Study of shell programming as a Language; Wild card characters, Type of statements and Reserved Words, Special Shell parameters. 7. The AWK pattern scanning and processing language. (No. of Periods : 10) (No. of Periods : 05) 8. UNIX and Networking : Setting up of DNS, Mail, WWW servers under UNIX. (No. of Periods : 10) References : 1. Srirengan, K., 1999. : Understanding UNIX, Prentice-Hall of India, 2. Kernighan, B.W. & Rob Pike, 1997. : The UNIX Programming Environment, Prentice-Hall of India. 27. 24 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code : BCA-15 Paper Title : Computer Lab.-1 : Based on BCA-12 and BCA-14 Theory Marks : 90 Paper Code : BCA-16 Paper Title : Computer Lab.-2 : Based on BCA-13 and BCA-25 Theory Marks : 90 ---------- 28. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS 25 SYLLABI AND COURSES OF READING FOR BACHELOR OF COMPUTER APPLICATIONS FOR THE EXAMINATION OF 2014 THIRD YEAR Paper Code Paper Title Theory Marks : : : BCA-17 Enterpreneurship Development Programme 90 Number of Lectures : 100 (45 minutes duration) Objectives : EDPs aim at training various target groups in entrepreneurial traits so that they obtain adequate information, motivation and guidance in setting up their own enterprises. In order to maintain a homogeneous nature of participating groups, EDPs focus on rural entrepreneurs, women, SC/ST, minority communities etc. (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Project Formulation : Need, Scope and approaches for project formulation; structure of project report; study and analysis of sample project report; preparation of a project report; Technoeconomic feasibility of the project. (No. of Periods : 25) SECTION-B 2. Finance & Accounting : Working capital assessment, its management & exercise thereon; Assessment of fixed capital and exercise thereon; Capital budgeting; Product costing and cost consciousness. Financial ratios and their significance; Break-even analysis; Credit institutions and financing procedures; Books of accounts, financial statements & fund flow analysis. (No. of Periods : 25) 3. SECTION-C Managing the Enterprise : Resource management – men, Personnel management, Office management. material, money and machines; E-Commerce: Introduction to E-Commerce, Benefits, Impact of E-Commerce, Classification of ECommerce, Application of E-Commerce. (No. of Periods : 25) SECTION-D 4. Rules & Regulations : Licensing and Registration procedure; Appreciation of important provisions of Factory Act, Shops & Commercial Establishment Act; Sales of Goods Act, Partnership Act; Contract Act; Income Tax, Sales Tax and Excise rules; Insurance. (No. of Periods : 25) 29. 26 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS References : 1 Sinha, A.K, 1983. : Project Engineering & Management, Vikas Publishing House Pvt. Ltd., 1983. 2. Srivastava, U. K., 1981 : Project Planning, Financing, Implementation & Evaluation, Indian Institute of Management, Ahmedabad,1981. 3. Kuchhal, S. C., 1982 : Financial Management - An Analytical Approach, Chaitanya Pub. House, 1982. 4. Mohan, 1982 : Principles of Management Accounting, Mohan & Goyal, Agra Sahitya Bhavan,1982. 5. Saroja, 1979 : Management of Small Bombay, 1979. 6. Vepa Ram K., 1984 : How to Succeed in Small Industry, Vikas Publishing House, New Delhi, 1984. 7. Bare Acts : Central Sales Tax Act, State Sales Tax Act, Central Excise Act and Customs Act. 8. Bhagwati Prasad, 1972 : Law and Practice of Income Tax in India, Navman Prakashan. 9. Gulshan, S. S., 1979 : A Text Book of Commercial Law, S. Chand & Co. 10. Gupta, B. P., 1986 : Industrial Relations, (PHD Chamber of Commerce & Inds.). _____ Scale and Conceptual Industries, Seth Publishers, 30. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-18 Data Communication & Networks 90 27 Number of Lectures : 100 (45 minutes duration) Objectives : As part of this course, students will be introduced to computer networks and data communication paradigms, about network models and standards, network protocols and their use, wireless technologies. (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Introduction : Network definition, Network Hardware and Software, Network Topologies, Uses of Computer Networks, OSI reference model, TCP/IP Reference Model. Comparison of OSI & TCP/IP reference model. 2. Physical Layer : Transmission Media, Switching, ISDN & its service. Multiplexing, Modems. (No. of Periods : 25) SECTION-B 3. Data Link Layer : Protocols, Static & Window Protocol. Design Issue, Error Detection & Correction Codes, Elementary Data Link Dynamic Channel Allocation, Introduction to IEEE standards, Sliding (No. of Periods : 25) SECTION-C 4. Network Layer : Design issues, Routing Algorithms, Shortest path routing, Flooding, Broadcast & Multicast routing congestion, Control & internetworking. (No. of Periods : 25) SECTION-D 5. Application Layer : Network Security & Privacy, Data Compression & Cryptography. Electronic Mail, The WWW, Multimedia, Audio, Video, Remote Login, File Transfer. (No. of Periods : 25) References : 1. Tannenbaum, A.S., 2003 : Computer Networks, Prentice Hall. 2. Stallings, William, 2008 : Local and Metropolution Area Networks : An Introduction, Macmillian Publishing Co. 3. Black : Data Network, Prentice Hall of India. 31. 28 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-19 Computer Graphics and Multimedia Applications 90 Number of Lectures : 100 (45 minutes duration) Objectives : • • • To study the graphics techniques and algorithms. To study the multimedia concepts and various I/O technologies. To enable the students to develop their creativity. Note : (i) (ii) The syllabus of this paper has been divided into four sections. Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) All questions carry equal marks, unless specified. SECTION-A Computer Graphics : 1. 2. A Survey of Computer Graphics : Computer Aided Design, Presentation Graphics, Computer art, Entertainment, Education and Training, Visualization, Image Pressing, Graphical User Interfaces. (No. of Periods : 15) Overview of Graphics Systems : Video Display Devices, Raster Scan Systems, Random Scan Systems. Graphics Monitors and Workstations, Input Devices, Hard-copy devices, Graphics Software. (No. of Periods : 10) SECTION-B 3. Studying the Features and Developing Computer Graphics Using Standard Graphics packages like Auto CAD and Paint Brush. (No. of Periods : 10) 4. Developing Computer Graphics Using 'C' : Input-output primitives, Setting character and text attributes, Changing line styles, Using fill styles to fill images. Use the above primitives to develop programs like drawing concentric circles, Ellipses, Sine surves, Histograms, Pie charts and human face. (No. of Periods : 15) SECTION-C Multimedia Applications : 5. Multimedia in use Introducing multimedia, What is multimedia ? using multimedia. 6. Technology System Components, Multimedia Platforms, Development Tools, Image, Audio, Video, Storage for multimedia, Communications. (No. of Periods : 25) SECTION-D 7. Applications : Multimedia in the Real World, Training and Education, Image Processing. 8. Studying features and use of Multimedia Image Processing Macromedia Director. authoring tools like photo shop, (No. of Periods : 25) 32. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS 29 References : 1. Hearn and Backe, 1997 : Computer Graphics, Second Edition, PHI, New Delhi. 2. Kanetkar Yashwant, 2003 : Graphics Under 'C', BPB Publications. 3. Judith Jeffcoate, 2007 : Multimedia in Practice, Technology and Applications, PHI. 4. Foley, Vandom, Hughes, 1 9 9 6 : 5. Ian R. Sinclair, 1994 : Multimedia on the PC (with CDROM), BPB Publications. 6. Hillman, David, 1998 : Multimedia Technology and Applications, ITP. 7. Vaughan, Tay, 2008 : Multimedia Making it Work, Osborne Publishers. 8. Kelly & Bootle, 1989 : Turbo 'C', BPB Publications. Fenier, Computer Graphics, Principles and Practice, IV Edition in 'C'; Addison Wesley Publishers. …… 33. 30 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-20 Internet Programming 90 Number of Lectures : 100 (45 minutes duration) Objectives : To describe basic Internet Protocols. Explain JAVA and HTML tools for Internet programming. Describe scripting languages – Java Script. Explain dynamic HTML programming. Explain Server Side Programming tools. • • • • • (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Review of forms in HTML, Java Script: Features, tokens, data types, variables, operations, control structs strings arrays, functions, core language, objects, client side objects, event handling. Applications related to client side form validation. (No. of Periods : 25) SECTION-B 2. Fundamentals of Java: Java Vs. C++, Byte lode, Java virtual machine, constants, variables, data types, operators, expressions, control structures, defining class, creating objects, accessing class members, constructions, method overloading. (No. of Periods : 25) SECTION-C 3. Inheritance : Basics, member access, using super to call super class constructors, creating a multi level hierarchy, method overriding, dynamic method dispatch, using abstract classes, using Final. Packages and Interfaces: Defining a package, understanding CLASSPATH, Access protection : Importing packages, Interfaces, Defining an Interface, Implementing Interfaces, Applying Interfaces, Variables in Interfaces. Exception Handling: Fundamentals, Exception types, Using Try and Catch, Multiple Try and Catch clauses, Nested Try statements, Built–in exceptions. (No. of Periods : 25) 34. SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS 31 SECTION-D 4. Multi-threaded Programming: The Java Thread model, Thread priorities, Synchronizations, Messaging. The thread class and runnable interface, The Main Thread : Creating a Thread, Implementing Runnable, Extending Thread, Creating Multiple Threads, Thread Priorities; Synchronizations : Methods, Statements, Inter Thread Communication, Deadlock, Suspending, Resuming and Stopping Threads. I/O Applets : I/O Basics : Streams, The predefined streams; Reading console I/P, Writing console O/P. The print writer class; Reading and Writing files, Applet fundamentals, Using AWT controls, Layout Managers and Menus, String handling and event handling. (No. of Periods : 25) References : 1. Phillips LEE and Darmell Rick : Computer Graphics, Second Edition, PHI, New Delhi. 2. Daniel Dang, 2010 : An Introduction to Java Programming, PHI, New Delhi. 3. Balaguruswamy, E., 1998 : Programming with Java, A Primer, TMH, New Delhi. 4. Wanger & Wyke, 2000 : Java Script Unleased, Techmedia, New Delhi, 2000. ---------- 35. 32 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS Paper Code Paper Title Theory Marks : : : BCA-27 Discrete Mathematics 90 Number of Lectures : 100 (45 minutes duration) Objectives : This is first mathematics subject. Student will learn and revise his knowledge acquired previously. Logic, Relations and Functions, Algebric Functions and Graph Theory will be introduced in this course. (i) The syllabus of this paper has been divided into four sections. (ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi. (iii) The students are required to attempt one question from each Section and the entire Compulsory question. (iv) Note : All questions carry equal marks, unless specified. SECTION-A 1. Set Theory : Relations and Functions : Set Notation and Description, subset, basic set operations, Venn Diagrams, laws of set theory, partitions of sets, min sets, duality principle, basic definitions of relations and functions, graphics of relations, properties of relations: injective, surjective and bijective functions, compositions. 2. Recurrence : Recurrence Relations and Recursive Algorithms – Linear-Recurrence Relations with Constant Coefficients; Homogeneous Solutions : Particular Solution, Total Solution, Solution by the Method of Generating functions. (No. of Periods : 25) SECTION-B 3. Graph Theory : Graph and planar graphs – Basic Terminology, Multi-graphs, Weighted Graphs, Paths and Circuits, Shortest Paths, Eulerian Paths and Circuits. Travelling Salesman Problem, Planar Graphs. (No. of Periods : 25) SECTION-C 4. Automata Theory : Finite State Machines–Equivalent Machines, Finite State Machines as language Recognizers; Analysis of Algorithms - Time Complexity, Complexity of Problems. 5. Boolean Algebra : Lattices and Algebraic Structures; Duality. Distributive and Complemented Lattices, Boolean Lattices and Boolean Algebra. (No. of Periods : 25) SECTION-D 6. Boolean Functions and Expressions, Propositional Calculus, Design and Implementation of Digital Networks, Switching Circuits. (No. of Periods : 10) 7. Algebra of Logic : Proposition of logic operations, truth tables and propositions generated by set, equivalence and implication laws of logic, mathematical system, propositions over a universe, mathematical induction, quantifiers. (No. of Periods : 15) 36. 33 SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS References : 1. Doerr, A. and Kenneth, L., : 1989 Applied Discrete Structures Galgotia Publications Pvt. Ltd. 2. Liu, C. L., 1985 Elements of Discrete Mathematics, McGraw Hill. 3. Seymour Lipschutz and Lipson, : 1992 : for Computer Science, 2000 Solved Problems in Discrete Mathematics, McGraw- Hill. BCA : 21 PROJECT and SEMINAR Project and Seminar must be taken up from the real life problems. Marks for these are to be given on the basis of Programming Style, User friendly I/O, on-line help and documentation (user Manual). This work will carry 100 marks, (85 Marks for Project and Seminar Viva; and 15 Marks for Internal Assessment). Paper Code : BCA-23 Paper Title : Computer Lab.-1 : Based on BCA-19 Theory Marks : 90 Paper Code : BCA-24 Paper Title : Computer Lab.-2 : Based on BCA-20 Theory Marks : 90 ---------- Published by : Professor A.K. Bhandari, Registrar, Panjab University, Chandigarh.