

KRANTIGURU SHYAMJI KRISHNA VERMA KACHCHH UNIVERSITY

Department of Computer Science

Syllabus for Five Years Integrated **Master of Science** (Computer Applications & Information Technology)

(Effective from June 2016)

Master of Science (Computer Applications & Information Technology) **Five Years Integrated Full Time Program**

This course abbreviated as M.Sc. (CA & IT) is an integrated post-graduate programme of 10 semester's duration.

CREDIT SYSTEM

One credit in theory course is equivalent to classroom teaching of 1 hour per week for 15 weeks, whereas one credit in practical requires 3 hours of performing practical per week for 15 weeks.

ELIGIBILITY CRITERIA

- 1. A student who have passed H.S.C. Examination with minimum 40% marks with
 - a. Science Stream with A or B groups or
 - b. Commerce Stream.
- 2. A candidate who has passed an equivalent examination from any other university/examining body shall have to produce Eligibility Certificate from KSKV Kachchh University, Bhuj (which can be obtained from the University Office) along with the application for admission in the first semester.

DOCUMENTS REQUIRED

Original as well as self attested copies of :

- 1. S.S.C (10th) mark sheet, Passing and Trial Certificate.
- 2. H.S.C. (10+2) or Equivalent Mark sheet.
- 3. School Leaving Certificate.
- 4. SC/ST/SEBC caste certificate wherever applicable.
- 5. Non-Creamy Layer Certificate in case of SEBC
- 6. Relevant reservation documents as notified by the government.

ADMISSION PROCEDURE

Counselling will be given to the candidates on the day of admission before actual admission takes place in each college.

CRITERIA FOR EVALUATION

- Continuous and Comprehensive Evaluation (CCE) will be conducted by respective departments; CCE will have 30% weightage. A student shall have to score minimum 40% marks in internal evaluation to pass.
- End semester examination will have 70% weightage. A student shall have to score minimum 40% marks in internal evaluation to pass.
- CCE Marking Scheme for theory courses other than foundation:

For each paper, 30 % of CCE may be further distributed as under:

- a) Seminar/Assignment/Project/Presentation : 10 Marks 20 Marks
- b) Internal Test:

Internal Test comprises of 40 Marks and $1\frac{1}{2}$ hours duration.

| Course Type | Course | Name of Course | Theory / | Credit | Exam | Com | ponent of M | larks |
|--------------------|---------|--------------------------------------|-----------|--------|----------|----------|-------------|-------|
| | Code | | Practical | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS101 | Introduction to Computer Science and | Theory | 4 | 3 | 30 | 70 | 100 |
| | | Programming | | | | | | |
| | CCCS102 | Fundamentals of Computers and Data | Theory | 4 | 3 | 30 | 70 | 100 |
| Core Courses | | Processing | | | | | | |
| | CCCS103 | Practical Based on CCCS101 | Practical | 5 | 3 | 30 | 70 | 100 |
| | CCCS104 | Practical /Viva Based on CCCS102 and | Practical | 5 | 3 | 30 | 70 | 100 |
| | | Elective Courses | | | | | | |
| Foundation Courses | FCCS101 | Communication Skills in English | Theory | 4 | 3 | 30 | 70 | 100 |
| Elective Courses | CECS101 | PC Software and Applications | Theory | 2 | 3 | 30 | 70 | 100 |
| (Any One) | CECS102 | Desktop Publishing | Theory | 2 | 3 | 30 | 70 | 100 |
| | CECS103 | Financial Management and Accounting | Theory | 2 | 3 | 30 | 70 | 100 |
| Total | | | | 24 | | 180 | 420 | 600 |

Master of Science (Computer Applications & Information Technology) Semester I

| Paper | Code: CCCS101 | Total Credit : 4 | |
|---------------------------------|---|-------------------------|--|
| Title | of Paper: Introduction to Computer Science and Programming | Total Marks: 70 | |
| | | Time: 5 His | |
| | | | |
| Unit | Description | Weighting | |
| Ι | Introduction: Core Elements of a IDLE, types of objects, operators, overloading, commands, variable, assignment, input, straight line and branching programs, looping constructs, Turing completeness, conditionals, nesting. | 20% | |
| II | Problem Solving: Termination, decrementing functions, exhaustive enumeration, brute force, while loop, for loop, approximation, specifications, bisection search. | 20% | |
| III | Machine Interpretation of a Decomposition, module, function, abstraction, formal parameter, actual parameter, argument, assert, scope, mapping, stack, last in first out, string, slicing. | 20% | |
| IV | Object in Python: Tuples, lists, dictionaries, methods, identifiers, modifying objects, aliasing, mutability Recursion: Dictionaries, modular abstraction, divide and conquer, recursion, tower of Hanoi, base case, Fibonacci Sequence. | 20% | |
| v | Efficiency and Order of Growth: Efficiency, problem reduction, RAM, best case, worst case, expected case, growth, exponential growth, polynomial growth, logarithmic growth, global variable. Memory and Search Methods: Memory, storage, indirection, sorting | 20% | |
| Basic Text & Reference Books :- | | | |
| 1. | Guttag, John. Introduction to Computation and Programming Using P | Python, MIT Press, | |
| 2 | 2013. ISBN: 9780262519632 Downey Allen B. Think Python. Shroff, ISBN:9350238632 | | |
| ۷. | Downey, Anen D. Think I yulon, Shion, $10011, 10011, 10010200002$ | | |

| Paper Code: CCCS101 | | | Total Credit : 4 Total Marks : 70 |
|--|---|----|--|
| Title of Paper: Introduction to Computer Science and Programming | | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 04 | |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 06 | 14 |
| | Q.1 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |
| II | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 04 | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 06 | |
| | Q.2 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | 14 |
| | Q.3 (A) Short / Medium Questions (With Internal Option) | 04 | |
| III | Q.3 (B) Medium / Long Questions. (With Internal Option) | 06 | 14 |
| | Q.3 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |
| | Q.4 (A) Short / Medium Questions (With Internal Option) | 04 | |
| IV | Q.4 (B) Medium / Long Questions. (With Internal Option) | 06 | 14 |
| | Q.4 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 04 | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 06 | 14 |
| | Q.5 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |

| Paper | Code: CCCS102 | Total Credit : 4 |
|---------|---|-------------------------|
| Title | of Paper: Fundamental of Computers and Data Processing | Total Marks : 70 |
| | | Time: 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Ι | Information concept and processing: | 20% |
| | Introduction, Data and Information, Features of Information, | |
| | Categories of Information, Levels of Information. | |
| | Concepts of Data: | |
| | Organization of Data as a file, Types of File, Classification of data | |
| | files by functions, File Organization. | |
| II | Elements of Electronic Data Processing (EDP): | 20% |
| | Introduction to computerized business data processing, Benefits of | |
| | EDP, Overview of Commercial Application. | |
| | Number systems: | |
| | Binary, Octal, Decimal, Hexadecimal, Conversion of Number System | |
| | ASCII, BCD | •••• |
| 111 | Elements of Computer Systems: | 20% |
| | Introduction, Computer Classification, Capabilities and Limitations, | |
| | | |
| | Input Units: Eurotions of Input Units, Types of Input Devices | |
| 137 | Outrust Units, Types of Input Devices. | 200/ |
| 1 V | Turpes of Output Devices, Turpes of Printer, Turpes of VDU, Turpes of | 20% |
| | Plotters | |
| | Memory: | |
| | Introduction Classification of Memory Primary Memory Types of | |
| | RAM and ROM. Characteristics of Memory. | |
| V | Data Storage Devices: | 20% |
| , , | Secondary storage devices, magnetic media, types of disks. storage | |
| | principles, magnetic tape, hard disk and floppy disk, optical media. | |
| | CD-ROM, CD, DVD. | |
| | Merits, demerits and application of storage devices. | |
| Basic ' | Text & Reference Books :- | |
| 1. | Computer Fundamentals 4/e, Pradeep Sinha, BPB Publications | |

| Paper Code: CCCS102 | | | Total Credit : 4 Total Marks : 70 |
|--|---|----|--------------------------------------|
| Title of Paper: Fundamental of Computers and Data Processing | | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| II | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper Code: CCCS103 | Total Credit : 4 |
|---|------------------|
| Title of Paper: Practical Based on CCCS101 | Total Marks : 70 |
| - | Time : 3 Hrs |
| | |
| | |
| Description | |
| | |
| 1. Understanding IDLE: Installing, Running Programs, Saving and Loading | g Files |
| 2. Understanding Python Operators. | |
| 3. Understanding Branching. | |
| 4. Understanding Looping. | |
| 5. Understanding Functions and Parameters. | |
| 6. Understanding Tuples, Lists, Dictionaries. | |
| 7. Understanding Mutability of various objects. | |
| 8. Understanding Recursion. | |
| | |

| Paper Code : CCCS103 | | | Total Credit : 4 Total Marks : 70 | | |
|--|---------------------|--------------|--|--|--|
| Title of Paper: Practical Based on CCCS101 | | Time : 3 Hrs | | | |
| | | | | | |
| | 1 | | | | |
| Unit | Description | | Total Marks | | |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 | | |
| | Q.1 (B) Practical | 50 | | | |

| Paper Code: CCCS104 | Total Credit : 4 | |
|--|------------------|--|
| Title of Paper: Practical Based on CCCS102 and Elective Courses | Total Marks: 70 | |
| • | Time : 3 Hrs | |
| | | |
| | | |
| Description | | |
| | | |
| 1. To understand and implement concept of desktop publishing softwar | e | |
| 2. To understand and implement the basic concept of Word Processing Software | | |
| 3. To understand and implement the concept of Presentation Packages | | |
| 4. To understand and implement the concept of Spreadsheet Packages | | |
| | | |

| Paper Code : | Total Credit : 4 Total Marks : 70 | | |
|----------------|--------------------------------------|----|-------------|
| Title of Paper | Time : 3 Hrs | | |
| | | | <u>.</u> |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 |
| | Q.1 (B) Practical | 50 | |

| Paper Title | • Code: FCCS101 of Paper: Communication Skills in English | Total Credit : 4 Total Marks : 70 |
|----------------|--|--|
| | | Time : 3 Hrs |
| | | |
| T T •4 | | TT 7 • 1 /• |
| Unit | Description | Weighting |
| | ORAL COMMUNICATION : Magning, pature and scope | |
| | - Meaning, nature and scope Dringinlag of offective and communication | |
| т | - Principles of effective speech | 200/ |
| 1 | - Techniques of effective speech Mooning and Definition | 20% |
| | - Meaning and Demittion Process Eurotions Objectives | |
| | Importance Essentials of good communication | |
| | - Importance – Essentials of good communication | |
| | - Communication barriers | |
| | Communication: At the college On the communication the | |
| | - Communication. At the conege, On the campus, Outside the | |
| | CDAMMED AND USACE . | |
| п | GRAMMER AND USAGE : The Articles | |
| 11 | - The Articles | |
| | - Noulis & Flohoulis Tonsos | 20% |
| | - Tellses | 20% |
| | Ouestions and negatives | |
| | - Questions and negatives Drepositions attached to verbs | |
| | CRAMMER AND USACE · | |
| ш | - Vocabulary words often confused Abbreviations and Numerals | |
| 111 | - Active-Passive | 20% |
| | - Conjunctions | 2070 |
| | - Conjunctions | |
| | - Translation | |
| | BUSINESS COMMUNICATION | |
| | - Enquiries and Replies | |
| IV | - Quotations | |
| 1, | - Voluntary offers | 20% |
| | - Placing of orders | 2070 |
| | - Cancellations of orders | |
| | - Complaints and Adjustments | |
| | INFORMATIONTECHNOLOGYFOR COMMUNICATION | |
| | - Word Processor-Telex-Facsimile(Fax) | |
| | - E-mail-Voicemail-Internet –Multimedia-Teleconferencing | |
| V | - Mobile Phone Conversation | 20% |
| | - Video Conferencing | |
| | - SMS | |
| | - Telephone Answering Machine | |
| | - Advantages and limitations of these types. | |
| Basic | Text & Reference Books :- | |
| 1. | Creative English Communication By N.Krishnaswami and T.Sriraman. | |
| 2. | Contemporary English Grammar, Structure and Composit | ion By David |
| | Green.(MacMillan) | - |
| 3. | Essential of Business Communication By Rajendra Pal and J.S.Kor | lahalli(S.Chand & |
| | Sons) | |
| 4. | Business correspondence & Report By R.C.Sharma & Krishna Mohan. | |
| 5. | Business Communication Dr. S.V. Kadvekar, Prin. Dr. C.N. Rawal | and Prof.Ravindra |
| | Kothavade – Diamond Publications, Pune. | |

| Paper | Code: FCCS101 | Total Credit : 4 Total Marks : 70 | |
|---------|---|--------------------------------------|-------------|
| Title o | of Paper: Communication Skills in English | Time : 3 Hrs | |
| | | | |
| | | | |
| Unit | Description | | Total Marks |
| | Q.1 (A) Short /Medium Questions. (With Internal Option) | 06 | |
| Ι | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 |
| Π | Q.2 (A) Short /Medium Questions. (With Internal Option) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |

| Paper Code: CECS101 | | Total Credit : 4 | | |
|---------------------|--|--------------------|--|--|
| Title | of Paper: PC Software and Applications | Total Marks : 70 | | |
| | | Time: 3 Hrs | | |
| | | | | |
| Unit | Description | Weighting | | |
| Umt | Operating System : | weighting | | |
| | Introduction Types of Operating System | | | |
| | DOS: Internal & External commands, file name, wildcard character. | | | |
| Ι | autoexec.bat & config.sys, hidden system files. Commands like DIR, | 20% | | |
| | MKDIR, CHDIR, COPY, TYPE, DELETE, RENAME, PRINT, | | | |
| | FORMAT, SYS, LABEL, CHKDSK, SCANDISK, ATTRIB, PATH, | | | |
| | PROMPT, DATE, TIME, BACKUP, | | | |
| | RESTORE etc. | | | |
| | WINDOWS: Concept of Window, icon, menu, picture Control Panel | | | |
| | etc. Desktop : my computer, network neighbourhood, recycle bin | | | |
| | etc., start menu, windows explorer, long & short file names, creating | | | |
| | folder, copying & moving files, deleting files, creating shortcuts, | | | |
| | adding & deleting from start menu, adding & removing hardware, | | | |
| | scanning disk, defragmentation, security features, installing other | | | |
| | Introduction to personal computers | | | |
| П | Significance and use of a typical PC Operating System | | | |
| | Introduction to Editors | | | |
| | Classification of PC Software | 20% | | |
| | Introduction to word processing | , , | | |
| | Examples of some popular word processing packages | | | |
| | Uses of word processors | | | |
| | Creation, editing, and formatting of documents | | | |
| | Mail merge facility in word processors | | | |
| III | Global search & replacement of text | | | |
| | Page layout and printing of a document | 20% | | |
| | Spelling checker, Tables, Templates, Advanced features | | | |
| | Introduction to spreadsheets | | | |
| | Lises of spreadsheet packages | | | |
| | Addressing cells in a spreadsheet | | | |
| | Building Spreadsheets using formulas, conditional calculations, built- | | | |
| IV | in | | | |
| | functions | 20% | | |
| | Graph-plotting facilities | | | |
| | Sorting and filtering data | | | |
| | Using externally created data files in a spreadsheet package | | | |
| | What-if analysis and protection facility in spreadsheets | | | |
| | Using pivot tables | | | |
| | Applications of spreadsheets | | | |
| V | Introduction to presentation tools | 20% | | |
| | Creating a presentation | | | |
| | Formatting stides | | | |
| | Inserting pictures sound charts | | | |
| Basic | Basic Text & Reference Books :- | | | |
| 1 | Taxali R.K : PC Software for windows made simple. Tata McGraw-F | Hill Publishing Co | | |
| | Ltd. | | | |
| 2. | Manuals of PC Software | | | |

| Paper Code: CECS101 | | | Total Credit : 4 Total Marks : 70 | |
|---------------------|---|----|--------------------------------------|--|
| Title o | Title of Paper: PC Software and Applications | | | |
| | | | | |
| | | | | |
| Unit | Description | | Total Marks | |
| | Q.1 (A) Short /Medium Questions. (With Internal Option) | 06 | | |
| Ι | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 | |
| II | Q.2 (A) Short /Medium Questions. (With Internal Option) | 06 | 14 | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | | |

| Paper | Total Credit : 4 | | | | |
|------------------------------------|---|-------------------|--|--|--|
| Title of Paper: Desktop Publishing | | Total Marks : 70 | | | |
| | | Time : 3 Hrs | | | |
| | | | | | |
| Unit | Description | Weighting | | | |
| | Introduction | 0 0 | | | |
| | Publishing – meaning and planning | | | | |
| | Graphics and desktop publishing, Publication purpose and | | | | |
| Ι | effectiveness, Introduction to a popular desktop publishing software | 20% | | | |
| | and key features | | | | |
| | Using DTP Software-I (Page Maker) | | | | |
| II | Working with document - creating, saving, printing, etc. | | | | |
| | Working with tools and pallets, navigation | | | | |
| | Working with margins, indents, tabs and ruler | 20% | | | |
| | Working with text, paragraph and graphics | | | | |
| | Using DTP Software-II (Page Maker) | | | | |
| III | Working with multipage documents | | | | |
| | Working with master pages, hyperlinks | 20% | | | |
| | Working with frames, text frames, Using tables | | | | |
| | Using styles and story board, Working with objects, forms | | | | |
| | Working with templates, Importing and exporting | | | | |
| | Corel Draw | | | | |
| | Introduction, Surfing the Interface, Getting to know the status bar. | | | | |
| IV | Getting to scrollbar and color palette. | | | | |
| | Understanding Dialog box, Exploring the standard toolbar, Toolbox. | | | | |
| | Browsing the Menus, File, Edit, View, Layout, Arrange, Effect, | 20% | | | |
| | Bitmaps, Text, Tools, Drawing and working with Lines and Curves. | | | | |
| | Drawing and working with Rectangles, Ellipse and Polygons, Adding | | | | |
| | Text and Formatting Text, Working with Objects, Defining Outline | | | | |
| | and Fill Color, Working with outlines, The outline pen dialog, The | | | | |
| | outline color dialog, Understanding fills, Fountain fills, Pattern fills, | | | | |
| | Creating Special Effects, Using an envelope, Creating perspective | | | | |
| | effects, Blending objects | | | | |
| | Photoshop's Environment Cranhing and Environment El | | | | |
| | Photosnop's Environment Graphics and Environment Elements | | | | |
| V | Cropping Selecting Image Areas The Postengular and Elliptical | 2004 | | | |
| v | Marguee Tools The Lasso Tools and Saving Selections. The Magic | 2070 | | | |
| | Wand Tool. The Magnetic Lasso Tool and Modifying Selections. | | | | |
| | Lavers Feathering Edges: Image Modes Color and Painting | | | | |
| | Selecting Colors Painting Tools and the Clone Stamp Tool Text | | | | |
| | Laver Effects and Filters Filters Merging and Flattening Adjusting | | | | |
| | Images Brightness/Contrast and Levels Adjustment Lavers Toning | | | | |
| | Tools and Hue/Saturation | | | | |
| Basic | Basic Text & Reference Books | | | | |
| 1 | Jain S · PageMaker 7 Training Guide BPB 2008 | | | | |
| 2 | Manuals of Photoshop | | | | |
| - <u>-</u> . 3 | Connally C · PageMaker (R) 7 – The Complete Reference Mc | Graw-Hill/Oshorne | | | |
| 5. | Media. 2002 | | | | |
| 4 | 4 Mastering Corel Draw by Rick Altman RPR 4th Edition | | | | |

| Paper Code: CECS102 | | | Total Credit : 4 Total Marks : 70 | |
|---------------------|---|----|--------------------------------------|--|
| Title (| Title of Paper: Desktop Publishing | | | |
| | | | | |
| Unit | Decerintian | | Total Marka | |
| Umt | Description | | Totai Wiarks | |
| | Q.1 (A) Short /Medium Questions. (With Internal Option) | 06 | | |
| Ι | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 | |
| II | Q.2 (A) Short /Medium Questions. (With Internal Option) | 06 | 14 | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | | |

| Paper | Code: CECS103 | Total Credit : 4 |
|-------|--|------------------|
| Title | of Paper: Financial Management and Accounting | Total Marks: 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Omt | Accounting principles concepts and conventions double entry | weighting |
| | system of accounting, types of accounts journalizing, introduction of | |
| | basic books of accounts of sole proprietary concern, control accounts | |
| Ι | for debtors and creditors, closing of books of accounts and | 20% |
| | preparation of trial balance. | |
| | Trading and profit and loss account and balance sheet of sole | |
| | proprietary concern with normal closing entries. Final accounts of | |
| | partnership firms and limited company. | |
| | Financial Management: | |
| II | Meaning, role and importance of financial management. | |
| | Ratio analysis: | 2004 |
| | Meaning, advantages, limitations, types of ratios and their usefulness. | 20% |
| | Costing: | |
| | Nature, importance and basic principles, methods, elements of cost, | |
| | Cost sheet, pro-forma of cost-sheet, tender price. | |
| Ш | Nature and scope importance methods of finalization of master | |
| 111 | hudget and functional budgets | 20% |
| | Standard Costing: | 2070 |
| | Nature and scope, computation and analysis of variances with | |
| | reference to material cost, labor cost, interpretation of the variances. | |
| | Marginal Costing: | |
| | Meaning and scope of marginal costing, uses and limitations of | |
| IV | marginal costing, breakeven point, simple example on decision | |
| | making. | 2004 |
| | A second in a California | 20% |
| | Accounting Software Role of computers in commerce. Introduction to Accounting | |
| | Packages Hardware and software requirement for tally Features of | |
| V | tally Flow of Accounting package tally through examples Various | 20% |
| • | Phases of Accounting Cycle in Tally. Tax calculation & tally | 2070 |
| Basic | Text & Reference Books :- | |
| 1. | Accounting & Financial Management by D.R.Patel, Atul Prakashan | |
| 2. | Manuals of Tally | |

| Paper Code: CECS103 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title of | Time : 3 Hrs | | |
| | | | |
| Unit | Description | | Total Marks |
| All | Q.1 MCQ | 14 | 14 |
| I, II | Q.2 (A) Short /Medium Questions. (With Internal Option) | 06 | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 |
| | OR Q.2 Long Question | 14 | |
| II,III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 |
| | OR Q.3 Long Question | 14 | |
| III,IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 |
| | OR Q.4 Long Question | 14 | |
| IV, V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 |
| | OR Q.5 Long Question | 14 | |

| Course Type | Course | Name of Course | Theory / | Credit | Exam | Com | ponent of M | larks |
|--------------------|---------|---|-----------|--------|----------|----------|-------------|-------|
| | Code | | Practical | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS205 | Introduction to Data Structures and | Theory | 4 | 3 | 30 | 70 | 100 |
| | | Algorithms | | | | | | |
| | CCCS206 | Introduction to Internet and Web | Theory | 4 | 3 | 30 | 70 | 100 |
| Core Courses | | Programming | | | | | | |
| | CCCS207 | Practical Based on CCCS205 | Practical | 5 | 3 | 30 | 70 | 100 |
| | CCCS208 | Practical Based on CCCS206 and Elective | Practical | 5 | 3 | 30 | 70 | 100 |
| | | Courses | | | | | | |
| Foundation Courses | FCCS202 | Foundation Course of BAOU | Theory | 8 | 3 | - | 100 | 100 |
| | FCCS203 | Mathematical Foundation of Computer | | 2 | 3 | 30 | 70 | 100 |
| | | Science-I | | | | | | |
| Elective Courses | CECS204 | Elements of C Programming | Theory | 2 | 3 | 30 | 70 | 100 |
| (Any One) | CECS205 | Digital Computer Electronics | Theory | 2 | 3 | 30 | 70 | 100 |
| Total | | | | 28 | | 180 | 520 | 700 |

Master of Science (Computer Applications & Information Technology) Semester II

| Pape | r Code: CCCS205 | Total Credit : 4 | |
|---------------|---|-------------------------|--|
| Title | Title of Paper: Introduction to Data Structure and Algorithm | | |
| | | Time: 3 Hrs | |
| | | | |
| I Init | Decorintion | Woighting | |
| Umt | Description | weighting | |
| I | Variables, Data Types, Data Structures, Abstract Data Types (ADTs) What is an Algorithm? Why the Analysis of Algorithms? Goal of the Analysis of Algorithms, What is Running Time Analysis? How to Compare Algorithms, What is Rate of Growth? Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega- Ω Notation, Theta- Θ Notation, Why is it called Asymptotic Analysis? Guidelines for Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Variant of Subtraction and Conquer Master Theorem, Method of Guessing and Confirming, Amortized Analysis Algorithms Analysis: Problems & Solutions | 20% | |
| II | Recursion and BacktrackingIntroduction, What is Recursion? Why Recursion? Format of a RecursiveFunction, Recursion and Memory (Visualization), Recursion versusIteration, Notes on Recursion, Example Algorithms of Recursion,Recursion: Problems & Solutions, What is Backtracking? ExampleAlgorithms of Backtracking, Backtracking: Problems & SolutionsLinked ListsWhat is a Linked List? Linked Lists ADT, Why Linked Lists? ArraysOverview, Comparison of Linked Lists with Arrays and Dynamic Arrays,Singly Linked Lists, Doubly Linked Lists, Circular Linked Lists, AMemory-efficient Doubly Linked List, Unrolled Linked ListsSkip Lists, Linked Lists: Problems & Solutions | 20% | |
| III | Stacks What is a Stack? How Stacks are Used, Stack ADT, Applications Implementation, Comparison of Implementations, Stacks: Problems & Solutions Queues What is a Queue?, How are Queues Used, Queue ADT, Exceptions Applications, Implementation, Queues: Problems & Solutions | 20% | |
| IV | Trees What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals (Stack or Queue-less Traversals), Expression Trees, XOR Trees, Binary Search Trees (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees, Other Variations on Trees | 20% | |
| V Basic | Algorithms Design TechniquesIntroduction, Classification, Classification by Implementation MethodClassification by Design Method , Other ClassificationsGreedy AlgorithmsIntroduction, Greedy Strategy, Elements of Greedy Algorithms, DoesGreedy Always Work? Advantages and Disadvantages of Greedy Method,Greedy Applications, Understanding Greedy TechniqueGreedy Algorithms: Problems & SolutionsDivide and Conquer AlgorithmsText & Reference Books :- | 20% | |
| 1 | Data Structures And Algorithmic Thinking With Python Narasimba Karur | nanchi CareerMonk | |
| 1. | Publications | | |
| 2. | Introduction to Algorithms, Thomas H. Cormen, Prentice-Hall of India | | |

| Paper | Total Credit : 4 Total Marks : 70 | | | | |
|-------|---|----|-------------|--|--|
| Title | Title of Paper: Introduction to Data Structure and Algorithm | | | | |
| | | | | | |
| Unit | Description | | Total Marks | | |
| | Description | | | | |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| | | | | | |

| Paper Code: CCCS206 | | Total Credit : 4 | |
|--|--|------------------|--|
| Title of Paper: Introduction to Internet and Web Programming | | Total Marks : 70 | |
| | | Time : 3 Hrs | |
| | | | |
| Unit | Description | Weighting | |
| | The Internet and Web Browsers | | |
| | Introduction to the Internet, History of the Internet | | |
| | Services provided by the Internet, Some basic terminology and | | |
| | concepts (WWW, URL, webpage, web site, web servers, web | 20% | |
| Ι | browsers, HTML, search engines, etc.) | | |
| | Components of a browser window, Use of menus and toolbar buttons | | |
| | History and navigation, Setting basic options, security and privacy | | |
| | precautions, Managing bookmarks/favorites, Tabbed browsing, | | |
| | downloading files, saving web pages for offline reading | | |
| | Web Page Designing-I | | |
| | An introduction to HTML | | |
| II | HTML tags | 20% | |
| | Structure of an HTML document | | |
| | Text and paragraph formatting | | |
| | Ordered and unordered lists, nested lists | | |
| | Web Page Designing-II | | |
| | HTML tables | | |
| 111 | Hyperlinks | 20% | |
| | Images | | |
| | Frames, framesets, nested framesets | | |
| | Web Page Designing-III Designing UTML forms. Websee lowest Introduction to a selected | | |
| TX 7 | Designing HTML forms, weopage layout, introduction to a selected | 200/ | |
| 1 V | tool Development tool, Key features of the website development | 20% | |
| | Tage Eastures of Style Sheet | | |
| | Introduction to Java Script: | | |
| | Introduction Using operators control statements user defined | | |
| V | functions working with built-in objects: window object document | 20% | |
| • | object string object array object and date object. Handling events in | 2070 | |
| | IavaScript | | |
| | A brief Introduction to Dreamweaver. Planning and creation of web | | |
| | Site. Site Management | | |
| Basic | Text & Reference Books :- | | |
| 1. | Ivan Bayross, "Web Enabled Commercial Applications Development | ent using HTML, | |
| | DHTML, Javascript, Perl CGI", BPB, 2004 | _ / | |
| 2. | Douglas E Comer: The Internet, PHI, Second Edition, May 2000 | | |
| 3. | Xavier C : World Wide Web Design With HTML, Tata McGraw Hill Publication, 2000 | | |

| Paper Code: CCCS206 | | | Total Credit : 4 Total Marks : 70 |
|---|---|----|--|
| Title of Paper: Fundamental of Internet and Web Programming | | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions based on Table Designing. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Java Script Program. (With Internal Option) | 08 | |

| Paper Code: CCCS207 Total C | | | | |
|---|---|----------------------------------|--|--|
| Title of Paper: Prac | tical Based on CCCS205 | Total Marks : 70 | | |
| | | Time : 3 Hrs | | |
| | | | | |
| Unit | Description | Weighting | | |
| | Recursion and Backtracking | | | |
| 1. Solving Tower | of Hanoi Problem. | | | |
| 2. Given an array | , check whether the array is sorted or not using re | ecursion. | | |
| 3. Generate all th | e binary strings with n bits. Assume $A[0n-1]$ is | an array of size <i>n</i> . | | |
| | Linked List | | | |
| 4. Implement Sta | ck using Linked List. | | | |
| 5. Check whether | the given Linked List is either null terminated o | r not, if there is a cycle, find | | |
| the start node of | the start node of the loop. | | | |
| 6. Insert a node in sorted Linked List. | | | | |
| 7. How to display | a Linked List from end? | | | |
| | Stacks and Queues | | | |
| 8. Evaluate postf | ix expressions with Stack. | | | |
| 9. Given a Stack, | how to reverse the Stack using only Stack operat | tions push and pop. | | |
| 10. How to impler | nent three Stacks in one array? Every node in arra | ay should be used. | | |
| 11. Given an array | of elements, replace every element with nearest | greater element on the right | | |
| of that element | I. | | | |
| 12. Implement a (| Queue using just two Stacks, How can we efficient | iently implement one Stack | | |
| using two Que | ues. | | | |
| 13. Given a string, | check whether it is palindrome or not using a do | uble ended queue. | | |
| | Trees | | | |
| 14. Searching an element in a binary tree (with and without recursion). | | | | |
| 15. Inserting an element into a binary tree. | | | | |
| 16. Finding deeper | st node of the binary tree. | | | |
| 17. For a given bir | hary tree (not threaded) how do we find a pre-order | er successor? | | |
| NOTE: This list | is not exhaustive; the instructor should form | ulate appropriate problem: | | |
| wherever required. | | | | |

| Paper Code | e: CCCS207 | Total Credit : 4 Total Marks : 70 | |
|--------------|--------------------------------|--------------------------------------|-------------|
| Title of Pap | er: Practical Based on CCCS205 | Time : 3 Hrs | |
| | | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 |
| | Q.1 (B) Practical | 50 | |

| Pa | ape | r Code: CCCS208 | Total Credit : 4 | | | |
|----|---|--|------------------------|--|--|--|
| Ti | itle | Total Marks : 70 | | | | |
| | | Time : 3 Hrs | | | | |
| | | | | | | |
| | | Description | | | | |
| | 1. | Develop a simple web page having attractive background color, text color. | | | | |
| | 2. | Develop a HTML document for a web page of your course detail. Design a | page with attractive | | | |
| | | font, suitable heading and horizontal rules (use paragraph and line tag). | | | | |
| | 3. | Develop a HTML document with an example of Ordered Lists and Unordered I | List. | | | |
| | 4. | Develop a HTML document for a web page of your favorite teacher. Design a | page with attractive | | | |
| | | color combination, suitable headings and appropriate text styles. | | | | |
| | 5. | Develop a HTML document for a web page having the Image and also indica | te the another image | | | |
| | | as background. | | | | |
| | 6. | Develop a HTML document for a web page with an example of Table | Format having the | | | |
| | | information of Hardware and Software used in your lab. | | | | |
| | 7. | Develop a HTML document for a web page of your Bio-Data with use of Table | e tag. | | | |
| | 8. | Develop a HTML document for a web page with use of frame and frameset tag | | | | |
| | 9. | Develop a HTML document for a web page which linking with another pages. | | | | |
| | 10. | Develop a HTML document having the Student Information Form.(Use all nece | essary tags) | | | |
| | 11. | Develop an HTML document which will use style sheets. Use inline style she | eet and external style | | | |
| | | sheet. | | | | |
| | 12. | Develop an HTML document for a web page of your favorite National Lead | der. Design the page | | | |
| | with an attractive color combination, with suitable headings and horizontal rules. | | | | | |
| | 13. Write an HTML document with an example of Table format to print your Telephone Bill. | | | | | |
| | Write an HTML code for designing the subscription form of mail account in the e-mail website with appropriate fields. | | | | | |
| | 14. Looping and Branching practices of Java Script | | | | | |
| | 15. User defined practices of Java Script | | | | | |
| | 16. | Java Script implementation of objects | | | | |
| | | | | | | |

| Paper Code : | Total Credit : 4 Total Marks : 70 | | | | | | | |
|----------------|--|----|-------------|--|--|--|--|--|
| Title of Paper | Time : 3 Hrs | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Unit | Unit Description | | Total Marks | | | | | |
| I | Q.1 (A) Viva – Voce | 20 | 70 | | | | | |
| | Q.1 (B) Practical | 50 | | | | | | |

| Paper | Total Credit : 4 | | | |
|----------|---|---|--|--|
| Title | Total Marks: 70 | | | |
| | | Time : 3 Hrs | | |
| | | | | |
| Unit | Description | Weighting | | |
| Omt | Sot Theory | weighting | | |
| | Introduction of Set | | | |
| Т | Types of Sets | | | |
| L | Operations on Sets | 20% | | |
| | Venn Diagram | 2070 | | |
| | Laws related to set theory | | | |
| | Numerical based on operations on sets and Venn diagram | | | |
| | Application and Importance of Set Theory in Computing Science | | | |
| | Matrices | | | |
| | Introduction of Matrix | | | |
| п | Types of Matrices | 20% | | |
| | Operations on Matrices | 2070 | | |
| | Cramer's Rule | | | |
| | Adjoin Minor and Inverse of a Matrix | | | |
| | Solving equation using matrices | | | |
| | Determinant of Matrix | | | |
| | Application and Importance of Matrices in Computing Science | | | |
| | Graph Theory | | | |
| | Introduction of Graph | | | |
| ш | Multi-graph. Degree of vertex | 20% | | |
| | Paths, connectivity, sub-graph | 2070 | | |
| | Connected components, cut points, bridges | | | |
| | Special Graphs: complete, regular and bipartite graphs | | | |
| | Matrices and Graphs | | | |
| | Application and Importance of Graph Theory in Computing Science | | | |
| | Functions | | | |
| | Introduction to Functions | | | |
| IV | Domain and Range | 20% | | |
| | Types of Functions | | | |
| | Numerical based on functions | | | |
| | Elementary Data Analysis | | | |
| | Discrete and continuous frequency distribution, | | | |
| V | Cumulative Frequency, Distribution, | 20% | | |
| | Graphical Representation, | | | |
| | Measures of central tendency: Mean, Median, Mode. | | | |
| Basic ' | Text & Reterence Books :- | · · · /T. · · · · · · · · · · · · · · · · · · · | | |
| 1. | S.Lipscnutz and Marc Lars Lipson : Discrete Mathematics, Schaum's series | es (Interational | | |
| | Cultion, 1992). Vinou Kuman Disarata Mathamatias (DDD Dublication Einst edition 2000 | | | |
| <u> </u> | v may Kumar: Discrete Mathematics (BPB Publication, First edition-2002 | 4 | | |
| 3. | S. C. Gupta, Fundamentals of Statistics, Himalaya Publishing House, 2004. | | | |

| Paper | Total Credit : 4 Total Marks : 70 | | | | | |
|-------|---|----|-------------|--|--|--|
| Title | Time : 3 Hrs | | | | | |
| | | | | | | |
| Unit | Description | | Total Marks | | | |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | | |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | | | | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | | | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | | |
| | Q.3 (B) Medium / Long Questions based on Table Designing. (With Internal Option) | 08 | | | | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | | | | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | | | | |

| Pape | Total Credit : 4 | | | |
|-------|--|-----------|--|--|
| Title | Title of Paper: Elements of C Programming | | | |
| | | | | |
| | | | | |
| | | | | |
| Unit | Description | Weighting | | |
| | Concept of Algorithm, Flowchart and Languages | | | |
| | Concept of an algorithm and a flow chart, need and definition | | | |
| | Symbols used to draw a flow chart | | | |
| | Typical (primitive) examples of flow charts and algorithms | 20% | | |
| Ι | Generations of computer languages | | | |
| | High-level and low-level languages | | | |
| | Translators, Introduction to editors and details about one of the | | | |
| | editors | | | |
| | Basics of Programming | | | |
| | Problem analysis, Variables, expressions & manipulation | | | |
| II | Data types in a high-level language, operators, I/O statements, | 20% | | |
| | Assignment statements, Control strategies, Conditions | | | |
| | Structured Programming and Arrays, Strings | | | |
| | Loop statements | | | |
| III | Common standard library functions | 20% | | |
| | Arrays, Strings and string handling functions | | | |
| | Functions and Pointers | | | |
| | Functions and Working with functions, | | | |
| IV | Pointer, Pointer Arithmetic and Pointer Manipulations, | 20% | | |
| | Calling functions, passing arguments | | | |
| | Structure, Union and File Management | | | |
| | Structure and Union, | | | |
| V | File Management, | 20% | | |
| | Command Line Arguments | | | |
| Basic | Text & Reference Books :- | | | |
| 1. | Balaguruswami : Programming in ANSI C., Tata McGraw Hill Publica | tion. | | |
| 2. | Kernighan B., Ritchie D. : The C Programming Language, Prentice Hal | 1. | | |
| 3. | Cooper H. & Mullish H : The Sprit of C, Jaico Publication House, New | Delhi. | | |

| Paper C | Total Credit : 4 Total Marks : | | |
|---|--|----|-------------|
| Title of | 70 Time : 3 Hrs | | |
| | | | |
| Unit | Description | | Total Marks |
| | Q.1(A) Multiple Choice Questions (MCQ) | 06 | 14 |
| All | Q.1 (B) Short Questions (Definitions, Blanks, Full Forms, True/False, Match the Following) | 08 | |
| I, II | Q.2(A) Medium Questions (Any Two) | 06 | 14 |
| | Q.2(B) Medium Questions / Long Questions (Any Three) | 08 | |
| II, | Q.3(A) Medium Questions / Long Questions (Any Two) | 06 | 14 |
| III | Q.3(B) Medium Questions / Long Questions (Any Two) | 08 | |
| III,IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) C Program. (With Internal Option) | 08 | |
| IV,V Q.5 (A) Short / Medium Questions (With Internal Option) 06 | | 06 | 14 |
| | Q.5 (B) C Program. (With Internal Option) | 08 | |

| Paper | r Code: CECS205 | Total Credit : 4 | | | |
|-------|---|--------------------|--|--|--|
| Title | Title of Paper: Digital Computer Electronics | | | | |
| | | Time : 3 Hrs | | | |
| | | | | | |
| | | | | | |
| Unit | Description | Weighting | | | |
| | Number Systems- Binary, Octal, Decimal, Hexadecimal, Floating | | | | |
| Ι | Point representation of numbers, Number base conversion, Binary | 20% | | | |
| | Addition, Subtraction, Multiplication, Division, 2'complement | | | | |
| | arithmetic, BCD Numbers, The ASCII code ,The EXCESS-3 code | | | | |
| | ,The Gray code, Error correcting and correcting method | | | | |
| | Gates and Boolean Algebra | | | | |
| II | Gates, Boolean algebra, Truth tables | 20% | | | |
| | Circuit equivalence, De Morgan's theorem | | | | |
| | Basic Digital Logic Circuits-I | | | | |
| III | Usage of Karnaugh maps | 20% | | | |
| | Encoders, decoders, comparators | | | | |
| | Basic Digital Logic Circuits-II | | | | |
| IV | Half adder, full adder, binary adder-subtractor | 20% | | | |
| | Multiplexers | | | | |
| | Memory Elements & Counters | | | | |
| V | D Flip flops, Shift-left, shift-right and controlled buffer registers | 20% | | | |
| | Ring counters | | | | |
| Basic | Text & Reference Books :- | | | | |
| 1. | Malvino A. P.: Digital Computer Electronics, 2nd Edition, Tata McG | raw, Hill Pub. Co. | | | |
| | Ltd., New Delhi, 1990. | | | | |
| 2. | Gothmann, William H. : Digital Electronics - An Introduction to Th | eory and Practice, | | | |
| | 2nd | | | | |
| | Edition,PHI,1982. | | | | |
| 3. | Tanenbaum A. S. : Structured Computer Organization, 3rd Edition, Prentice-Hall of India | | | | |
| | Pvt. Ltd., 1993. | | | | |
| 4. | Hall Douglas V. : Microprocessors and Interfacing - Programmin | g and Hardware., | | | |
| | McGraw Hill Book Company, 1986. | | | | |
| 5. | M.M. Mano : Computer System Architecture, 3rd Edition, Pearson Edu | ication, 2000. | | | |

| Paper | Total Credit : 4 Total Marks : 70 | | | | |
|---------------|---|----|-------------|--|--|
| Title | Title of Paper: Digital Computer Electronics | | | | |
| | | | | | |
| T T •4 | | | | | |
| Unit | Description | | Total Marks | | |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | |
| III | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | |
| IV | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |

Master of Science (Computer Applications & Information Technology) Semester III

| Course Type | Course | Name of Course | Theory / | Credit | Exam | Com | ponent of M | larks |
|--------------------|---------|---|-----------|--------|----------|----------|-------------|-------|
| | Code | | Practical | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS309 | Object Oriented Programming with C++ | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS310 | Database Management System – I | Theory | 4 | 3 | 30 | 70 | 100 |
| Core Courses | CCCS311 | Practical Based on CCCS309 | Practical | 5 | 3 | 30 | 70 | 100 |
| | CCCS312 | Practical Based on CCCS310 and elective | Practical | 5 | 3 | 30 | 70 | 100 |
| | | courses | | | | | | |
| Foundation Courses | FCCS304 | Mathematical Foundation of Computer | Theory | 4 | 3 | 30 | 70 | 100 |
| | | Science-II | | | | | | |
| Elective Courses | CECS306 | Operating Systems | Theory | 2 | 3 | 30 | 70 | 100 |
| (Any One) | CECS307 | Advanced Computer Architecture | Theory | 2 | 3 | 30 | 70 | 100 |
| Total | | | | 24 | | 180 | 420 | 600 |

| Paper | Total Credit : 4 | | |
|---------|---|-----------------|--|
| Title o | Title of Paper: Object Oriented Programming with C++ | | |
| | | Time : 3 Hrs | |
| | | | |
| Unit | Description | Weighting | |
| Omt | Object Oriented Programming (OOP) Concents and | weighting | |
| | Introduction to C++ | | |
| I | Structured programming vs. object oriented programming | 20% | |
| _ | Basic OOP concepts : objects . classes . encapsulation . data hiding . | _0,0 | |
| | inheritance, polymorphism | | |
| | Introduction to $C++$: structure of a $C++$ program , data types , | | |
| | variables, constants, expressions, statements and operators | | |
| | Usage of header files | | |
| | Control flow statements : if else, for loop, while loop, do while loop, | | |
| | switch, break and continue | | |
| | Basic I/O in C++ | | |
| II | Arrays in C++ : introduction, declaration, initialization of one , two | 20% | |
| | and | | |
| | multi-dimensional arrays, operations on arrays | | |
| | Working with strings : introduction, declaration, string manipulation | | |
| | and arrays of string | | |
| | Classes and objects in C++ | | |
| | Constructors : default, parameterized, copy, constructor overloading | | |
| | and destructor | | |
| | Access specifiers, implementing and accessing class members | 200/ | |
| | working with objects: constant objects, nameless objects, live | 20% | |
| | Objects, arrays of objects. | | |
| тт | nitroduction to functions, notary and user-defined functions, | | |
| 111 | Functions overloading inline functions friend functions and virtual | | |
| | functions | | |
| | Inheritance: Introduction, derived class declaration, forms of | | |
| | inheritance. Inheritance and member access ability, constructor and | | |
| | destructor in derived class, construction invocation and data member | | |
| | initialization. | | |
| | Operator overloading : Introduction, overloaded operators, unary | | |
| | operator overloading, operator keyword, operator return values, | | |
| IV | binary operators overloading, overloading with friend function | 20% | |
| | Usages of Pointers in C++ : basic overview | | |
| | Dynamic memory allocation | | |
| | Files : Introduction and applications | | |
| V | File operations: open, read, write, seek and close, Command Line | | |
| | Arguments. Execution Handling Components of execution handling and its | 200/ | |
| | example | 20% | |
| | Namespaces: The Name conflict problem Using Namespaces | | |
| | Defining Namespaces, Unnamed Namespaces, Nested namespaces, | | |
| | Namespace Aliases, std Namespace | | |
| Basic ' | Fext & Reference Books :- | | |
| 1. | Object Oriented Programming with C++ by E. Balagurusamy, Tata Mc | Graw-Hill. | |
| 2. | Object Oriented Programming in Turbo C++ by Robert Lafore, Galgoti | a Publications. | |
| 3. | Programming with ANSI C++ by Bhusan Trivedi | | |
| Paper C | ode: CCCS309 | | Total Credit : 4 Total Marks : 70 |
|------------|---|----|--|
| Title of] | Title of Paper: Object Oriented Programming with C++ | | |
| | | | |
| | | | |
| Unit | Description | | Total Marks |
| | Q.1 (A) Multiple Choice Question. | 06 | 14 |
| All | Q.1 (B) Answer the following. (With Internal Option) (Definitions, Blanks, Full Forms, True/False, Match the Following) | 08 | |
| T 11 | Q.2 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| 1, 11 | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| пп | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| 11, 111 | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III, | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| IV | Q.4 (B) C++ Program. (With Internal Option) | 08 | |
| IV, V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) C++ Program. (With Internal Option) | 08 | |

| Paper | Code: CCCS310 | Total Credit : 4 |
|--------------|---|------------------|
| Title | Title of Paper: Database Management System – I | |
| L | | Time : 3 Hrs |
| | | |
| | | |
| Unit | Description | Weighting |
| - | Database Management System | |
| | Introduction | 20% |
| | Definition of DBMS | |
| | File processing system Vs DBMS | |
| | - Limitation of file processing system | |
| | Comparison of File processing system and DBMS | |
| | Advantages and Disadvantages of DBMS | |
| | Users of DBMS | |
| | - Database Designers | |
| | - Application programmer | |
| | - Sophisticated Users | |
| | - End Users | |
| | Capabilities of good DBMS | |
| | Overall System structure | |
| | Data Models | |
| II | Introduction | 20% |
| | Object Based Logical Model | |
| | Record Base Logical Model | |
| | - Relational Model, Network Model, Hierarchical Model | |
| | Entity Relationship Model | |
| | - Entity Set, Attribute, Relationship Set | |
| | Entity Relationship Diagram (ERD) | |
| | Extended features of ERD | |
| | Relational Databases | |
| ш | Introduction | 20% |
| | Terms | |
| | - Relation Tuple Attribute Cardinality Degree Domain | |
| | Kevs | |
| | - Super Key Candidate Key Primary Key Foreign Key | |
| | Relational Algebra Operations | |
| | - Select Project Union Difference Intersection Cartesian | |
| | Product Natural Join | |
| | Relational Database Design | |
| IV | Introduction Anomalies of un normalized database | 20% |
| 1, | Normalization | 2070 |
| | Normal Forms: 1 NF 2 NF 3 NF 4 NF BCNF DKNF | |
| | SOL (Structured Ouery Language) | |
| \mathbf{V} | Introduction History Of SOL Basic Structure | 20% |
| • | DDI Commands: CREATE ALTER DROP TRUNCATE | 2070 |
| | DDL Commands: CREATE, ALTER, DROI, TRONCATE DML Commands: SELECT INSERT LIPDATE DELETE | |
| | Clauses · FROM GROUP RV HAVING ORDER RV IN | |
| | Aggregate Functions: AVG COUNT FIRST LAST MIN MAY | |
| | SIM | |
| | Simple Queries and Nested Queries | |
| | MS Access Forms and Reports | |
| Racio | Text & Reference Books - | |
| 1 | Database System Concepts Ry Henry Korth and A Silberschatz | |
| 2 | An Introduction to Database System by Rinin Desai | |

| Paper Code: CCCS310 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----------|--|
| Title | of Paper: Database Management System – I | | Time : 3 Hrs |
| | | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| П | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 08 | 14 |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | 14 |

| Paper Code: CCCS311 | Total Credit : 4 |
|---|-------------------------|
| Title of Paper: Practical Based on CCCS309 | Total Marks : |
| | 70 |
| | Time : 3 Hrs |
| | |
| | |
| Description | |
| 1 Implementation of a scope resolution operator. Manipulators and | l reference veriable |
| 2. Implementation of feature of a inline function | |
| 2. Implementation of user defined functions and its various feature | 2 |
| 4. Implementation of Class and its basic feature | , |
| 5. Implementation of arrays within a class | |
| 5. Implantation of alrays within a class. | |
| 7 Concept of "Array of Object" | |
| 8 Concept of "Object as a Arguments" | |
| 9. Implementation of a friend function and its various features | |
| 10 Concept of a returning objects | |
| 10. Concept of a retaining objects. | |
| 12 Concept of constructing matrix objects | |
| 13 Implementation of destructors | |
| 14 Implantation of overloading various operator | |
| 15 Implementation of inheritance and its types | |
| 16. Concept of virtual base class | |
| 17. Implementation of pointers to objects. | |
| 18 Implementation of <i>this</i> pointer | |
| 19. Implementation of virtual function | |
| 20 Implantation of file and its various operations | |
| 20. Implantation of accention handling | |
| | |

| Paper Code : CCCS311 | | | Total Credit : 4 Total Marks : 70 | | |
|--|---------------------|--------------|--|--|--|
| Title of Paper: Practical Based on CCCS309 | | Time : 3 Hrs | | | |
| | | | | | |
| | | | | | |
| Unit | Description | | Total Marks | | |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 | | |
| | Q.1 (B) Practical | 50 | | | |

| Pape | r Code: | CCCS312 | Total Credit : 4 |
|-------|---------|---|---|
| Title | of Pape | er: Practical Based on CCCS310 and Elective Courses | Total Marks : |
| | | | 70 |
| | | | Time: 3 Hrs |
| | | | |
| Unit | | Description | |
| | 1. | To create ER diagrams using MS Access and at least one other | such tool e.g. MS |
| | | Visio. | |
| | 2. | To create a database from given ER diagram. | |
| | 3. | To understand Primary Key constraint. (Given an ERD, the stussuitable primary keys for each table.) | dents shall identify |
| | 4. | To understand Foreign Key constraint. (Identify suitable relation keys and granularity of the relationship for given ERD.) | nships and foreign |
| | 5. | The instructor shall formulate appropriate laboratory exercises into good understanding of : a. Data definition commands: CREATE, ALTER, DROP ar b. Data manipulation commands: INSERT, UPDATE and S c. Clauses in SQL : FROM, GROUP BY, HAVING, ORDE d. Nested queries e. Aggregate functions: AVG, COUNT, FIRST, LAST, MI f. Project, Union, Difference, Intersection, Cartesian Projoin. | s which can result ad TRUNCATE. ELECT. ER BY, IN N, MAX, SUM oduct and Natural |
| | 6. | To create forms and reports in MS Access: student should be a self sufficient application in MS Access. | ble to create a tiny |
| | 7. | To understand need of normalization: the instructor shall press spreadsheet and show anomalies in it (e.g. data redundancy, mu and show how relational database can be used to remove these an | ent students with a ltiple updates etc.) nomalies. |
| | 8. | To normalize given database (or spreadsheet) up to given normal | form. |
| | 9. | To understand the differences between various normal forms. | |
| | 10 | . To understand design of a real life database used by an organizat | ion. |

| Paper Code : | Total Credit : 4 Total Marks : 70 | | | |
|---------------|--|-------|--------------|--|
| Title of Pape | r: Practical Based on CCCS310 and Elective Co | urses | Time : 3 Hrs | |
| | | | | |
| | | | | |
| Unit | Description | | Total Marks | |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 | |
| | Q.1 (B) Practical | 50 | | |

| Paper | Code: FCCS304 | Total Credit : 4 |
|-------|--|-------------------------|
| Title | of Paper: Mathematical Foundation of Computer Science – II | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| | Connectives | |
| Ι | Introduction | 20% |
| | Statements, | |
| | Connectives, Negation, Conjunction, Disjunction, | |
| | Conditional and Bi-conditional, | |
| | Equivalence of formulae and well-formed formulae, | |
| | Two state devices, Gate and module, | |
| | Two level networks, NOR and NAND gates. | |
| | Poset and Lattices | 200/ |
| 11 | Introduction, Posets, Lattices as Posets, Lattices as algebraic | 20% |
| | systems, Sublattices, Complete Lattices, Bounds of Lattices, | |
| | Algebraic System | |
| ш | Binary operations Semigroups | 20% |
| 111 | Groups Homomrphism Rings Integral | 2070 |
| | domains Fields | |
| | Data Analysis – I | |
| IV | Measures of dispersions: range; quartile deviation; mean deviations, | 20% |
| | Standard deviations | |
| | Data Analysis – II | |
| | Introduction to Correlation, | 20% |
| V | Methods of finding coefficient of correlation | |
| | Rank Correlation | |
| Basic | Text & Reference Books :- | (T) |
| 1. | S.Lipschutz and Marc Lars Lipson : Discrete Mathematics, Schaum's serie | es(Interational |
| • | edition,1992) | |
| 2. | Vinay Kumar: Discrete Mathematics (BPB Publication, First edition-2002) | 1 |
| 5. | 5. C. Gupta, Fundamentals of Statistics, Himalaya Publishing House, 2004 | + |

| Paper Code: FCCS304 Title of Paper: Mathematical Foundation of Computer Science - II | | | Total Credit : 4 Total Marks : 70 Time : 3 Hrs |
|--|---|----|--|
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |

| Paper | Code: CCCS306 | Total Credit : 4 | |
|-------|--|-------------------------|--|
| Title | of Paper: Operating Systems | Total Marks : | |
| | | 70 | |
| | | Time : 3 Hrs | |
| | | | |
| Unit | Decovintion | Weighting | |
| Umt | Introduction to Operating System Functions of OS | weighting | |
| | Different types of Operating Systems: Pool time, Multi user, Time | | |
| т | sharing | | |
| 1 | OS Structure – Monolithic Lavered Virtual Machine Client-Server | 20% | |
| | CPU Scheduling: Introduction to process process control block | 2070 | |
| | process scheduling | | |
| | FCFS Scheduling SIF scheduling Priority scheduling Round Robin | | |
| | Scheduling | | |
| п | Memory Management: Concept. Basic memory management | 20% | |
| | techniques:. | | |
| | Swapping, Virtual Memory System, Demand Paging | | |
| | 1) The Optimal Page Replacement Algorithm | | |
| | 2) The NRU Page Replacement Algorithm | | |
| | 3) The FIFO Page Replacement Algorithm | | |
| | 4) The second change Page Replacement Algorithm | | |
| | 5) The clock Page Replacement Algorithm | | |
| | Introduction to Cooperating process | | |
| | Process Synchronization, | | |
| III | Critical Section Problem | 20% | |
| | Two process solution, Multiple process solution | | |
| | Semaphores and race condition, | | |
| | Deadlock and characterization, Starvation, RAID | | |
| | Introduction to Linux System & History | | |
| | Features of Linux | | |
| IV | Introduction to File System & Memory Management | 20% | |
| | Basic Commands: login, logout, date, man, pwd, who, whoami, dir, | | |
| | ls, cd, mkdir, rmdir | | |
| | Use of Wild card characters and introduction to vi editor | | |
| | Tures of EAD use of shmed sommand | | |
| | Basic commands like on my rm ray file redirection | | |
| | gren cut paste find sort commands with example | | |
| V | Introduction to shell script: execution of it shell script variable expr | 20% | |
| · | test commands | 2070 | |
| | Control structure: if if else, case structure | | |
| | Iteration: while, for construct, break, continue, exit commands | | |
| Basic | Basic Text & Reference Books :- | | |
| 1. | Andrew S. Tanenbaum: Operating System deign & Implementati | on, Prentice Hall | |
| | International | | |
| 2. | James Peterson and Abraham Silberschatz: Operating System Concept, | Addition Wesley | |
| 3. | Linux Commands Instant reference – Bryan Pfaffenberger, BPB Public | ation | |
| 4. | Advanced Linux Programming – Samuel, Techmedia Publications | | |

| Paper Code: CCCS306 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | of Paper: Operating Systems | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Shell Script Program. (With Internal Option) | 08 | |

| Paper | r Code: CECS307 | Total Credit : 4 |
|-------|--|-------------------------|
| Title | of Paper: Advanced Computer Architecture | Total Marks : |
| | | 70 |
| | | Time: 3 Hrs |
| | | |
| Unit | Description | Woighting |
| Umt | Fundamentals of Computer design: Instruction set principles and | weighting |
| | examples, classifying instruction set - memory addressing, type and | |
| | size of operands - addressing modes for signal processing-operations | |
| | in the instruction set, instructions for control flow, encoding an | 200% |
| т | instruction set Overview of Parallel Processing and Pinelining | 20 /0 |
| - | Processing Necessity of high performance Constraints of | |
| | conventional architecture Parallelism in uniprocessor system | |
| | Evolution of parallel processors Architectural Classification | |
| | Applications of parallel processing | |
| | Parallel Computer methods: Multiprocessor and multi computers – | |
| | Shared-Memory multiprocessors, Distributed-Memory | |
| II | Multiprocessors. Multi-vector and SIMD computers. PRAM and | 20% |
| | VLSI models - Architectural development tracks - Multiple- | |
| | Processor Tracks, Multi-vector and SIMD Tracks, Multi-threaded | |
| | and Dataflow Tracks. Program and Network properties: Conditions | |
| | of parallelism - Program partitioning and scheduling - Program flow | |
| | mechanism - System interconnect architecture. Principles of Scalable | |
| | Performance: Performance metrics and measures - Speedup | |
| | performance laws - Scalability analysis and approaches | |
| | Processors and Memory Hierarchy: Advanced processor technology - | |
| тт | Super scalar and vector processors - Memory hierarchy technology - | 200/ |
| 111 | Virtual memory technology. Bus, Cache and Shared Memory: Bus | 20% |
| | System-Cache memory organizations-shared memory organization- | |
| | Instruction level Parallelism & Data Parallel Architectures: | |
| | Instruction level parallelism (ILP)- over coming data hazards- | |
| IV | reducing branch costs -high performance instruction delivery- | 20% |
| | hardware based speculation- limitation of ILP - ILP software | 2070 |
| | approach- compiler techniques- static branch protection- VLIW | |
| | approach- H.W support for more ILP at compile time- H.W verses | |
| | S.W solutions - SIMD Architectures – Associative and Neural | |
| | Architectures - Data-Parallel Pipelined and Systolic Architectures - | |
| | Vector Architectures | |
| | Multiprocessors and Thread level parallelism: Multi-threaded | |
| | Architectures, Distributed Memory MIMD Architectures, Shared | |
| V | Memory Architectures. Architecture of Multi-threaded processors, | 20% |
| | Latency hiding techniques, Principles of multithreading, Issues and | |
| | Solutions. Synchronization and Multiprocessing modes – Shared- | |
| | Manning programs onto Multicomputers | |
| Basic | Text & Reference Books :- | |
| 1. | Dezso Sima, Terence Fountain, Peter Kacsuk, "Advanced Computer | Architectures – A |
| | Design Space approach", Pearson Education. 2009 | |
| 2. | Kai Hwang, "Advanced Computer Architecture – Parallelism, Scalability. | , Programmability". |
| - | Tata McGraw-Hill, 2008 | <i>c , , ,</i> |
| 3. | John L. Hennessey and David A. Patterson, "Computer architecture | e – A quantitative |
| | approach", Morgan Kaufmann / Elsevier Publishers, 5th Edition | _ |

| Paper Code: CECS307 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--------------------------------------|
| Title | of Paper: Advanced Computer Architecture | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions based on Table Designing. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |

| Course Type | Course | Name of Course | Theory / | Credit | Exam | Com | ponent of M | arks |
|--------------------|---------|---|-----------|--------|----------|----------|-------------|-------|
| | Code | | Practical | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS413 | Windows Programming with VB.NET | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS414 | Database Management System – II | Theory | 4 | 3 | 30 | 70 | 100 |
| Core Courses | CCCS415 | Practical Based on CCCS413 | Practical | 5 | 3 | 30 | 70 | 100 |
| | CCCS416 | Practical Based on CCCS414 and elective | Practical | 5 | 3 | 30 | 70 | 100 |
| | | courses | | | | | | |
| Foundation Courses | FCCS405 | Computer Oriented Numerical Methods | Theory | 4 | 3 | 30 | 70 | 100 |
| Elective Courses | CECS408 | Advanced Data Structures | Theory | 2 | 3 | 30 | 70 | 100 |
| (Any One) | CECS409 | System Analysis and Design | Theory | 2 | 3 | 30 | 70 | 100 |
| Total | | | | 24 | | 180 | 420 | 600 |

Master of Science (Computer Applications & Information Technology) Semester IV

| Paper | Code: CCCS413 | Total Credit : 4 |
|----------------|---|------------------|
| Title | of Paper: Windows Programming with VB.Net | Total Marks: 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Cint | .NET Architecture, .NET Languages, Microsoft Intermediate | ,, eighting |
| | Language | |
| | (MSIL), The Just-In-Time (JIT) compiler, Working with Assemblies, | 20% |
| | The | |
| Ι | .NET framework class library | |
| | VB.NET - introduction, applications and types of project | |
| | Introduction to Visual Studio IDE | |
| | Creating simple Windows Application using VB.NET | |
| | Variables, data types, constants and operators | |
| | Type casting, Boxing and Unboxing, | |
| | Working with arrays and strings | |
| II | Creating simple Windows Application using VB.NET | 20% |
| | Use of conditional statement (if), multibranaching statement (select) | |
| | and WithEnd With statement, | |
| | Looping Statement: DO, FOR, FOR EACHNEXT and WHILE, | |
| | Working with EXIT, CONTINUE and WITH statements | |
| | Working with procedures – introduction, types, use of parameters, | |
| | parameter passing, calling procedures | |
| | OOP concepts - Encapsulation, Inheritance, Interfaces and | |
| | Polymorphism | |
| | Working with modules, classes (partial) and namespaces | |
| | Working with Windows Forms – introduction, life cycle, basic | 20% |
| | properties, | |
| ш | Working with SDI and MDI forms | |
| 111 | Working with basic controls – Button CheckBox CheckedListBox | |
| | ComboBox DateTimePicker GroupBox HScrollBar RadioButton | |
| | VscrollBar Label ListBox PictureBox TextBox and Time controls | |
| | Working with advanced controls – LinkLabel, RichTextBox, | |
| | ColorDiolog. FontDialog. TreeView | |
| | Working with modules, classes (partial) and namespaces | |
| | ADO.NET – introduction and applications | |
| IV | ADO.NET – architecture (connected and disconnected) | 20% |
| | Database connectivity using ADO.NET | |
| | Use of Data sources, Server Explorer and working with DataSet | |
| | Populating data in a DataGridView | |
| | Error Handling: exception, structured exception using trycatch and | |
| V | final statement | |
| | ArrayList Collection ,HashTable, Searching and Sorting an Array, | |
| | SortedList Class, Char Class, String Class, DateTime Class, | 20% |
| | StringBuilder Class, Serialisation Class, TimeSpan Class, Directory | |
| | Class, File Class, DirectoryInfo Class, FileInfo Class, Path Class | |
| | File Access by FileStream, StreamReader, Stream Writer, | |
| D - • • | BinaryKeader and Binary Writer | |
| Basic 1 | Text & Reference Books :- Mastaring VB Nat. by E. Patroutson | |
| 1. 2 | VR Net Black Books, by Stoven Holzner | |
| 4. | V D.INCI DIACK DOUKS, UY SIEVEII HOIZIIEI. | |

| Paper Code: CCCS413 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----------|--------------------------------------|
| Title of] | Title of Paper: Windows Programming with VB.Net | | |
| | | | |
| Unit | Description | | Total Marks |
| | Q.1 (A) Multiple Choice Question. | 06 | 14 |
| All | Q.1 (B) Answer the following. (With Internal Option) (Definitions, Blanks, Full Forms, True/False, Match the Following) | 08 | |
| тп | Q.2 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| 1, 11 | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| II, III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 08 | 14 |
| III, | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| IV | Q.4 (B) VB.Net Program. (With Internal Option) | 08 | |
| IV, V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) VB.Net Program. (With Internal Option) | 08 | |

| Paper | Code: CCCS414 | Total Credit : 4 |
|-------------|--|--------------------|
| Title o | of Paper: Database Management Systems – II | Total Marks : 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| | PL/SQL | |
| Ŧ | Introduction, Block Structure, Data Types, Operators | 200/ |
| I | Control Structures: Loops, Conditional Statements, | 20% |
| | Procedures, Functions, Cursors, Triggers | |
| | Distributed and Parallel Databases | |
| | Reliability and Commit protocols, Fragmentation and Distribution, | |
| п | View Integration, Distributed database design, Distributed algorithms | 20% |
| | for data management, Heterogeneous and Federated Database | 2070 |
| | Systems. Parallel database Architectures and their merits and | |
| | demerits. | |
| | Database Transactions and Recovery Procedures | |
| | Transaction Processing Concepts, Transaction and System Concepts, | |
| | Desirable Properties of a Transaction, Schedules and Recoverability, | 200/ |
| 111 | Serializability of Schedules, Transaction Support in SQL, Recovery | 20% |
| | techniques, Database Backup, Concurrency control, locking | |
| | Techniques Granularity of Data Items | |
| | Emerging Databases | |
| | Multimedia database: Definition need of Multimedia databases | |
| | MDBMS Multimedia database components and structure | |
| | Multimedia database gueries and applications: Mobile database: | |
| | definition, their need, Characteristics, architecture, uses and | |
| TT 7 | limitations of mobile databases; Digital libraries: Introduction, | 200/ |
| IV | Objectives, types, components, myths, services, advantages, | 20% |
| | limitations, and comparison with traditional libraries; Spatial | |
| | databases: Basic concepts, need, types and relationships, architecture, | |
| | queries, indexing techniques, advantages and disadvantages of spatial | |
| | databases; Temporal database: basic concepts, characteristics, | |
| | components, merits and demerits. | |
| | Introduction to NoSQL and In-memory Databases | |
| | Introduction to NoSOL Advantages and Disadvantages of NoSOL | |
| | CAP Theorem Types of NoSOL Key - Value Based Columnar | |
| | Based, Graph Based, Document Based, Difference between RDBMS | |
| | and NoSQL with Use cases, Popular Industry Standard NoSQL, | |
| T 7 | Choose Best NoSQL according to requirement, Generate Data Model | 200/ |
| V | with NoSQL, Ways to access NoSQL (Shell, API, Connector, | 20% |
| | Client), Assignment: Performance Benchmarks | |
| | In Memory Databases | |
| | Introduction to In-memory DB / NoSQL, Requirements of In- | |
| | memory Databases with Use cases, Advantages and Disadvantages of | |
| | In memory DB / NoSQL, Scalability, Reliability, Availability, | |
| Do- | Custering & replication., Block Architecture of In- memory DB | |
| Basic 1 | Lexi & Reference Dooks :- Eundemontols of Database Systems (2 adition) Elmosti D and No | watha C D 2000 |
| 1. | Addison Wesley I ow Priced Edition | ivalle S.D., 2000, |
| 2 | An Introduction to Database System by Rinin Desai | |
| 3. | Oracle Database 10g PL/SOL Programming. Scott Urman. Oracle Press | S |
| | oracle Database rog r L/SQL r rogramming, Scott Orman, Oracle Fress | |

| Paper Code: CCCS414 | | r - - | Fotal Credit : 4 Fotal Marks : 70 | |
|---------------------|---|-------------|--------------------------------------|--|
| Title | of Paper: Database Management Systems – II | | Fime : 3 Hrs | |
| Unit | Description | | Total Marks | |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| | | | | |

| per Code: CCCS415 | Total Credit : | | | |
|---|--|--|--|--|
| tle of Paper: Practical Based on CCCS413 | 04 | | | |
| | Total Marks : | | | |
| | 70 | | | |
| | Time : 3 Hrs | | | |
| 1. Create a Visual Basic .Net program which used to find area of circle. | Area = PI * r^2 | | | |
| Create a Visual Basic .Net program which used to find area of recta = l*b | ngle. Area of rectangle | | | |
| Create a Visual Basic .Net program which used to find area of Tria =1/2*Base * Height | ngle. Area of Triangle | | | |
| Create a Visual Basic .Net program which used to find circumference of circle = 2 x PI * r | cumference of circle. | | | |
| 5. Create a Visual Basic .Net program which used to find perimeter of rectangle=2(1+b) | rectangle. Perimeter of | | | |
| 6. Create a .NET program which used to determine that student is student input by user. As given below. | pass or fail. Marks of | | | |
| 7. Create a Visual Basic .Net program which used to determine that negative or zero. Change the back colour of textbox based on result. | number is positive or | | | |
| 8. Create a Visual Basic .Net program which used to determine that gi or not? Print result in a label. | ven number is numeric | | | |
| 9. Create a Visual Basic .Net program which used to determine that in or not. | put string is valid date | | | |
| 10. Create a .NET program which used to display name of day based of For example if user enter 1 then display Sun, 2 then Mon as on, Usin | on input value by user. g if statement. | | | |
| 11. Create a .NET program which used to display 1 to 10 in a textbo Loop | x control Using While | | | |
| 12. Create a Visual Basic .Net program which used to display 1 to 10 in a textbox using various Do loop Display using Do while entry controlled as well as exit controlled Display using Do until entry controlled as well as exit controlled | | | | |
| 13. Create a Visual Basic .Net program which will print even and odd number. Also print sum of even numbers and odd numbers. | 1 numbers up to given | | | |
| 14. Implementation of looping and branching using VB.Net | | | | |
| 15. Implementation of concept of class using VB.Net | | | | |
| | | | | |

| Paper Code | e: CCCS415 | Total Credit : 4 Total Marks : 70 | | | | |
|--|---------------------|--|--------------|--|--|--|
| Title of Paper: Practical Based on CCCS413 | | | Time : 3 Hrs | | | |
| | | | | | | |
| | | | | | | |
| Unit | Description | | Total Marks | | | |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 | | | |
| | Q.1 (B) Practical | 50 | | | | |

| Paper Code: CCCS416 | Total Credit : |
|--|---|
| Title of Paper: Practical Based on CCCS414 and Elective Courses | 04 |
| | Total Marks : |
| | 70 Time : 2 Um |
| | Time: 5 Hrs |
| 1. The instructor shall formulate appropriate laboratory exercise good understanding of following PL/SQL concepts: | ses which can result into |
| a. Block structure (three practicals) | |
| b. Variables and data types (three practicals) | |
| c. Operators (three practicals) | |
| d. Control structures (three practicals) | |
| f Cursors (three practicals) | |
| g Triggers (three practicals) | |
| g. mggers (mee practicals) | |
| Hands-on understanding of any one distributed database (proinstallation, understanding basic functions, study of algorithm (At the end of the student shall write down the findings in the judge) | eferably Apache HBase): ns used and applications. journal.) |
| 3. The instructor shall formulate appropriate laboratory exercises good understanding of following TCL commands on Oracle data. Commit b. Rollback c. Savepoint | ses which can result into atabase: |
| 4. To understand the architecture and design issues in following: a. Multimedia databases b. Mobile databases c. Digital libraries d. Spatial databases e. Temporal databases | |
| 5. To get hands-on experience with NoSQL databases (e.g. HBas | e, MongoDB) |
| 6. To get hands-on experience with In-memory databases (e.g. A | erospike) |
| Elective | |
| Heap | |
| 1. Finding k-smallest element in mean-Heap. | |
| 2. Implement Queue using Heap. | |
| 5. Union of two given neaps. | udes at least one number |
| 4. Of the <i>n</i> lists of softed integers, find the smallest range that mer | uues at least one number |
| Sorting and Searching | |
| 5. Implementing sorting and searching algorithms (all algorithms as | per syllabus). |
| | / |
| Graphs | |
| 6. Count simple paths for given graph G has simple paths from so | ource S to destination D? |
| Assume that graph is represented using adjacent matrix. | |
| 7. Count the number of connected components of graph G which is r | epresented using adjacent |

- 7. Count the number of connected components of graph G which is represented using adjacent matrix.
- 8. Finding depth of directed acyclic graph (DAG).

| Paper Code : | Total Credit : 4 Total Marks : 70 | | | | |
|---------------|---|----|-------------|--|--|
| Title of Pape | Title of Paper: Practical Based on CCCS414 and Elective Courses | | | | |
| | | | | | |
| | | | | | |
| Unit | Description | | Total Marks | | |
| I | Q.1 (A) Viva – Voce | 20 | 70 | | |
| | Q.1 (B) Practical | 50 | | | |

| Paper | Code: FCCS405 | Total Credit : 4 |
|------------|--|--|
| Title | of Paper: Computer Oriented Numerical Methods | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| | | |
| Unit | Description | Weighting |
| Ι | Computer Arithmetic & Iterative Methods | |
| | Absolute, Relative and Percentage error | |
| | The method of successive bisection, an algorithm of bisection method to | |
| | find a root and examples | |
| | The method of false position | |
| | Secont method, illustration and algorithm | |
| | The method of successive approximations illustrations and algorithm | |
| П | Interpolation with Faual and Unequal Intervals | |
| | Interpolation with equal intervals-finite difference table | |
| | The Gregory- Newton formula for forward and backward interpolation | |
| | corresponding algorithms and examples | |
| | Interpolation for unequal intervals using Newton's formula for divided | |
| | differences | |
| | Lagrange interpolation | |
| | Central difference formulae | |
| | Extrapolation and corresponding examples | |
| III | Probability | |
| | Introduction and various related terms of probability, | |
| | Conditional probability, | |
| | Baye's Rule, | |
| | Application of Baye's rule | |
| IV | Regression | |
| | Introduction to Regression, | |
| | Difference between correlation and regression, | |
| X 7 | Regression lines for various data | |
| v | Litility of Time Series Analysis | |
| | Components of Time Series: Secular trend Seasonal variation | |
| | Cyclical variation and Irregular variation | |
| | Methods on measurement of components: The moving average method - | |
| | merits and limitations. Forecasting models and methods | |
| Basic ' | Fext & Reference Books :- | |
| 1. | Sastry S. S. : Introductory Methods of Numerical Analysis, Prentice Hall | of India Pvt. Ltd., |
| | 1986(2) | · · · · · · · · · · · · · · · · · · · |
| 2. | Salaria R S : Computer Oriented Numerical Methods, Khanna Book P | ublishing $\overline{\text{Co. Ltd.}}$, |
| | 2000(3) | |
| 3. | Fundamentals of statistics by S.C. Gupta, Himalaya Publishing House (6) | |
| 4. | Rajaraman V. : Computer Oriented Numerical Methods, Prentice Hall | of India Pvt. Ltd., |
| | 1983 | |

| Paper Code: FCCS405 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--------------------------------------|
| Title | Title of Paper: Computer Oriented Numerical Methods | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| l . | | | |

| Paper Code: CECS408 | | Total | Credit |
|---------------------|--|--------|---------|
| Title | of Paper: Advanced Data Structures and Algorithms | :04 | |
| | | Total | Marks : |
| | | 70 | |
| | | Time : | 3 Hrs |
| | | | 0 1115 |
| | | | |
| Unit | Description | Wei | ighting |
| Ι | Priority Queues and Heaps | 2 | 20% |
| - | What is a Priority Queue? Priority Queue ADT, Priority Queue, | _ | |
| | Applications, Priority Queue Implementations, Heaps and Binary | | |
| | Heaps, Binary Heaps, Heapsort, Priority Queues [Heaps]: Problems | | |
| | & Solutions | | |
| | Disjoint Sets ADT | | |
| | Introduction, Equivalence Relations and Equivalence Classes, | | |
| | Disjoint Sets ADT, Applications, Tradeoffs in Implementing | | |
| | Disjoint Sets ADT, Fast UNION Implementation (Slow FIND), Fast | | |
| | UNION Implementations (Quick FIND), Summary, Disjoint Sets: | | |
| | Problems & Solutions | | |
| II | Sorting | 2 | 20% |
| | What is Sorting? Why is Sorting Necessary? Classification of | | |
| | Sorting Algorithms, Other Classifications, Bubble Sort, Selection | | |
| | Sort, Insertion Sort, Shell Sort, Merge Sort, Heap Sort, Quick Sort, | | |
| | Comparison of Sorting Algorithms Linear Sorting Algorithms | | |
| | Comparison of Softing Algorithms, Linear Softing Algorithms, Counting Sort Bucket Sort (or Bin Sort) Badiy Sort Topological | | |
| | Sort External Sorting Sorting: Problems & Solutions | | |
| | Sort, External Sorting, Sorting, 11001ems & Solutions | | |
| | What is Searching? Why do we need Searching? Types of Searching | | |
| | Unordered Linear Search. Sorted/Ordered Linear Search. Binary | | |
| | Search, Comparing Basic Searching Algorithms, Symbol Tables and | | |
| | Hashing, String Searching Algorithms, Searching: Problems & | | |
| | Solutions | | |
| III | Graph Algorithms | 2 | 20% |
| | Introduction, Glossary, Applications of Graphs, Graph | | |
| | Representation | | |
| | Graph Traversals, Topological Sort, Shortest Path Algorithms, | | |
| | Minimal Spanning Tree, Graph Algorithms: Problems & Solutions | | |
| | What are Selection Algorithms? Selection by Sorting Partition | | |
| | based Selection Algorithm Linear Selection Algorithm - Median of | | |
| | Medians Algorithm Finding the K Smallest Elements in Sorted | | |
| | Order | | |
| | Selection Algorithms: Problems & Solutions | | |
| IV | Symbol Tables | 2 | 20% |
| | Introduction, What are Symbol Tables? Symbol Table | | |
| | Implementations, Comparison Table of Symbols for Implementations | | |
| | Hashing | | |
| | What is Hashing? Why Hashing? HashTable ADT, Understanding | | |
| | Hashing | | |
| | Collisions Collision Desolution Techniques Supersta Chain | | |
| | Open Addressing Comparison of Collision Desolution Techniques, | | |
| | How Hashing Gets O(1) Complexity? Hashing Techniques, Problems | | |
| | for which Hash Tables are not suitable Bloom Filters Hashing | | |
| | Problems & Solutions | | |
| | String Algorithms | | |
| | Introduction, String Matching Algorithms, Brute Force Method, | | (1 |

| | Robin-Karp String Matching Algorithm, String Matching with Finite Automata, KMP Algorithm, Boyce-Moore Algorithm, Data Structures for Storing Strings, Hash Tables for Strings, Binary Search Trees for Strings, Tries, Ternary Search Trees, Comparing BSTs, | | |
|-------|--|-----------------|--|
| - | Tries and TSTs, Suffix Trees, Strings: Problems & Solutions | | |
| V | Dynamic Programming Introduction, What is Dynamic Programming Strategy? Properties of Dynamic Programming Strategy, Can Dynamic Programming Solve All Problems? Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence, Dynamic Programming: Problems & Solutions Complexity Classes Introduction, Polynomial/Exponential Time, What is a Decision Problem? Decision Procedure, What is a Complexity Class? Types of Complexity Classes Reductions, Complexity Classes: Problems & Solutions | 20% | |
| Basic | Text & Reference Books :- | | |
| 1. | Data Structures And Algorithmic Thinking With Python, Narasi | mha Karumanchi, | |
| | CareerMonk Publications | | |
| 2. | Introduction to Algorithms, Thomas H. Cormen, Prentice-Hall of India | | |

| Paper Code: CECS408 | | | Fotal Credit : 4 Fotal Marks : 70 |
|---------------------|---|----|--------------------------------------|
| Title | of Paper: Advanced Data Structures and Algorithms |] | Fime : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper Code: CECS409 | | Total Credit |
|---------------------|---|--|
| Title | of Paper: System Analysis and Design | :04 Total Marks : 70 Time : 2 Ura |
| | | 1 ime : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Ι | Overview of systems analysis & Design, role of systems analyst, user | 20% |
| | clientele, categories of business systems - TPS, MIS, DSS OAS, | |
| | Strategic information systems. System development strategies - | |
| | classical, structured and Prototyping. | |
| | Reasons for systems project initiation, Project selection and review - | |
| | Committee methods, project requests. Preliminary investigation - | |
| | applications | |
| П | Requirement determination - process, data used, information | 20% |
| | produced, schedule, controls, transaction and decision requirements | 2070 |
| | etc. Fact finding techniques - interview, questionnaires, document | |
| | scanning, observation. Tools for specifications - decision trees, | |
| | decision tables, structured English. Structured analysis - Physical and | |
| | Application prototyping - rationale suitability steps uses Tools for | |
| | prototyping - 4GL, report generators application generators screen | |
| | generators, strategies for prototyping | |
| III | Modelling object classes, attributes & relationships. | 20% |
| | Automated tools - front end, back end, integrated tools. | |
| | CASE tools- functionality and benefits. | |
| | Objectives in system design. Components to be designed - output, | |
| | specifications Management of Design Process | |
| | Output Design - needs, types of output, presentation of outputs. | |
| | Printed outputs. Input and controls - capture of input data, source | |
| | documents, coding methods. Input validation - batch controls, | |
| | transaction controls, check digit system, and hash totals. | |
| | Data Entry forms design. User interface design purpose, | |
| | display dialogue design | |
| IV | File design - Storage media selection, types of files by purpose. | 20% |
| | File organization and access methods. | |
| | Backup and recovery design. Database design - entity relationship, | |
| | Schema, data models, normalization. Security design, Object oriented | |
| | channels control devices and protocols. Design of LAN systems | |
| | client/Server strategies | |
| V | Development and testing. Tools for documentation - HIPO, | 20% |
| | Structured flowcharts, warnier/orr diagrams. quality assurance - | |
| | testing, verification and validation . Testing strategies. | |
| | Creation/conversion of master files. Loading the database. | |
| | old system to new system. Post implementation review System | |
| | Development Management - estimation of development time. team | |
| | management. Hardware/ software selection - selection criteria, | |
| | benchmarking, purchase/ lease/rent options | |
| Basic | Text & Reference Books :- | |
| 1. | Analysis and Design of Information Systems, James Senn, McGraw Hi | ll, 1989. |
| 2. | Systems analysis and design and the Transition to Objects, Sa | andra D. Dewitz, |
| | McGrawHill International, 1996. | |
| 3. | Systems analysis and Design, elias awad, Galgotia, 1997 | 64 |

| Paper Code: CECS409 | | | Fotal Credit : 4 Fotal Marks : 70 |
|---------------------|---|--------|--------------------------------------|
| Title | of Paper: System Analysis and Design | - - | Fime : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Course Type | Course | Name of Course | T / P | Credit | Exam | Com | ponent of M | larks |
|--------------------|---------|---|-----------|--------|----------|----------|-------------|-------|
| | Code | | | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS517 | Internet Programming with JAVA | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS518 | Computer Network – I | Theory | 4 | 3 | 30 | 70 | 100 |
| Core Courses | CCCS519 | Practical Based on CCCS517 | Practical | 5 | 3 | 30 | 70 | 100 |
| | CCCS520 | Practical / Viva Voce Based on CCCS518 | Practical | 5 | 3 | 30 | 70 | 100 |
| | | and elective if any | | | | | | |
| Foundation Courses | FCCS506 | Soft Skills and Personality Development | Theory | 4 | 3 | - | 100 | 100 |
| Elective Courses | CECS510 | Information Security | Theory | 2 | 3 | 30 | 70 | 100 |
| (Any One) | CECS511 | E-Commerce and M-Commerce | Theory | 2 | 3 | 30 | 70 | 100 |
| Total | | | | 24 | | 180 | 420 | 600 |

Master of Science (Computer Applications & Information Technology) Semester V

| Paper | Code: CCCS517 | Total Credit : 4 |
|-------|---|-------------------------|
| Title | of Paper: Internet Programming With Java | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| I | Introduction to OOP, Features and Evolution of JAVA, Byte code and JVM, Applications, Applets, Classes, Objects, Encapsulation, Garbage Collection, C++ v/s. JAVA, Data types, Variables, Operators, Associatively and Precedence, Expressions, Type Conversion, Comments, Arrays, Keywords, Methods, Arguments and Return Values, Static v/s. Instance Members, Command-Line Arguments, Escape sequences. Control Structures (if, switchcase), Loops(for, while, dowhile), Constructors. | 20% |
| II | Access Specifiers, Subclasses, Inheritance, Method Overriding, Interfaces and Packages, Access Control and Packages, Exception Handling, Custom Exceptions. | 20% |
| Ш | Java Class Libraries, The Integer Class, Random Class, Date Class, Calendar and Gregorian Calendar Classes, Vector Class and Enumeration Interface, Stack Class, Hashtable Class, StringTokenizer Class, Files and Directories, Character Streams, Buffered Character Streams, The PrintWriter Class, Byte Streams, Random Access Files, The StreamTokenizer Class Networking Internet Addresses, ServerSockets and Sockets, Diagram Sockets and Packets, Uniform Resource Locators | 20% |
| IV | Introduction to visual programming in JAVA with AWT and Swing. GUI Components. Event Handling, Applets and the Life Cycle. The Applet Class, The Graphics Class, Colors, Text, Applet Dimensions | 20% |
| V | Database Drivers, jdbc-odbc bridge, connection, Performing the Basis SQL commands, Resultset Interface, Prepared Statement, Mapping SQL types to java, Overview of JSP, Multithreaded Programming, Synchronization, Deadlock, Thread Communication. | 20% |
| Basic | Text & Reference Books :- | |
| 1. | Balagurusamy, Programming with Java: A printer-Second Edition, Tata McG | raw-Hill,2000 |
| 2. | Naughton & Schildt, JAVA: The Complete Reference, Tata McGraw Hill. | |

| Paper Code: CCCS517 | | |
|---|--|--|
| Title of Paper: Internet Programming with Java | | |
| | | |
| Description | | Total Marks |
| Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| Q.4 (B) Program based on Java. (With Internal Option) | 08 | |
| Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| Q.5 (B) Program based on Java. (With Internal Option) | 08 | |
| | r Code: CCCS517 of Paper: Internet Programming with Java Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) Q.1 (B) Medium / Long Questions. (With Internal Option) Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) Q.2 (B) Medium / Long Questions. (With Internal Option) Q.3 (A) Short / Medium Questions (With Internal Option) Q.3 (B) Medium / Long Questions. (With Internal Option) Q.3 (B) Medium / Long Questions. (With Internal Option) Q.4 (A) Short / Medium Questions (With Internal Option) Q.5 (A) Short / Medium Questions (With Internal Option) Q.5 (B) Program based on Java. (With Internal Option) Q.5 (B) Program based on Java. (With Internal Option) | r Code: CCCS517 of Paper: Internet Programming with Java Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) Q.1 (B) Medium / Long Questions. (With Internal Option) Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) Q.2 (B) Medium / Long Questions. (With Internal Option) Q.2 (B) Medium / Long Questions. (With Internal Option) Q.3 (A) Short / Medium Questions (With Internal Option) Q.3 (B) Medium / Long Questions. (With Internal Option) Q.4 (A) Short / Medium Questions (With Internal Option) Q.4 (B) Program based on Java. (With Internal Option) Q.5 (A) Short / Medium Questions (With Internal Option) Q.5 (B) Program based on Java. (With Internal Option) |

| Paper | Code: CCCS518 | Total Credit : 4 |
|-------|---|-------------------------|
| Title | of Paper: Computer Network – I | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| I | Introduction | the spinning |
| - | LAN. MAN. WAN. | |
| | Types of networks [LAN, WAN, WLAN, MAN, SAN, PAN, EPN & | 20% |
| | VPN1. | 2070 |
| | Types of transmission [Simplex, Half Duplex, Full Duplex], | |
| | PSTN, Switching techniques | |
| II | The Application Layer - I | 20% |
| | HTTP, HTTPS, TELNET, DNS, FTP, DHCP, IMAP | |
| III | The Application Layer – II | 20% |
| | POP, LDAP, RIP, SMTP, SSH, TLS & SSL | |
| IV | The Physical Layer - I | |
| | Guided Transmission Media [Twisted Pair, Fiber Optics, Coaxial], | 20% |
| | Cabling [cross, straight], | |
| | IEEE 802.3 Ethernet standard, RJ45 ,RJ11 | |
| V | The Physical Layer - II | |
| | Router, Switch, Hub, | |
| | Analog Modulation, | 20% |
| | Digital modulation: Modem - phase shift keying - bit rate - boud rate | |
| | , QAM (Quadrature amplitude modulation) | |
| Basic | Text & Reference Books :- | |
| 1. | Computer Networks 4th Edition - Andrew Tanenbaum | |
| 2. | Computer Networking: A Top-Down Approach Featuring the In | nternet By James |
| | F.Kurose, Keith W.Ross | |
| 3. | Data Communication & Networking 4th Edition By Behrouz A.Forouz | an |

| Paper Code: CCCS518 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--------------------------------------|
| Title | Title of Paper: Computer Network – I | | |
| | | | |
| Unit | Description | | Total Marka |
| | Description | | i otai wiai KS |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper Code: CCCS519 | Total Credit : | |
|---|------------------------|--|
| Title of Paper: Practical Based on CCCS517 | 04 | |
| | Total Marks : | |
| | 70 | |
| | Time : 3 Hrs | |
| 1. Write a Simple Application to print any trigonometric / mathematical for | ormula. | |
| 2. Find the greatest of numbers. | | |
| 3. Write a program to display a table in the format $n \ge i = m$ | | |
| 4. Create a program using switch case statement to identify the day of the | week. | |
| 5. Write a program to find greatest and smallest element of an array. | | |
| 6. Write a program to sort the array using bubble sort. | | |
| 7. Write a program to accept string as a command line argument and a reverse order. | lisplay the string in | |
| 8. Write a small program that accepts an argument from the user an palindrome. | d cheeks it for the | |
| 9. Write a program to check the format of email address given by the us argument. | er as command line | |
| 10. Create a class, which has a method to calculate the area of a triangle and | l use it. | |
| 11. Create a class with two methods for calculating area and parameter | of triangle. Create | |
| another class and initialize the instance of the former class and cal perimeter. | culate the area and | |
| 12. Create a class with a method, which accept an object of the same class | s as a parameter and | |
| calculates the addition of two matrices. | | |
| 13. Create a class quadrilateral and create two methods each for calculating | g area and perimeter | |
| of the quadrilateral with one and two parameters respectively. | | |
| 14. Create a class with a constructor, which initializes all the class level | variable and display | |
| the values of the variables. | | |
| 15. Create a base class called vehicle which contains properties called col | or, wheels. Create a | |
| child class car and which has properties called model no and make. U | se the object of the | |
| child class which will define the different properties of a car. | | |
| 16. Create a method to calculate the area and perimeter of a circle. Extend | the semicircle class | |
| control of circle class and overfide the method to calculate the area | and perimeter of a | |
| 17 Create a class, which has two methods each of static and non-static nat | ure Try to use them | |
| in any class of your choice and enlist the different interfaces and package | tes | |
| 18 Create an interface called arithmetic which defines methods for | sum multiplication | |
| division, subtraction, percentage and implement of them. | , manipilearion, | |
| 19. Create a package, which holds the class and an interface defined in the | e previous question | |
| and use them in your main method/class. | 1 1 | |
| 20. Create an abstract class and try to use if. Enlist the problems that com- | e. Create an abstract | |
| class inherit it and implement the methods of the abstract class, e.g. Peo | ple – Student. | |
| 21. Create an inner class shape which has a method called pyramids t | o create a pyramid | |
| scheme. Use this method in the outer class. | | |
| 22. Write a program to handle an exception using try and catch block (Zero | division problem) | |
| 23. Define an exception "Not Found" that is thrown when a string is not ex | qual to "India" write | |
| a program that uses this exception. | | |
| 24. Write a program, which displays the use of finally. Explain how it is d | itterent or similar to | |
| catch. | | |

25. Write a program, which shows use of array out of band exception.

| Paper Code | e: CCCS519 | Total Credit : 4 Total Marks : 70 | | | |
|--|---------------------|--------------------------------------|--------------|--|--|
| Title of Paper: Practical Based on CCCS517 | | | Time : 3 Hrs | | |
| | | | | | |
| | | | | | |
| Unit | Description | | Total Marks | | |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 | | |
| | Q.1 (B) Practical | 50 | | | |
| Paper Code: CCCS520 | Total Credit : |
|---|----------------|
| Title of Paper: Practical Based on CCCS518 and elective courses | 04 |
| | Total Marks : |
| | 70 |
| | Time : 3 Hrs |
| Computer Network Practical List | |
| 1. Telnet Connectivity | |
| 2. Ftp Connections | |
| 3. DHCP Connections | |
| 4. SSH Connection | |
| 5. POP & IMAP Connectivity Using Thunderbird | |
| 6. Cabling [cross, straight] | |
| 7. Router Configuration | |
| 8. Switch Configuration | |
| | |
| | |
| | |
| | |

| Paper Code : | Total Credit : 4 Total Marks : 70 | | | | | | |
|---------------|--|----|-------------|--|--|--|--|
| Title of Pape | Title of Paper: Practical Based on CCCS518 and elective courses | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Unit | Description | | Total Marks | | | | |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 | | | | |
| | Q.1 (B) Practical | 50 | | | | | |

| Paper | Code: FCCS506 | Total Credit : 4 | | | |
|-----------|---|-------------------------|--|--|--|
| Title | of Paper: Soft Skills and Personality Development | Total Marks : | | | |
| | | 70 | | | |
| | | Time : 3 Hrs | | | |
| | | | | | |
| | | | | | |
| Unit | Description | Weighting | | | |
| Ι | Introduction to Soft Skills and Hard Skills, Break the ice berg - | | | | |
| | FEAR, Self Development - Etiquette and Manners. The Self Concept: | | | | |
| | Attitude, The process of attitude formation, positive attitude, How to | | | | |
| | build a success attitude, You are the chief architecture of yourself. | | | | |
| | Self Management Techniques. Believe in yourself: Self Image and | | | | |
| | Self Esteem, Building Self Confidence, Environment we mix with, | | | | |
| II | How to build sell illiage?. | | | | |
| 11 | Success Attitude: Prioritizing Creating the master plan Active | | | | |
| | positive visualization and Spot analysis Self Motivation and | | | | |
| | Communication: Levels of motivation power of irresistible | | | | |
| | enthusiasm, etiquettes and manners in a group, public speaking. | | | | |
| | Importance of listening and responding | | | | |
| III | Motivation Skills & Personality Development, Goal Setting, Career | | | | |
| | Planning, Resume Building, Psychometric Test, Priority Management | | | | |
| | & Time Management, Positive Attitude and Self Confidence. Verbal | | | | |
| | Communication includes Planning, Preparation Delivery, Feedback | | | | |
| | and assessment of activities like: Public speaking, Group Discussion, | | | | |
| | Oral Presentation skills, Perfect Interview, Listening and observation | | | | |
| | skills, body language and use of Presentation aids. | | | | |
| IV | Written communication that includes project proposals, brochures, | | | | |
| | newsletters, articles. | | | | |
| | enquettes that include: enquettes in social as well as office settings, | | | | |
| | study skills that include rapid reading notes taking and creativity | | | | |
| V | Problem Solving and Decision Making Skills Percentive | | | | |
| • | Conceptual. Creative. Analytical and Decisive. Leadership as a | | | | |
| | process: co-ordination while working in a team, Leadership styles, | | | | |
| | Leader and Team player, Management of conflict, Profiles of great | | | | |
| | and successful personalities, Role of career planning in personality | | | | |
| | development, negotiation, Motivating. | | | | |
| Basic | Text & Reference Books :- | | | | |
| 1. | Wallace : Personality Development 1st Edition, 2008 Cengage Learning | g India. | | | |
| 2. | Succeed for your self -Richard Denny (3rd edition)- Kogan page Ind | | | | |
| 2 | www.vivagroupindia.com. | | | | |
| 5. | Unreashing Leadership – John Hoover & Angelo Valenti – Jaico publishin | g nouse | | | |
| 4. 5 | 1.001 ways to inspire your organization, your team and your salf. | avid F Rua Inica | | | |
| 5. | nublishing house | aviu L. Kyt- Jaico | | | |
| | puononing nouse. | | | | |

| Paper | | Total Credit : 4 Total Marks : 70 | |
|-------|---|--------------------------------------|--------------|
| Title | of Paper: Soft Skills and Personality Development | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 14 | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option)06 | | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 14 | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |

| Pape | r Code: CECS510 | Total Credit : 4 |
|-------|---|-------------------------|
| Title | of Paper: Information Security | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Ι | Introduction to computer security | 10 |
| | What Is Computer Security? | |
| | A Broader Definition of Security | |
| II | Security Policy | 20 |
| | Introduction, Corporate Policy, Information Security Policy, | |
| | Concepts, Classification of information, Personnel Security policy, | |
| | Ethics, Password Policy, General Software Policy, Networks, | |
| | Internet, Laptops and portable computers | |
| III | Computer and Network Policy | 25 |
| | System administration policy, Physical security, Access Control, | |
| | Logon Policy, Assurance, Accountability and Audit, Reliability of | |
| | Service, Network Policy | |
| | Network / Distributed Systems Policy: | |
| | Dial-in access, Dial-out, Internet Firewall, Interfaces to other | |
| | networks | |
| IV | Incident Response Procedure, Software Development Policy, General | 25 |
| | Guidelines, Production Guidelines, Business Continuity Planning, | |
| | Enforcement, Physical Security, Buildings, Transport of Data, | |
| | Backups, Disks, Laptops / mobile computers, Printers, Computers, | |
| | Clean desk principle | |
| V | System Security(book no-2) | 20 |
| | Intruders : Intruders, Intruders detection, Password management. | |
| | Malicious Software: Viruses and Related Threats | |
| | Firewalls: Firewalls Design principle, established systems. | |
| Basic | Text & Reterence Books :- | |
| 1. | 11 Security Cook Book(http://www.boran.com/security) | |
| 2. | Cryptography and Network Security (2nd edition), William Stallings, I | Pearson |

| Paper | r Code: CCCS103 | | Total Credit : 4 Total Marks : 70 |
|-------|---|----|--|
| Title | of Paper: Practical Based on CCCS101 | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| II | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Pape | r Code: CECS511 | Total Credit : 4 |
|-------|---|-------------------------|
| Title | of Paper: E-Commerce and M-Commerce | Total Marks : |
| | | 70 |
| | | Time: 3 Hrs |
| | | |
| | | |
| Unit | Description | Weighting |
| Ι | E-Commerce | |
| | Introduction -The e-commerce environment - The e-commerce marketplace | |
| | -Focus on portals, Location of trading in the marketplace - Commercial | 20% |
| | arrangement for transactions - Focus on auctions | |
| | - Business models for e-commerce - Revenue models - Focus on internet | |
| п | start-up companies – the dot-com - E-commerce versus E-business. | |
| 11 | Introduction Infrastructure Of M Commerce Types Of Mobile | |
| | Commerce Services - Technologies Of Wireless Business - Benefits And | 200/ |
| | Limitations Support Mobile Marketing & Advertisement Non– | 2070 |
| | Internet Applications In M– Commerce –Wireless/Wired Commerce | |
| | Comparisons | |
| III | M-Commerce – Technology | |
| | A Framework For The Study Of Mobile Commerce | |
| | NTT Docomo's I– Mode | |
| | Wireless Devices For Mobile Commerce | |
| | Towards A Classification Framework For Mobile Location Based Services | 20% |
| | Wireless Personal And Local Area Networks | |
| | Formulation In Mobile Communications Networks | |
| IV | M-Commerce Theory and Application | |
| 11 | The Ecology Of Mobile Commerce | |
| | The Wireless Application Protocol | |
| | Mobile Business Services | |
| | Mobile Portal | |
| | Factors Influencing The Adoption Of Mobile Gaming Services | 20% |
| | Mobile Data Technologies And Small Business Adoption And Diffusion | _0,0 |
| | M-Commerce In The Automotive Industry | |
| | The Pole Of Mobile Advertising In Building A Brand | |
| | M– Commerce Business Models | |
| V | Business to business M-Commerce | |
| | Enterprise Enablement | |
| | Email And Messaging | |
| | Field Force Automation (Insurance, Real Estate, Maintenance, Healthcare) | |
| | Field Sales Support (Content Access, Inventory) | 20% |
| | Asset Tracking And Maintenance/Management | |
| | Remote 11 Support Customer Potention (P2C Services, Financial Special Deals) | |
| | Warehouse Automation | |
| | Security | |
| Basic | Text & Reference Books :- | |
| 1. | Dave Chaffey, "E-Business and E-Commerce Management", Thi | rd Edition, 2009, |
| | Pearson | |
| | Education | |
| 2. | Brian E. Mennecke, Troy J. Strader, "Mobile Commerce: Technology, | Theory and |
| | Applications", Idea Group Inc., IRM press, 2003. | |
| 3. | Paul May, "Mobile Commerce: Opportunities, Applications, and | Technologies of |
| | Wireless | |
| | Business" Cambridge University Press March 2001 | |
| 4. | Dr.Pandey, Saurabh Shukla E-commerce and Mobile commerce Techr | ologies, Sultan |
| | chand .2011 | |

| Paper | Paper Code: CECS511 | | | | |
|-------|---|----|--------------|--|--|
| Title | of Paper: E-Commerce and M-Commerce | | Time : 3 Hrs | | |
| | | | | | |
| Unit | Description | | Total Marks | | |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) 06 | | 14 | | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 14 | | | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| | | | | | |

| Master o | of Science | (Computer | Applications | & Information | Technology) | Semester | VI |
|----------|------------|---------------------------------------|---------------------|---------------|-------------|----------|----|
| | | · · · · · · · · · · · · · · · · · · · | TT | | | | |

| Course Type | Course | Name of Course | Course T / P Credit Exam | | Exam | Com | ponent of M | arks |
|------------------|---------|---------------------------------------|--------------------------|----|----------|----------|-------------|-------|
| | Code | | | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS621 | Web Application development using PHP | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS622 | Computer Network-II | Theory | 4 | 3 | 30 | 70 | 100 |
| Coro Coursos | CCCS623 | Practical Based on CCCS621 | Practical | 5 | 3 | 30 | 70 | 100 |
| Core Courses | CCCS624 | Practical and Viva Voce Based on | Practical | 5 | 3 | 30 | 70 | 100 |
| | | CCCS622 and Elective Courses | | | | | | |
| | CCCS625 | Project | Practical | 8 | 4 | 30 | 70 | 100 |
| Elective Courses | CECS612 | Computer Graphics and Multimedia | Theory | 2 | 3 | 30 | 70 | 100 |
| (Any One) | CECS613 | Software Engineering | Theory | 2 | 3 | 30 | 70 | 100 |
| Total | | | | 28 | | 180 | 420 | 600 |

| Paper | Code: CCCS621 | Total Credit : | | |
|--|--|-----------------------|--|--|
| Title | of Paper: Web Application Development using PHP | 4 | | |
| | | Total Marks : | | |
| | | 70 | | |
| | | Time : 3 Hrs | | |
| | | | | |
| Unit | Description | Weighting | | |
| I | Introduction | Weighting | | |
| - | Introduction to Webpage, Website, Static and Dynamic Web, Client | | | |
| | side & Server Side, Scripting | | | |
| | Web server (IIS & Anacha) UTTD & UTTDC protocol ETD ICD and | | | |
| | its Services | | | |
| | Web Hosting, Virtual Host, Multi-Homing | 20% | | |
| | Distributed Web Server Overview, Document Root. | | | |
| | Introduction to PHP | | | |
| | PHP configuration in IIS & Apache Web server | | | |
| | Understanding of PHP.INI file, Understanding of PHP.htaccess file | | | |
| | PHP Variable, Static & global variable, GET & POST method | | | |
| | PHP Operator Conditional Structure & Looping Structure | | | |
| П | Array | | | |
| | User Defined Functions: | | | |
| | argument function. default argument, variable function, return | | | |
| | function | | | |
| | Variable Length Argument Function | | | |
| | func_num_args, func_get_arg, func_get_args | | | |
| | Variable Function | 20% | | |
| | Gettype, settype, isset, unset, strval, floatval, intval, print_r | | | |
| | String Function: | | | |
| | chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim trim, substr,strcmp, | | | |
| | strcasecmp, strops, strrpos, strstr, stristr, str_replace, strrev, echo, print, | | | |
| | explode(), implode(), join(), ind(), su_spin(), su_snume(), sucspin(), strabel(), substr_compare() substr_count() ucfirst() ucwords() | | | |
| | Math Function | | | |
| | Abs ceil floor round fmod min max pow sort rand cos() acos() | | | |
| | $\sin(0)$, $\sin(0)$, $\tan(0)$, $\tan(0)$, $\tan(0)$, $\tan(0)$, $\tan(0)$, $\arctan(0)$, $\operatorname{con(0)}$, $con(0)$ | | | |
| | is_finite(), is_infinite(),log(), base_convert(), deg2rad() | | | |
| | Date Function | | | |
| | Date, getdate, setdate, Checkdate, time, mktime, date_add(), | | | |
| | <pre>date_create(), date_format(), gmdate(), localtime(), strftime(),</pre> | | | |
| | strptime(), strtotime(), gettimeofday(), | | | |
| | Array Function | | | |
| | Count, list, in_array, current, next, previous, end, each, sort, sort, | | | |
| | asson, alson, allay_inerge, allay_reverse, allay_uni(), | | | |
| | array unshift() array keys() array key exists() array nush() | | | |
| array pop(), array multisort(), array search() | | | | |
| | Miscellaneous Function | | | |
| | define, constant, include, require, header, die, exit | | | |
| | File handling Function | | | |
| | fopen, fread, fwrite, fclose,file_exists, is_readable,is_writable, fgets, | | | |
| | fgetc, file,file_get_contents, fputcsv, fputs, file_putcontents, ftell, | | | |
| | fseek, rewind, copy, unlink, rename, move_upload_file | | | |
| Ш | Handling form with GET & POST | | | |

| | Cookies, Session, Server variable | |
|------------|---|---------------|
| | PHP GD Library | |
| | PHP Regular expression | |
| | Uploading file. | |
| | Sending mail using mail() | |
| | Sending mail using smtn() | |
| | Working with MySOL using PhnMyAdmin | |
| | PHP-MySOL Connectivity | |
| | PHP-MySQL Connectivity PHP-MySQL Functions | |
| | mysal connect mysal close mysal error msyal error | |
| | mysql_connect, mysql_close, mysql_criot, msyql_crino, mysql_select_db_mysql_query_mysql_fetch_array_mysql_num_Rows | |
| | mysql_select_db,mysql_quely,mysql_leten_array,mysql_ndm_kows, | |
| | mysql_affected_Kows, mysql_fetch_assoc, mysql_fetch_fetch | |
| | , mysql_itten_object, mysql_itten_itow , mysql_itset_ita | |
| | , mysql_hum_heids, mysql_field_type_mysql_db_neme_mysql_hist_tables, | |
| | mysql_list_lields,inysql_lield_type,inysql_db_lialle,inysql_db_qdefy | |
| 137 | BUB with OOBS | |
| 1 V | Class constructor inhoritance corielize chiests | |
| | Database Handling with OODS | |
| | Database Handling with OOPS | |
| | PHP WIN AJAX What is AIAX | |
| | What IS AJAA. | |
| | HOW AJAA WOIKS WILL PHP Working With Aigy of Deckergund Process | |
| | Working with Ajax as Background Process | 200/ |
| | JQuery What is IOssame? | 20% |
| | What is JQuery? | |
| | How JQuery works and How it is Created. | |
| | Using JQuery with PHP | |
| | Using XML and JSON | |
| | Introduction to JSON | |
| | Installation & Configuration | |
| | Kesource Types | |
| | JSON Eurotions, icon, decodo, icon, anação | |
| X 7 | Son Functions: json_decode, json_encode | |
| v | Smarty Introduction Variables | |
| | Variables assigned from DUD | |
| | Variables assigned from PHP | |
| | Variables loaded from coming mes | |
| | variable modifiers: capitalize, lower, upper, truncate, | |
| | Duilt in Functions | |
| | Duill in Function: | |
| | coning_load, ioreach, ioreacheise, include, in,eisen, eise, section, | |
| | Custom Europians: | |
| | cusion runcuous. | |
| | html options html radios html select date html select time | 20% |
| | html_table | 20 /0 |
| | Creating a PHP Based Web service | |
| | Working with SOAP | |
| | Introduction to SOAP | |
| | Installation & Configuration | |
| | Predefined Constants | |
| | SOAP Client | |
| | SOAP Server | |
| | Introduction to CMS | |
| | Uses and Advantages of CMS | |
| | Wordpress [Introduction & Installation] | |
| | Joomla [Introduction &Installation] | |
| Basic | Text & Reference Books :- | l |
| 1. | Begging PHP 5 by Wrox. | |
| 2. | Julie C. Meloni, PHP MySOL and Apache, SAMS Teach Yourself Pear | son Education |
| 3 | Web Development using PHP – Rharat & Co. [ISRN No. • 978-93-8178 | 36-39-01 |
| | -1100 Development using 1 m $-$ Dhatat & CO. [10D11 100 770-73-01/0 | |

| Paper Code: CCCS621 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | of Paper: Web Application Development using PHP | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| II | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) PHP Programs. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) PHP Programs. (With Internal Option) | 08 | |
| | | | |

| Pape | r Code: CCCS622 | Total |
|---------------------------------------|---|-----------------|
| Title of Paper: Computer Network – II | | Credit : 4 |
| | | Total |
| | | Marks : |
| | | 70 |
| | | Time : 3 |
| | | Hrs |
| | | |
| Unit | Description | Weighting |
| Ι | The Data Link Layer- I | 0 0 |
| | Packet, | 20% |
| | Framing Techniques (Character Count, Byte Stuffing, Bit Stuffing), Error | |
| | Control, Flow Control | |
| II | The Data Link Layer – II | |
| | Error Detection and Correction Techniques (Single Bit Parity, Block | |
| | Parity, Checksum, CRC Checksum, Hamming Code) | 20% |
| | An Unrestricted Simplex Protocol, A Simplex Stop-and-Wait | |
| | Protocol, A Simplex Protocol for a Noisy Channel, Sliding Window | |
| | Protocols | |
| III | The Medium Access Sublayer | |
| | The Channel Allocation Problem, Static Channel Allocation in LANs | • • • • • |
| | and MANs, Dynamic Channel Allocation in LANs and MANs, | 20% |
| | Multiple Access Protocols, ALOHA, Carrier Sense Multiple Access | |
| TX 7 | Protocols | |
| IV | Network with OS (Linux) | |
| | Ubuntu: date, is, who, cal, ps, wc, cat, uname, pwd, mkdir,rmdir, cd, | 200/ |
| | cp, mi, mv, dm, chinou, grep, sed, nead, tan, cut, paste, son, mid, | 20% |
| N7 | Network with OS (Windows) | |
| v | Windows: inconfig arn msconfig services msc event logger advanced | |
| | taskmanager ping nslookup petstat tracert route hostname pet physical whois | 20% |
| | & Many more | 2070 |
| Basic | Text & Reference Books :- | |
| 1. | Computer Networks 4th Edition - Andrew Tanenbaum | |
| 2. | Computer Networking: A Top-Down Approach Featuring the Internet | et By James |
| | F.Kurose, Keith W.Ross | |
| 3. | Data Communication & Networking 4th Edition By Behrouz A.Forouzan | |

| Paper Code: CCCS622 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | of Paper: Computer Network – II | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| L | | | |

| Paper Code: CCCS623 | Total Credit : |
|--|----------------|
| Title of Paper: Practical Based on CCCS621 | 04 |
| | Total Marks : |
| | 70 |
| | Time : 3 Hrs |
| 1. Write a PHP program to display "Hello World" Message on Screen. | |
| 2. Write a PHP program to display the today's date and current time. | |
| 3. Write a PHP program to read the employee detail using form component. | |
| 4. Write a PHP program to display the Fibonacci series. | |
| 5. Write a PHP program to calculate sum of given number. | |
| 6. Write a PHP Program that will use the concept form. | |
| 7. Write a PHP program to send Mail from PHP Script. | |
| 8. Write a PHP Program for Create, Delete, and Copying file from PHP Script. | |
| 9. Write a PHP Program to Recursive Traversals of Directory. | |
| 10. Write a PHP Program to Validate Input Data. | |
| 11. Write a PHP Program to Upload File. | |
| 12. Write a PHP program to demonstrate the use of array. | |
| 13. Write a PHP program to prepare student Mark sheet. | |
| 14. Write a PHP program to generate the multiplication of matrix. | |
| 15. Write a PHP program to perform demonstrate the college Website. | |
| 16. Write a PHP program to add new rows in a Table. | |
| 17. Write a PHP program to modify the rows in a Table. | |
| 18. Write a PHP program to delete the rows in a Table. | |
| 19. Write a PHP program to fetch rows in a Table. | |
| 20. Develop an PHP application to make following Operation | |
| i. Registration of user. | |
| ii. Insert the details of user. | |
| iii. Modify the details. | |
| iv. Transaction Maintained like the use of session and cookies variable. | |
| | |

| Paper Code | e: CCCS623 | Total Credit : 4 Total Marks : 70 | | |
|--|---------------------|--|--------------|--|
| Title of Paper: Practical Based on CCCS621 | | | Time : 3 Hrs | |
| | | | | |
| | | | | |
| Unit | Description | | Total Marks | |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 | |
| | Q.1 (B) Practical | 50 | | |

| Paper Code: CCCS624 | Total Credit : |
|---|----------------|
| Title of Paper: Practical Based on CCCS622 and elective courses | 04 |
| | Total Marks : |
| | 70 |
| | Time: 3 Hrs |
| 1. Hamming Code Implementation | |
| 2. Stop-and-Wait Protocol | |
| 3. Sliding Window Protocols | |
| 4. Checksum method | |
| 5. CRC Implementation | |

| Paper Code : | Total Credit : 4 Total Marks : 70 | | |
|----------------|--------------------------------------|----|-------------|
| Title of Paper | Time : 3 Hrs | | |
| | | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 |
| | Q.1 (B) Practical | 50 | |

| Paper Code: CCCS625 | Total Credit : 04 |
|--|---|
| Title of Paper: Project | Total Marks : 70 Time : 3 Hrs |
| Guidelines for the Project | |
| • Definition should ideally reflect current trends of IT industry and it application potential. | should have a high |
| • Project must be carried out by individual student | |
| • Coding standards should be followed meticulously. At the minimum, self documented, modular, and should use the meaningful naming conv | the code should be ention. |
| • Database design is mandatory. At least portions of code (prefera mandatory. Student may be asked to write the code related to examination. | ably full code) are the project during |
| • A report should be prepared for the project work which should be internal project guide and head of the college/department. | duly signed by the |
| | |
| | |
| | |
| | |

| Paper Code : CCCS625 Total Title of Paper: Project Time | | Credit : 4 Marks : 70 : 3 Hrs | |
|---|--------------------------------------|-------------------------------------|--------------------|
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 |
| | Q.1 (B) Explanation of Project | 20 | |
| | Q.1 (C) Explanation of Code/Database | 20 | |
| | Q.1 (D) Documentation / Report | 10 | |

| Paper Code: CECS612 | | Total Credit : 4 |
|--|--|--|
| Title of Paper: Computer Graphics and Multimedia | | Total Marks : 70 Time : 3 Hrs |
| T T 1 / | | |
| Unit | Description | Weighting |
| I | Overview of Computer Graphics System: | |
| | A survey of Computer Graphics | |
| | Over View of Computer Graphics System | |
| | Video display devices | 20% |
| | Raster Scan and random scan system | |
| | Input devices | |
| | Hard copy devices | |
| Ш | Output Primitives and Attributes | |
| | Drawing line, circle and ellipse generating algorithms | |
| | Scan line algorithm | |
| | Character generation – attributes of lines, curves and characters | 20% |
| | Two Dimensional Graphics Transformation | |
| | Two dimensional geometric transformations | |
| | Windowing and Clipping | |
| | Clipping of lines | |
| III | Three Dimensional Graphics Transformation | |
| | Three dimensional concepts – representations | |
| | Polygon table, Quadric surfaces, Splines, Besier curves and surfaces | 30% |
| | Geometric and Modeling transformations | |
| | Viewing | |
| TT 7 | Parallel and perspective projections. | |
| IV | Removal of Hidden Surfaces | 100/ |
| | Visible surface detection methods | 10% |
| | Computer animation | |
| V | Multimedía | |
| | Introduction, Definition, Multimedia Hardware, Multimedia Software, | |
| | Multimedia Networking, Multimedia Application, | 20% |
| | Multimedia Environments, Multimedia Computer Components, | |
| | Multimedia Standards, Multimedia PC. | |
| Docio | Tort & Deference Decks | |
| Basic 1 | Text & Reference Books :- | Edition 2000 |
| 1. | Lagran D, and Douling Dakar M. "Computer Craphics" and Edition Drant | Dulloll, 2000. |
| 2. | 1005 | ce nali of Illula, |
| | 1995. Sections: 1 1 1 8 2 1 2 2 5 2 6 2 1 2 7 2 11 2 14 4 1 4 2 4 5 5 1 5 5 6 1 6 7 0 1 0 2 10 1 10 4 | |
| | 5 = 5 = 5 = 5 = 5 = 5 = 5 = 5 = 5 = 5 = | |
| 3 | Neuman W M and Sproull R F "Principle of Interactive Computer Graphics" McCraw Hill | |
| 5. | BookCo., 1979. | |
| | BookCo., 1979. | , |

| Paper Code: CCCS612 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | of Paper: Computer Graphics and Multimedia | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper | Code: CECS613 | Total Credit : 4 |
|---------|--|-------------------------|
| Title | of Paper: Software Engineering | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| I | Introduction | weighting |
| • | Introduction : Software and Software Engineering | |
| | General Characteristics of Software Process | 20% |
| | Phases in Software development | _070 |
| | Effort and Error Distribution | |
| | Process Models : Waterfall, Prototype, Iterative enhancement, spiral | |
| | Software metrics : introduction, product metrics, process metrics | |
| II | Requirement Specification and Software Project Planning | |
| | Introduction : Software Requirement Specification (SRS) and Needs | |
| | Problem Analysis - Structuring Information | 20% |
| | Introduction to UML | |
| | Software Requirement Specifications (SRS), Characteristics and | |
| | Components of SRS | |
| | Specification language (Structured English, Regular Expression and | |
| | Decision Lable) Structure of SDS Validation of SDS | |
| TTT | Structure of SRS, Validation of SRS | |
| 111 | projects | |
| | Overview of Cost estimation Uncertainty in cost estimation size | 20% |
| | estimation COCOMO Model (with example) | 2070 |
| | Project Monitoring Plan : Time sheets, Reviews, Cost- schedule | |
| | milestone and Earned value method | |
| | Software Quality Assurance Plans (SQAP) | |
| | Overview of Risk Management | |
| | Software Design | |
| | Introduction : System Design | |
| | Design Objectives and Design Principles | |
| | Design Concepts - Top down and Bottom up approach, Problem | |
| | Partition, Abstraction, Modularity, Module Level concept, Coupling, | |
| | Cohesion | |
| IV | Overview of structured design | |
| | Design Specification Verification | 200/ |
| | Introduction: Detailed Design | 20 / 0 |
| | Module Specification Desirable properties functional module | |
| | specification. | |
| | Data abstraction specification | |
| | PDL, Logic/ Algorithm Design | |
| | Design Verification – Design Walkthrough, Critical Design review, | |
| | Consistency checkers | |
| V | Coding and Testing | |
| | Introduction: Coding, Top Down and Bottom Up approach for coding | •••• |
| | Structured programming, Information Hiding | 20% |
| Racia ' | riogramming style, internal documentation | |
| Dasic | An Integrated Approach to Software Engineering · Ry Dankai Jalota | Narosa Publishing |
| 1. | House. Second Edition 1997 | rarosa ruonsining |
| 2. | Software Engineering a practitioner's approach : By Roger S. Pressm | an, Tata McGraw- |
| | Hill, 5 th Edition | , <u> </u> |
| 3. | Software Engineering Fundamentals, By Richard Fairley, Tata McGrav | v Hill |
| 4. | Software Engineering By Ian Somnmerville, Addition- Wesley, 5th Ed | ition, 2000 |

| Paper Code: CCCS613 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--------------------------------------|
| Title | Title of Paper: Software Engineering | | |
| | | | |
| Unit | Description | | Total Marks |
| I | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Course Type | Course | Name of Course | T / P | Credit | Exam | Com | ponent of M | arks |
|------------------|---------|----------------------------------|-----------|--------|----------|----------|-------------|-------|
| | Code | | | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS726 | Advanced Web Programming | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS727 | Mobile Computing | Theory | 4 | 3 | 30 | 70 | 100 |
| Core Courses | CCCS728 | Data warehousing and Data mining | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS729 | Practical Based on CCCS726 | Practical | 5 | 3 | 30 | 70 | 100 |
| | CCCS730 | Practical Based on CCCS727 | Practical | 5 | 3 | 30 | 70 | 100 |
| Elective Courses | CECS714 | System Software | Theory | 4 | 3 | 30 | 70 | 100 |
| (Any One) | CECS715 | Enterprise resource planning | Theory | 4 | 3 | 30 | 70 | 100 |
| Total | | | | 26 | | 180 | 420 | 600 |

Master of Science (Computer Applications & Information Technology) Semester VII

| Paper | Code: CCCS726 | Total Credit : 4 |
|-----------|--|------------------|
| Title | of Paper: Advanced Web Programming | Total Marks : 70 |
| | | 1 m |
| | | |
| Unit | Description | Weighting |
| Ι | <i>Introduction to C#:</i> C# : Data Types(Boxing and UnBoxing), Operators, Access Specifier, OOPS Concepts: Class, Inheritance, Constructor, | |
| | Destructor, Abstraction, interface, polymorphism (Over loading and over ridding), Garbage Collection, Array (One Dimensional and Two Dimensional), Jagged Array, Collection: Generic Collection (List),Non Generic Collection (Array list, Hash table,),Indexer(One Dimension) and property, Delegates and events(Multicasting , Multicasting Event),Exception Handling, Introduction to Namespace: Creating & Using Namespace(DLL) | 20% |
| II | ADO.Net | |
| | Architecture of ADO.Net, Comparison with ADO(Connected and Disconnected Architecture),.Net Data provider, Data Adapter, Data Set, Data Row, Data Column, Data Relation, command, Data Reader, Creating and Using Stored Procedure | 20% |
| III IV | Overview of Asp.NET Framework Client Server Architecture, Application Web Servers, Installation of IIS server, Types of Files in Asp.NET, Types of controls in Asp.NET, Page Architecture, Adding Controls to a Webpage, The Page Class, Webfor Introduction to standard Controls (Buttons, Textbox, Checkbox, Label, Panel, List box, Drop down list etc.) Running an Asp.Net Application, File Upload Control What is Validation? Client Side Validation, Server Side Validation Types (RequieredField Validator, Range Validator, CompareField Validator, RegularExpression Validator, Custom Validator, ValidationSummery Control) ASP.NET Page Life Cycle, Server Controls : label, dropdown list box, validation controls, list box, text box, radio button, check box, State | 20% |
| | Management : session, cookie, View State, Data Rendering Controls: Grid View, Data List, Repeater, Binding and perform operations (Insert, Update, Delete) with Grid View, Creating Simple 3-tier Application, Creating and Using web services. <i>Introduction to AJAX</i> Understanding Need of Ajax in Web Application, Ajax controls: Script Manager, Update Panel, Update Progress, Timer Reading Datasets From XML Writing DataSets With XML, WebServices (Introduction, HTTP, SOAP, UDDI,XML, Creating a Web Service) | 20% |
| V | State Management: What is State? Why is it Required in Asp.Net? Client Side State Management, Server Side State Management Various State Management Techniques (View State, Query String, Cookie, Session State, Application State) What is Master Page? Requirement Of a Master Page in an Asp.NET application Designing Website with Master Page, Theme and CSS Caching Application pages and Data Overview, Page Output Caching, Partial Page Caching, Absolute | 20% |

| | Cache Expiration, Sliding Cache Expiration, Data Caching |
|-------|---|
| Basic | Text & Reference Books :- |
| 1. | Asp.Net – Unleashed |
| 2. | Complete Reference C# - Herbert schildt (TMH Publication) |

| Paper Code: CCCS726 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--------------------------------------|
| Title | Title of Paper: Advanced Web Programming | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Program based on C#. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Program based on ASP.Net. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Pape | r Code: CCCS727 | Total Credit : 4 |
|-------|--|-------------------------|
| Title | of Paper: Mobile Computing | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| I | Introduction To Mobile Apps: Why we Need Mobile Apps | weighting |
| - | Different Kinds of Mobile Apps, Briefly about Android | |
| | Introduction Android: History Behind Android Development, What | |
| | is Android?, Pre-requisites to learn Android, Brief Discussion on Java | |
| | Programming | 20% |
| | Android Architecture: Overview of Android Stack, Android | |
| | Features, Introduction to OS layers | |
| | Deep Overview in Android Stack: Linux Kernel, Libraries, Android | |
| | Runtime, Application Framework, Dalvik VM Installing Android Machine: Configuring Android Stack Croating | |
| | Eclipse Environment Integrating Android with Eclipse IDE Exploring | |
| | Eclipse IDE | |
| II | Creating First Android Application: Creating Android Project. | |
| | Debugging Application through DDMS, Setting up environment, AVD | |
| | Creation, Executing Project on Android Screen | |
| | Android Components: Activities, Services, Broadcast Receivers, | |
| | Content Providers | 2007 |
| | Hello World App: Creating your first project, The manifest file, | 20% |
| | Building III with Activities: Activities Views layouts and Common | |
| | UI components. Creating UI through code and XML. Activity | |
| | lifecycle, Intents, Communicating data among Activities | |
| | Advanced UI: Selection components (GridView, ListView, Spinner | |
| |), Adapters, Custom Adapters, Complex UI components, Building UI | |
| | for performance, Menus, Creating custom and compound Views | |
| 111 | Notifications: Toast, Custom Toast, Dialogs, Status bar Natifications, Styles And Themese Creating and Applying | |
| | simple Style Inheriting built-in Style and User defined style Using | |
| | Styles as themes Resources and Assets: Android Resource, Using | |
| | resources in XML and code, Localization, Handling Runtime | 20% |
| | configuration change Intent, Intent Filters and Broadcast | |
| | Receivers: Role of filters, Intent-matching rules, Filters in your | |
| | manifest, Filters in dynamic Broadcast Receivers, Creating Broadcast | |
| | receiver Receiving System Broadcast: Understanding | |
| | broadcast action, category and data, Registering Broadcast receiver | |
| IV | Data Storage: Shared Preferences Android File System Internal | |
| | storage, External storage, SOLite | |
| | Introducing SQLite: SQLiteOpenHelper and creating a database, | |
| | Opening and closing a database, Working with cursors Inserts, | |
| | updates, and deletes | |
| | Content Providers: Accessing built in content providers, Content | 2007 |
| | provider MINE types, Searching for content, Adding, changing, and removing content. Creating content provider. Working with content | 20% |
| | files | |
| | Services: Overview of services in Android. Implementing a Service. | |
| | Service lifecycle, Inter Process Communication (AIDL Services) | |
| | Multimedia in Android: Drawing and Working with Animation, | |
| | Multimedia Supported audio formats, Simple media playback, | |
| | Supported video formats, Simple video playback | |
| | Location Based Services and Google Maps: Using Location Based Services Finding current location and listening for changes in | |

| | location, Proximity alerts | |
|-------|--|--------------------|
| | Working with Google Maps: Showing google map in an Activity, | |
| | Map Overlays, Itemized overlays, Geocoder, Displaying route on | |
| | map | |
| V | Web Services and WebView: Consuming web services, Receiving | |
| | HTTP Response (XML, JSON) Parsing JSON and XML, Using | |
| | We, View | |
| | Sensors: How Sensors work, Using Orientation and Accelerometer | |
| | sensors, Best practices for performance | |
| | WiFi: Monitoring and managing Internet connectivity, Managing | |
| | active connections, Managing WiFi networks | 20% |
| | Telephony Services: Making calls, Monitoring data connectivity | |
| | and activity, Accessing phone properties and status, Controlling the | |
| | phone, Sending messages | |
| | Camera: Taking pictures, Media Recorder, Rendering previews | |
| | Bluetooth: Controlling local Bluetooth device, Discovering and | |
| | bonding with Bluetooth devices, Managing Bluetooth connections, | |
| | Communicating with Bluetooth | |
| | Android Application Deployment: Android Application | |
| | Deployment on Android Market | |
| Basic | Text & Reference Books :- | |
| 1. | Lauren Darcey and Shane Conder, "Android Wireless Applicati | on Development", |
| | Pearson Education, 2 rd ed. (2011) | |
| 2. | Reto Meier, "Professional Android 2 Application Development", W | lley India Pvt Ltd |
| | (2011) | |
| 3. | Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd(2009) | |
| 4. | Sayed Y Hashimi and Satya Komatineni, "Pro Android", Wiley India | Pvt Ltd(2009) |

Chapter wise Coverage from Text Book:

Chapters: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 29

| Paper Code: CCCS727 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | Title of Paper: Mobile Computing | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper | Code: CCCS728 | Total Credit : 4 |
|-------|---|-------------------------|
| Title | of Paper: Data Warehousing and Data Mining | Total Marks: 70 |
| | | Time: 3 Hrs |
| | | |
| Unit | Description | Weighting |
| I | Introduction | |
| | An overview and definition along with clear understanding of the four | |
| | appearing in the definition. | |
| | Differences between Operational Database Systems and Data Warehouses | |
| | Overview of Multi-dimensional Data Model, and the basic differentiation | 200/ |
| | Concernt Historical of "Dimensions" Determinations Examples and the | 20% |
| | advantages Star Spowflakes and East Constallations Schemes for Multi | |
| | dimensional Databases Measures: Their Categorization and Computation | |
| | Pre-computation of Cubes, Constraint on Storage Space, Possible Solutions | |
| | OLAP Operations in Multi-dimensional Data Model: Roll-up Drill-down | |
| | Slice & Dice. Pivot (Rotate). Indexing OLAP Data: Efficient Processing of | |
| | OLAP Queries. Type of OLAP Servers: ROLAP versus MOLAP versus | |
| | HOLAP, Metadata Repository | |
| II | Data warehouse Architecture | |
| | The Design of A Data Warehouse: A Business Analysis Framework; | |
| | The Process of Data Warehouse Design | 20% |
| | A 3-Tier Data Warehouse Architecture; Enterprise Warehouse, Data mart, | |
| | Virtual Warehouse, Discovery-Driven Exploration of Data Cubes; Complex | |
| | Aggregation at Multiple Granularity: Multi-feature Cubes, Constrained | |
| | Gradient Analysis of Data Cubes | |
| III | Pre-Processing | |
| | The need for Pre-processing, Descriptive Data Summarization | |
| | Data Cleaning: Missing Values, Noisy Data, Data Cleaning as a Process | |
| | Data Integration & Transformation, Data Cube Aggregation; Attribute | 2004 |
| | Subset Selection, Dimensionality Reduction:(Basic Concepts only). | 2070 |
| | Numerosity Reduction: Regression & Log-linear Models, Histograms, | |
| | Clustering, Sampling. Data Dicretization & Concept Hierarchy Generation | |
| | For Numerical Data: Binning, Histogram Analysis, Entropy-based | |
| | Discretization, Interval Merging by x Analysis, Cluster Analysis, | |
| | Discretization by Intuitive Partitioning For Categorical Data | |
| IV | Data Mining- An Introduction | |
| | An Overview; What is Data Mining; Data Mining - on What Kind of Data | |
| | Data Mining Functionalities - What Kind of Patterns Can be Mined; Concept/Class Description: Characterization & Discrimination: Mining | 20% |
| | Frequent Patterns Associations and Correlations: Classification & | 2070 |
| | Prediction; Cluster Analysis; Outlier Analysis, Classification of Data | |
| | Mining Systems Data Mining Task Primitives, Integration of a Data Mining | |
| | System with a Database or Data Warehouse System, Major Issues in Data | |
| | Mining | |
| V | Mining Frequent Pattern, Association and correlations | |
| | Basic Concepts: Market Basket Analysis; Frequent Itemsets, Closed | |
| | Apriori Algorithm: Finding Fraguent Itomsota Using Condidate Congration: | |
| | Generating Association Rules from Frequent Itemsets' Improving the | 20% |
| | Efficiency of Apriori. From Association Mining to Correlation Analysis | |
| | Interesting: An Example: From Association Analysis to Correlation | |
| | Analysis Introduction to Classification and Prediction. Supervised learning | |
| | Unsupervised learning, Classification by decision tree induction | |
| Basic | Text & Reference Books : | |
| 1. | Jiawei Han & Micheline Kamber, "Data Mining: Concepts & Te | chniques", Morgan |
| | Kaufmann Publishers (2002) | - |

| Paper Code: CCCS728 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | Title of Paper: Data Warehousing and Data Mining | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper Code: CCCS729 | Total Credit : 4 |
|---|------------------|
| Title of Paper: Practical Based on CCCS726 | Total Marks: 70 |
| | Time : 3 Hrs |
| | |
| | |
| Description | |
| 1 Understanding of Constructor and Destructor using C# | |
| 1. Understanding of Constructor and Destructor using C# | |
| 2. Demonstration of Array and Collection | |
| 3. Understanding Inheritance | |
| 4. Understanding Exception handling | |
| 5. Understanding Polymorphism | |
| 6. Understanding Indexers | |
| 7. Demonstration of ADO.Net and its various components | |
| 8. Understanding of IIS server, loading and installing | |
| 9. Understanding various controls of ASP.Net | |
| 10. Demonstration of client side and server side validation | |
| 11. Understanding of session and cookie | |
| 12. Demonstration of AJAX controls | |
| 13. Demonstration of reading data sets using XML | |
| 14. Understanding of various web services | |
| 15. Understanding of various state management techniques | |
| | |

| Paper Code | e: CCCS729 | Total Credit : 4 Total Marks : 70 | | | | |
|--|---------------------|--------------------------------------|--------------|--|--|--|
| Title of Paper: Practical Based on CCCS726 | | | Time : 3 Hrs | | | |
| | | | | | | |
| | | | | | | |
| Unit | Description | | Total Marks | | | |
| I | Q.1 (A) Viva – Voce | 20 | 70 | | | |
| | Q.1 (B) Practical | 50 | | | | |

| Paper Code: CCCS730 | Total Credit : 4 |
|--|-------------------------|
| Title of Paper: Practical Based on CCCS727 | Total Marks : 70 |
| | Time : 3 Hrs |
| | |
| | |
| Description | |
| | |
| 1. Understanding of android stack | |
| 2. Understanding of Eclipse IDE | |
| 3. Understanding Android components | |
| 4. Demonstration of UI components | |
| 5. Demonstration of Activity life cycle | |
| 6. Demonstration of advanced UI components | |
| 7. Understanding Notifications | |
| 8. Understanding style and themes | |
| 9. Understanding of resources and assets | |
| 10. Understanding broadcast action and procedure | |
| 11. Understanding of SOLite and its operations | |
| 12. Understanding of Android services | |
| 13. Demonstration of Multimedia activities in android | |
| 14 Understanding location based services using android | |
| 15 Understanding Google man | |
| 16. Understanding of sensors and Wi-Fi | |
| 17. Understanding of bluetooth camera and talenhony services | |
| 12. Demonstration of Android application deployment | |
| 18. Demonstration of Android application deployment | |
| | |
| Paper Cod | e : CCCS730 | Total Credit : 4 Total Marks : 70 | |
|--|---------------------|--------------------------------------|--------------|
| Title of Paper: Practical Based on CCCS726 | | | Time : 3 Hrs |
| | | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 |
| | O.1 (B) Practical | 50 | |

| Pape | r Code: CECS714 | Total Credit : 4 |
|-------|--|-------------------------|
| Title | of Paper: System Software | Total Marks : 70 |
| | | Time : 3 Hrs |
| | | |
| | | |
| Unit | Description | Weighting |
| Ι | Language Processors and Compilers | |
| | Introduction to language processing | |
| | Language processing activities: program generation, program | |
| | execution, program interpretation | |
| | Meaning of analysis and synthesis in language processing | |
| | Introduction to compilers | |
| | The analysis-synthesis model of compilation | |
| | The phases of a compiler | |
| II | Fundamentals of Assembly Language and Assemblers | |
| | Elements of assembly language programming | |
| | Description of a simple assembly language | |
| | Description of different types of assembly language statements : | |
| | imperative statements, declaration statements, assembler directives | |
| | Advantages of assembly language | |
| | A simple assembly scheme : design specification of assemblers, | |
| | phases and data structures | |
| | Design of a two pass assembler | |
| III | Editors. Linkers and Loaders | |
| | Editors : line editors, stream editors, screen editors, word processors, | |
| | structure editors, design of editors | |
| | Translated, linked and load time addresses | |
| | Relocation and linking concepts : program relocation, performing | |
| | relocation | |
| | The process of linking | |
| | The concept of loading | |
| IV | System Software Tools | |
| | List of software tools for program development and their description | |
| | Debug monitors | |
| | Producing debug information | |
| | Programming environments | |
| | User interface tools | |
| V | Micro-Processor and Other System Software | |
| | Basic macro processor functions – Macro Definition and Expansion – | |
| | Macro Processor Algorithm and | |
| | data structures – Implementation examples: MASM Macro | |
| | Processor- Text editors – Overview of | |
| | Editing Process - User Interface - Editor Structure - Interactive | |
| | Debugging Systems – Debugging | |
| | functions and capabilities -Relationships with Other parts of the | |
| | system – User Interface Criteria | |
| | Virtual Machines | |
| Basic | Text & Reference Books :- | |
| 1. | Dhamdhare, D M : "System programming and Operating system", 2nd re | evised edition, Tata |
| | McGraw-Hill Company Limited, 2004 | |
| 2. | Aho A. V., Sethi R., Ullman J. D. : Compilers - Principles, Techniques and | nd Tools, Addition- |
| | Wesley Publishing Company, 1988. | |
| 3. | Srimanta Pal, "Systems Programming", Oxford University Press, 201 | 1 |

| Paper | Paper Code: CECS714 | | |
|-------|---|----|--------------|
| Title | of Paper: System Software | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| II | Q.2 (A) Short / Medium Questions. (With Internal Option) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper | Code: CECS715 | Total Credit : 4 |
|-------|--|------------------------------|
| Title | of Paper: Enterprise Resource Planning | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Ι | Introduction | 0 0 |
| | Enterprise Resource Planning (ERP) : introduction, history, | |
| | advantages | |
| | Enterprise : introduction, business modeling, integrated data model, | |
| | integrated management information | |
| | Basic concepts of ERP | |
| | Risks and benefits of ERP | |
| II | ERP and Related Technologies | |
| | Introduction to MRP, MRP-II and ERP | |
| | Business Process Reengineering (BPR) | |
| | Data warehousing, data mining and Online Analytical Processing | |
| | (ULAP) De last Life Carls Management (DLM). Sam la Chain Management | |
| | Product Life Cycle Management (PLM), Supply Chain Management | |
| | (SCM), Customer Balationshin Management (CBM) | |
| III | FDD Morketplace and Eurotional Modules | |
| 111 | Marketplace : overview dynamics changing FRP market | |
| | Indian FRP Scenario | |
| | Functional modules of ERP software | |
| | Integration of ERP. SCM and CRM | |
| IV | ERP – Selection and Implementation | |
| | ERP package selection | |
| | ERP Implementation basics, ERP Implementation Life Cycle | |
| | Post implementation activities | |
| | Success and Failure Factors of an ERP Implementation | |
| V | The Business Modules | |
| | Finance, Manufacturing, Human Resources, Plant Maintenance | |
| | Quality Management, Sales, Distribution and Service, Marketing | |
| Basic | Text & Reference Books :- | N H H H H H H H H H H |
| 1. | Alexis Leon : Enterprise Resource Planning, Tata McGraw-Hill, Nev | v Delhi 1st and 2nd |
| | editions. | |

| Paper Code: CECS715 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--------------------------------------|
| Title o | of Paper: Enterprise Resource Planning | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| II | Q.2 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Course Type | Course | Name of Course | T / P | Credit | Exam | Com | ponent of M | larks |
|------------------|---------|---|-----------|--------|----------|----------|-------------|-------|
| | Code | | | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS831 | Advanced Java Programming | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS832 | Cryptography | Theory | 4 | 3 | 30 | 70 | 100 |
| Coro Coursos | CCCS833 | Artificial Intelligence | Theory | 4 | 3 | | | |
| Core Courses | CCCS834 | Practical Based on CCCS831 | Practical | 4 | 3 | 30 | 70 | 100 |
| | CCCS835 | Practical Based on CCCS833 and Elective | Practical | 4 | 3 | 30 | 70 | 100 |
| | | Courses | | | | | | |
| Elective Courses | CECS816 | Embedded System | Theory | 2 | 3 | 30 | 70 | 100 |
| (Any One) | CECS817 | Optimization Techniques | Theory | 2 | 3 | 30 | 70 | 100 |
| Total | | | | 24 | | 180 | 420 | 600 |

Master of Science (Computer Applications & Information Technology) Semester VIII

| Paper | Code: CCCS831 | Total Credit : 4 |
|-------------|--|-------------------------|
| Title | of Paper: Advanced Java Programming | Total Marks : |
| | | 70 |
| | | Time: 3 Hrs |
| | | |
| | | |
| Unit | Description | Weighting |
| | Introduction to J2EE Platform and Architecture | |
| Ι | The J2EE Platform, The J2EE Architecture Containers, J2EE | 20% |
| | Technologies, Developing J2EE Applications, Introducing Java Mail | |
| | and JMS | |
| | Database Programming | |
| II | ODBC and JDBC Drivers, Connecting to Database with the java.sql | 20% |
| | Package, Using JDBC | |
| III | Servlets | |
| | Introduction to Servlets and architecture, Servlet Life Cycle, Servlet | |
| | based Applications, type of servlet, Servlet and HTML, Session | |
| | management | 20% |
| | JSP | |
| | Introduction to JSP, JSP implicit objects, JSP based Applications, | |
| TX 7 | Session Management | |
| IV | Remote Method Invocation (RMI) | |
| | The RMI Architecture, RMI Exceptions | 200/ |
| | Developing Applications with RMI, Parameter Passing in RMI | 20% |
| | AML XML syntax and semantics. Writing Document Type Definitions | |
| | (DTDs) XML based applications | |
| V | Iava Reans | |
| · | An overview of Java Beans | |
| | Requirement, Development and Scope of Java Beans | |
| | Design consideration and Naming conventions of Java Beans and | 20% |
| | Guideline. | |
| | Enterprise Java Beans (EJB) | |
| | Introduction to EJB | |
| | Entity Beans | |
| | Session Beans | |
| Basic | Text & Reference Books :- | |
| 1. | Professional Java Server Programming by Subrahmanyam Allamaraju | |
| 2. | J2EE Bible by Justin Couch and Deniel H. Steinberg | |
| 3. | Professional Java Server Programming Volume I and II, | |
| | Wrox Publication. | |
| 4. | J2EE Unleashed by Joseph J. Bambara, BPB publications | _ |
| 5. | Enterprise JAVA J2EE 1.3 complete, BPB publications | |

| Paper Code: CCCS831 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--------------------------------------|
| Title | Title of Paper: Advanced Java Programming | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Programs. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Programs. (With Internal Option) | 08 | |
| | | | |

| Paper | Code: CCCS832 | Total Credit : 4 |
|------------|--|-------------------------|
| Title | of Paper: Cryptography | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Ι | Introduction | |
| | Security Trends, OSI Security Architecture, Security Attacks, | 20% |
| | Security Services, Security Mechanisms, History and Overview of | |
| | Cryptology | |
| II | Symmetric Ciphers | |
| | Classical Encryption Techniques: Symmetric Cipher Model, Substitution | |
| | Techniques, Transposition Techniques, Rotor Machines / Enigma, | 20% |
| | Steganography | |
| | Block Ciphers: Principles, Data Encryption Standard 3DES, DES Operation DES Strength Plack Cipher Design Principles | |
| ш | Asymmetric Ciphers | |
| 111 | Prime Numbers Principles of Public Key Cryptosystems The RSA | |
| | Algorithm. Diffie-Hellman Key Exchange. Pseudorandom Number | 2004 |
| | Generation, Cryptographic Hash Functions, Secure Hash Algorithm, | 20 /0 |
| | Message Authentication Codes, Digital Signatures | |
| IV | Network and Internet Security | |
| | Key Distribution, X.509 Certificates, Public Key Infrastructure, Web | |
| | Security Issues, Secure Sockets Layer (SSL), Transport Layer Security | 20% |
| | (TLS), HTTPS, Secure Shell (SSH), Wireless Network Security Overview, | |
| T 7 | Email Security: PGP, S/MIME, DKIM. | |
| V | Scams and Upper Laws | 3 00/ |
| | Indian IT Act 2000 with Subsequent Amendments | 20% |
| Basic ' | Text & Reference Books :- | |
| 1. | Cryptography and Network Security, William Stallings, Pearson | |
| | | |

| Paper Code: CCCS832 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | Title of Paper: Cryptography | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |

| Paper | Code: CCCS833 | Total Credit : 4 |
|-------------|---|------------------|
| Title | of Paper: Artificial Intelligence | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| I | Artificial Intelligence and Knowledge-Based Systems | |
| | Natural and Artificial Intelligence – Characteristics and Definitions | 20% |
| | of AI | |
| | AI based systems, Testing the Intelligence with Turing Test, and | |
| | Chinese Room Experiment, Application Areas of Artificial | |
| | Intelligence, Data Pyramid and Computer Based Systems | |
| | Production Systems and AI based Searches like Hill Climbing and | |
| | Heuristic Search | |
| | Introduction & Objectives of KBS, Components of KBS | |
| | Categories of the KBS like Expert Systems, Database Management | |
| | Systems in Conjunction with an Intelligent User Interface, Linked | |
| | Systems, CASE Based Systems, Intelligent Tutoring Systems, etc. | |
| | Issues and limitations of KBS | |
| | General structure of KBS, Conflict Resolution Strategies for Rule | |
| | Based Systems | |
| | Knowledge Base Shell | |
| | Advantages, limitations and applications of Knowledge-Based | |
| TT | Systems | |
| 11 | | |
| | Development of Knowledge Based Systems | 200/ |
| | Development | 20% |
| | Development Knowledge Based Systems Development Model Knowledge | |
| | Acquisition Process and Techniques Knowledge Sharing Dealing | |
| | with Multiple Experts Issues in Knowledge Acquisition | |
| | Knowledge Undate | |
| | Characteristics of Good Knowledge Representation Scheme | |
| | Factual and Procedural Knowledge Representation Applications and | |
| | Users of KBS | |
| | Tools for KBS development and Case Studies | |
| III | Fuzzy Logic | |
| | Introduction to fuzzy logic | |
| | Fuzzy logic and fuzzy sets, Membership Functions, Fuzzification | 20% |
| | and Defuzzification, Operations on Fuzzy Sets | |
| | Fuzzy Functions and Linguistic Variables | |
| | Fuzzy Relationships, Propositions and Connectives | |
| | Fuzzy Inference | |
| TX 7 | Fuzzy Kules, Fuzzy Control System and Fuzzy Kule Based Systems Neurol Network | |
| 11 | Neural Network | |
| | Neural Networks: Introduction, Advantages and Disadvantages of | 200/ |
| | Riological Neuron and Artificial Neuron | 2070 |
| | Neural Network Architectures | |
| | Applications of Neural Network | |
| V | Genetic Algorithm | |
| • | Introduction to Genetic Algorithm | 20% |
| | Basic Terminology, Genetic Algorithm, GA Cycle | 4 0 /0 |
| | Basic Operator of GA. Function Optimization | |
| | Introduction to Prolog | |
| | Prolog Application and Programs | |
| Basic | Text & Reference Books :- | |
| 1. | Elain Rich: "Artificial Intelligence", McGraw Hill, Third Edition, 2001. | |
| 2. | R. Akerkar: "Introduction to Artificial Intelligence", Prentice Hall of India | , 2005. 119 |
| 3 | R Akerker and P S Saija: "Knowledge-Based Systems" Jones and Bartle | ettes MIT 2010 |

| Paper Code: CCCS833 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | Title of Paper: Artificial Intelligence | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Prolog Programs. (With Internal Option) | 08 | |

| Paper Code: CCCS834 | Total Credit : 4 |
|--|------------------|
| Title of Paper: Practical Based on CCCS834 | Total Marks : 70 |
| | Time : 3 Hrs |
| | |
| | |
| Description | |
| 1 Understanding I2EE Architecture | |
| 1. Understanding J2EE Arcmitecture | |
| 2. Demonstration of JDBC connectivity. | |
| 3. Understanding Java Mail and JMS. | |
| 4. Understanding Servlet Architecture | |
| 5. Understanding JSP and JSP objects | |
| 6. Demonstration of Session Management | |
| 7. Understanding RMI Architecture | |
| 8. Understanding RMI with XML. | |
| 9. Demonstration of XML based applications | |
| 10. Understating EJB | |
| | |
| | |

| Paper Code | e: CCCS834 | Total Credit : 4 Total Marks : 70 | | |
|--|---------------------|--|-------------|--|
| Title of Paper: Practical Based on CCCS831 | | Time : 3 Hrs | | |
| | | | | |
| | | | | |
| Unit | Description | | Total Marks | |
| I | Q.1 (A) Viva – Voce | 20 | 70 | |
| | Q.1 (B) Practical | 50 | | |

| Paper Code: CCCS835 | Total Credit : 4 |
|---|---------------------------------------|
| Title of Paper: Practical Based on CCCS833 and Elective Courses | Total Marks : 70 |
| | Time : 3 Hrs |
| | |
| <u> </u> | _ |
| Description | |
| | · · · · · · · · · · · · · · · · · · · |
| 1. Understanding Turbo Prolog: Installing, Running Programs, Saving and | Loading Files |
| 2. Understanding Prolog Syntax and Semantics. | |
| 3. Understanding Branching. | |
| 4. Understanding Looping. | |
| 5. Understanding Functions and Parameters. | |
| 6. Understanding List | |
| 7. Understanding various objects. | |
| 8. Understanding Recursion. | |
| | |

| Paper Code | Total Credit : 4 Total Marks : 70 | | | | |
|---------------|--------------------------------------|----|----|--|--|
| Title of Pape | Time : 3 Hrs | | | | |
| | | | | | |
| | | | | | |
| Unit | Total Marks | | | | |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 | | |
| | Q.1 (B) Practical | 50 | | | |

| Pape | r Code: CECS816 | Total Credit : 4 |
|-------|---|------------------|
| Title | of Paper: Embedded Systems | Total Marks : |
| | • • | 70 |
| | | Time : 3 Hrs |
| | | |
| | | |
| Unit | Description | Weighting |
| Ι | Introduction | |
| | What is IoT?, Examples of IoT, Appliances, Smart Health care, Oil & Gas | |
| | Industry, Smart Places, IoT v/s Computer v/s Smartphone, Adoption and | |
| | trends in IoT, Social benefits of IoT, Risk-Security-Privacy of IoT. | 20% |
| | Embedded Systems: An introduction to embedded systems, | |
| | examples, generic structure of embedded system, sensors and | |
| т | Actuators, Analog / Digital Conversion, basic devices. | |
| 11 | Arduino Basics IDE Setting up Arduino Board Arduino Sketch Uploading and Running | |
| | Blink Sketch Creating and Saving Sketch Structure of Sketch Primitive | 20% |
| | Types, Functional Blocks, Conditions, Loops, Operators, | 2070 |
| III | Arduino Communications | |
| | Sending Debug Information from Arduino to Your Computer, Sending | |
| | Formatted Text and Numeric Data from Arduino, Receiving Serial Data in | |
| | Arduino, Sending Multiple Text Fields from Arduino in a Single Message, | |
| | Receiving Multiple Text Fields in a Single Message in Arduino, Sending | |
| | Binary Data from Arduino, Receiving Binary Data from Arduino on a | • • • • • |
| | Computer, Sending Binary Values from Processing to Arduino, Sending the | 20% |
| | Value of Multiple Arduino Pins, How to Move the Mouse Cursor on a PC or Mag. Controlling Google Forth Using Arduino, Logging Arduino Data to a | |
| | File on Your Computer Sending Data to Two Serial Devices at the Same | |
| | Time Receiving Serial Data from Two Devices at the Same Time Setting | |
| | Up Processing on Your Computer to Send and Receive Serial Data. | |
| IV | Input | |
| | Using a Switch, Using a Switch Without External Resistors, Reliably | |
| | Detecting the Closing of a Switch, Determining How Long a Switch Is | |
| | Pressed, Reading a Keypad, Reading Analog Values, Changing the Range | |
| | of Values, Reading More Than Six Analog Inputs, Displaying Voltages Up | 2007 |
| | to 5V, Responding to Changes in Voltage, Measuring Voltages More Than 5V (Voltage Dividers) | 20% |
| | Detecting Movement Detecting Light Detecting Motion (Integrating | |
| | Passive Infrared Detectors). Measuring Distance. Measuring Distance | |
| | Accurately, Detecting Vibration, Detecting Sound, Measuring Temperature, | |
| | Reading RFID Tags, Tracking Rotary Movement, Using a Mouse, Getting | |
| | Location from a GPS | |
| V | Introduction to Raspberry Pi | |
| | A Tour of the Boards, The Proper Peripherals, The Case, Flash the SD Card, | |
| | Linux on the Deephermy Pi | |
| | Using the Command Line Files and the Filesystem More Linux | |
| | Commands, Processes, Sudo and Permissions. The Network. /etc. Setting | 20% |
| | the Date and Time, Installing New Software, Python on Raspberry Pi | , . |
| | Programming Inputs and Outputs with Python | |
| | Installing and Testing GPIO in Python, Blinking an LED, Reading a Button | |
| | Working with Webcams | |
| | Testing Webcams, Installing and Testing SimpleCV, Displaying an Image. | |
| Basic | Text & Reference Books :- | |
| 1. | Arduino Cookbook, Michael Margolis, U'Keilly | |
| 4. | Used the started with Kaspberry P1, Matt Kichardson, U Kelliv | |

| Paper Code: CECS816 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | Title of Paper: Embedded Systems | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper | Code: CECS817 | Total Credit : 4 |
|-------|---|--------------------|
| Title | of Paper: Optimization Techniques | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| | | |
| Unit | Description | Weighting |
| Ι | Linear Programming Model | 20% |
| | Mathematical Formulation | |
| | Graphical Solution of linear programming models | |
| | Simplex method | |
| | Artificial variable Techniques- Variants of Simplex method | |
| II | Transportation and Assignment Model | 20% |
| | Mathematical formulation of transportation problem | |
| | Methods for finding initial basic feasible solution | |
| | optimum solution | |
| | Degeneracy | |
| | Mathematical formulation of assignment models | |
| | Hungarian Algorithm | |
| | Variants of the Assignment problem | |
| III | Integer Programming Model | 20% |
| | Formulation – Gomory's IPP method – Gomory's mixed integer | |
| | method – Branch and bound technique. | |
| IV | Scheduling by PERT and CPM | 20% |
| | Network Construction – Critical Path Method – Project Evaluation | |
| | and Review Technique – Resource | |
| | Analysis in Network Scheduling | |
| V | Sequencing and Simulation | 20% |
| | Two Machine Problem | |
| | Three Machine Problem | |
| | Simulation and related numerical | |
| | Importance of Simulation in Computer Science | |
| Basic | Text & Reference Books :- | |
| 1. | Taha H.A., "Operations Research : An Introduction "8th Edition, F | Pearson Education, |
| | 2008. | |
| 2. | John W. Chinneck "Feasibility and Infeasibility in Optimization | Algorithms and |
| | Computational Methods' Springer, 2008 | |

| Paper | Code: CCCS817 | Total Credit : 4 Total Marks : 70 | |
|-------|---|--------------------------------------|--------------------|
| Title | of Paper: Optimization Techniques | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Short Medium Questions. (With Internal Option) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| II | Q.2 (A) Answer the Following. (With Internal Option) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Course Type | Course | Name of Course | T / P | Credit | Exam | Com | ponent of M | larks |
|------------------|---------|--|-----------|--------|----------|----------|-------------|-------|
| | Code | | | | Duration | Internal | External | Total |
| | | | | | in Hours | | | |
| | CCCS936 | Data Science | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS937 | Advanced Networking | Theory | 4 | 3 | 30 | 70 | 100 |
| | CCCS938 | Practical Based on CCCS936 | Practical | 4 | 3 | 30 | 70 | 100 |
| Core Courses | | | | | | | | |
| | CCCS939 | Practical / Viva Voce Based on CCCS937 | Practical | 4 | 3 | 30 | 70 | 100 |
| | | and Elective Courses | | | | | | |
| | CCCS940 | Project | Practical | 6 | 3 | 30 | 70 | 100 |
| Elective Courses | CECS918 | Research Methodology | Theory | 2 | 3 | 30 | 70 | 100 |
| (Any One) | CECS919 | Software Testing and Quality Assurance | Theory | 2 | 3 | 30 | 70 | 100 |
| | | | - | | | | | |
| Total | | | | 24 | | 180 | 420 | 600 |

Master of Science (Computer Applications & Information Technology) Semester IX

| Paper | Code: CCCS936 | Total Credit : 4 |
|-------|--|------------------|
| Title | of Paper: Data Science | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Ι | An Introduction to Big Data | 0 0 |
| | Challenges, Managing varieties of Data, The Emerging Big Data Stack, Gartner hype cycle for Big Data emerging technologies. Big Data life | |
| | Cycle, Types of Data (Unstructured, Structured, semi-structured) | 20% |
| | Opportunities in Big Data. | |
| | Introduction to NoSQL: Difference between RDBMS and NoSQL, CAP | |
| | Theorem for NoSQL, Features / Advantages of NoSQL, Types of NoSQL | |
| | (Document, Key-Value, Columnar, Graph) | |
| 11 | Apache Hadoop Introduction Hadoop eco-System High Level Architecture: Component | |
| | Level Architecture: MapReduce with Yarn, HDFS/ HDFS2, introduction to | |
| | Yarn, Features of Yarn, Intro to Tez, Features of Tez, Introduction and | 20% |
| | Features : Pig, Hive, Hbase. | |
| | Distributed publish – subscribe Messaging: Apache Kafka | |
| | Distributed MapReduce: Introduction to Apache Spark | |
| III | Hadoop Distributed File System HDES Architecture HDES Read / Writes processes HDES Performance | 200/ |
| | tuning: Overview of HDFS Access, API's & Applications. | 2070 |
| | HDFS Commands, Native Java APIs, Rest APIs. | |
| IV | An Introduction to MapReduce | |
| | Introduction to Map-Reduce, Map-Reduce Hands-on with Hadoop | |
| | streaming. | 20% |
| | Data Model best practices [Hands-on]: setup single node Hbase cluster on | |
| | Ubuntu, configuration setup. | |
| | Introduction to Hive, how Hive works? Component level architecture: Hive, | |
| | Hive Commands, Hive Query Language. | |
| V | Distributed MapReduce Computing with Apache Spark | |
| | An introduction to Apache Spark, features / advantages of Spark, | |
| | component level architecture, Resilient Distributed Datasets (RDDs), | |
| | functions to Spark Understanding closures Printing elements of an RDD | |
| | Working with Key-Value Pairs. Transformations. Actions. Shuffle | 20% |
| | operations, RDD Persistence, Removing Data, Shared Variables, Broadcast | 2070 |
| | Variables, Accumulators. Map-Reduce on file / streaming with spark, | |
| | Machine Learning with Spark Mlib – Clustering, Regression, | |
| | Recommender, Graph Analytics: Introduction to Graphx, Features of | |
| | Graphy, Basic path analytics algorithm | |
| | With Graphy, Implement Dijkstra Algorithm With Graphy. Data Visulization: An Introduction to Data Viz. Various RI tools Data | |
| | Visualization with Tableau. | |
| Basic | Text & Reference Books :- | |
| 1. | Hadoop: The Definitive Guide, 3 rd Edition By Tom White, O'Reilly | |
| 2. | Learning Spark: Lightning-Fast Big Data Analysis by Andy Konwinski, Hold | len Karau, and |
| | Patrick Wendell, O'Reilly | |

| Paper Code: CCCS936 | | | Total Credit : 4 Total Marks : 70 |
|---------------------|---|----|--|
| Title | Title of Paper: Data Science | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| II | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| | | | |

| Paper | r Code: CCCS937 | Total Credit : 4 |
|-------|---|-------------------------|
| Title | of Paper: Advanced Networking | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Weighting |
| Ι | The Network Layer | |
| | Routing Algorithms, Shortest Path Routing, Flooding, Distance | |
| | Vector Routing, Link State Routing, Hierarchical Routing, | 20% |
| | Congestion Control Algorithms, IP addresses and Classes, Subnets | |
| | and Subnet masks. IPv4 v/s. IPv6, Introduction to wire shark & | |
| | packet analysis. | |
| 11 | The Transport Layer | |
| | Quality Of Service, Transport Service Primitives, MAC protocols, | 2007 |
| | CSMA/CD, Establishment of Connection, Releasing of | 20% |
| | Connection, Flow Control and Buffering, Multiplexing, UDP | |
| TTT | Introduction to virtual machine & configure with real time machine | |
| 111 | Installation of windows server 2012 & Red bat linux server | 20% |
| | Configure firewall Antivirus Generate & authenticate open VPN | 20 /0 |
| | certificate & RSA key | |
| IV | Introduction to Cisco Packet Tracer[CPT] Establish own network | |
| | using CPT. Introduction to software reversing with | 20% |
| | ollydbg[debugger] & reflector[dotnet] | , . |
| V | Troubleshooting: PC, Router, Switch, Data Recovery from crash hard | |
| | disk, bad sector repair, hard disk data recovery, real-time network | 20% |
| | administration | |
| Basic | Text & Reference Books :- | |
| 1. | Computer Networks 4th Edition - Andrew Tanenbaum | |
| 2. | Computer Networking: A Top-Down Approach Featuring the Ir | nternet By James |
| | F.Kurose, Keith W.Ross | |
| 3. | Data Communication & Networking 4th Edition By Behrouz A.Forouza | an |

| Paper | Total Credit : 4 Total Marks : 70 | | | | |
|-------|---|----|-------------|--|--|
| Title | Title of Paper: Advanced Networking | | | | |
| | | | | | |
| Unit | Description | | Total Marks | | |
| I | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | | |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| II | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 14 | | | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | | 14 | | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) 06 | | 14 | | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | | | | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 06 | 14 | | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 08 | | | |
| | | | | | |

| Pape | r Code: CCCS938 | Total Credit : 4 |
|-------|---|---------------------|
| Title | of Paper: Practical Based on CCCS936 | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| | Description | |
| 1 | Setup & configure the Single node Hadoon Cluster on Ubuntu Machine | [Write scripts for |
| 1. | starting and shutting down the clusters] | |
| | starting and shutting down the clusters] | |
| 2 | Run Java ManReduce Jobs on Single node cluster, store data on HDFS | [Read flat file and |
| 2. | do ManReduce] | |
| | do maproduce] | |
| 3 | Setur & Configure Hive HBase Pig | |
| 5. | betup & configure filve, fibuse, fig. | |
| 4 | Run ManReduce Jobs using Hive Ouery Language | |
| •• | Run Mapredace voos asing mile Query Lungaage. | |
| 5 | Run ManReduce Jobs using Pig Scripts | |
| 5. | | |
| 6 | Setup & Configure Single node Spark cluster | |
| 0. | Setup & Comigue Single node Spain Clasteri | |
| 7 | Read file. Kafka streaming/ spark streaming from Enterprise data la | ck, then do Spark |
| | Transformation Job export processed data in form of JSON / CSV | do data viz. With |
| | tableau | |
| | | |
| 8 | Predictive modeling: Regression, classification, recommender etc. | |
| 0. | realerve modeling. Regression, classification, recommender etc. | |
| 9 | Graph Algorithm Implementation with Spark-Graphy | |
| 7. | | |

| Paper Code | e: CCCS938 | Total Credit : 4 Total Marks : 70 | |
|--|---------------------|--------------------------------------|--------------|
| Title of Paper: Practical Based on CCCS936 | | | Time : 3 Hrs |
| | | | |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Viva – Voce | 20 | 70 |
| | Q.1 (B) Practical | 50 | |

| Paper Code: CCCS939 | Total Credit : 4 |
|---|-------------------------|
| Title of Paper: Practical and Viva-Voce Based on CCCS937 and Elective | Total Marks : |
| Courses | 70 |
| | Time : 3 Hrs |
| | |
| Description | |
| 1. Dijkstra's shortest path algorithm | |
| 2. Prim's algorithm | |
| 3. Design Subnet & Supernet & implement in CPT | |
| 4. Packet Analysis Using Wireshark on LAN Network | |
| 5. Configure Firewall & Manage In/Out Rules | |
| 6. Installation of Ubuntu & Windows with harddisk format & data reco | very |
| 7. Software Debugging | |
| 8. Configure Virtual Machine With Realtime Network | |
| Software List and Links: | |
| • Open Visual Trace Route 1.6.2 - <u>https://sourceforge.net/projects/openv</u> | isualtrace/ |
| • Cisco Packet Tracer Student 6.2 - <u>http://cisco.edu.mn/Download/</u> | |
| • Advanced Task Manager - <u>http://filehippo.com/download_process_exp</u> | olorer/\ |
| • Virtual Box By Oracle- <u>http://filehippo.com/download_virtualbox/</u> | |
| • Wireshark - http://filehippo.com/download_wireshark_32/ | |
| • Whois - https://technet.microsoft.com/en-us/sysinternals/whois.aspx | |
| • Solaris Advanced Subnet Calcu | lator - |
| http://downloads.solarwinds.com/solarwinds/Release/FreeTool/SolarW | vinds-Subnet- |
| Calculator.zip | |
| • Linux OS - http://distrowatch.com/ | |
| • Ollydbg v2.01 - http://www.ollydbg.de/odbg201.zip | |
| - , | |

| Paper Code : Title of Paper Courses | Total Credit : 4 Total Marks : 70 Time : 3 Hrs | | | | |
|---|---|----|----|--|--|
| Unit | Unit Description | | | | |
| I | Q.1 (A) Viva – Voce | 20 | 70 | | |
| | Q.1 (B) Practical | 50 | | | |

| Paper Code: CCCS940 | Total Credit : 4 |
|---|---|
| Title of Paper: Project | Total Marks : |
| | 70 |
| | Time : 3 Hrs |
| | |
| Description | |
| Guidelines for the Project | |
| • Definition should ideally reflect current trends of IT industry and it si application potential. | hould have a high |
| • Project must be carried out by individual student | |
| • Coding standards should be followed meticulously. At the minimum, t self documented, modular, and should use the meaningful naming convert | he code should be ntion. |
| • Database design is mandatory. At least portions of code (preferab mandatory. Student may be asked to write the code related to t examination. | bly full code) are he project during |
| • A report should be prepared for the project work which should be d internal project guide and head of the college/department. | luly signed by the |

| Paper Code : CCCS940 To Title of Paper: Project Ti | | | tal Credit : 4 tal Marks : 70 me : 3 Hrs |
|--|--------------------------------------|----|--|
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Viva – Voce | 20 | |
| | Q.1 (B) Explanation of Project | 20 | 70 |
| | Q.1 (C) Explanation of Code/Database | 20 | |
| | Q.1 (D) Documentation / Report | 10 | |

| Paper Code: CECS918 | | Total Credit : 4 |
|---------------------|---|------------------|
| Title | of Paper: Research Methodology | Total Marks : 70 |
| | | Time: 3 Hrs |
| | | |
| | | |
| Unit | Description | Weighting |
| Ι | Meaning, Objectives and Motivation in Research, types of Research, | |
| | Research Approaches, Research Process, Validity and Reliability in | |
| | Research, Obstacles in accepting research. | 20% |
| | Problem Formulation, Hypothesis Formulation, types of Hypothesis, | |
| | characteristics of Good Hypothesis | |
| II | Meaning and Significance of Research Designs, Features of a good | |
| | research design, types of research design, contents of research design | 20% |
| | Census Vs. Sample. Steps in Sample Design. Determining the size of | |
| | Sample. Sampling methods - Simple Random Sampling, Stratified | |
| | Sampling, Systematic Sampling, Cluster Sampling, Selective Sampling | |
| III | Types of Data, Sources of Data – Primary and Secondary Data. | |
| | Methods of collecting the data. Testing the validity of the data. | 20% |
| | Measurement and scaling techniques, errors in measurement, tests of | |
| | sound measurement, scaling and scale construction techniques | |
| IV | Steps in Questionnaire design, characteristics of a good questionnaire | |
| | Presentation, Processing & Analysis and Interpretation of Data. | 20% |
| | Report Writing – layout of a Research Report, Characteristics of a good | |
| | research report. | |
| V | Overview of Statistical Techniques | |
| | Testing of Hypothesis, Large Sample Tests, Small Sample Tests – t, F | 20% |
| | tests. χ 2 tests. | |
| Basic | Text & Reference Books :- | |
| 1. | Research Methodology Methods & Techniques - C.R.Kothari, New Age | International |
| 2. | Introduction to Quantitative Research Methods - Mark Balnaves and Pete | r Caputi, Sage |
| | Publications | |
| 3. | Business Research Methods - William G.Zikmund, Thomson South-West | ern |

| Paper | Total Credit : 4 Total Marks : 70 | | |
|-------|---|----|--------------|
| Title | of Paper: Research Methodology | | Time : 3 Hrs |
| | | | |
| Unit | Description | | Total Marks |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 14 | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 06 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) 06 | | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 14 | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | | |
| | | | |

| Paper | Code: CCCS919 | Total Credit : 4 |
|-------------|---|-------------------------|
| Title o | of Paper: Software Testing and Quality Assurance | Total Marks : |
| | | 70 |
| | | Time : 3 Hrs |
| | | |
| Unit | Description | Woighting |
| I | Testing Environment and Test Processes | weighting |
| L | World-Class Software Testing Model – Building a Software Testing | |
| | Environment - Overview of | |
| | Software Testing Process – Organizing for Testing – Developing the | 20% |
| | Test Plan – Verification Testing – | _0,0 |
| | Analyzing and Reporting Test Results – Acceptance Testing – | |
| | Operational Testing – Post | |
| | Implementation Analysis | |
| II | Testing Techniques | |
| | Using White Box Approach to Test design, Static Testing Vs. | |
| | Structural Testing, Code Functional Testing, Coverage and Control | |
| | Flow Graphs, Using Black Box Approaches to Test Case Design, | 200/ |
| | Random Testing, Requirements based testing, Decision tables, State- | 20% |
| | based testing, Cause-effect graphing, Error guessing, Compatibility | |
| | Bash Elimination System Testing, Usability and Accessibility | |
| | Testing Configuration Testing Compatibility Testing Case study for | |
| | White box testing and Black box testing techniques | |
| Ш | Incorporating Specialized Testing Responsibilities | |
| | Testing Client/Server Systems, Rapid Application Development | |
| | Testing, Testing in a Multiplatform Environment, Testing Software | |
| | System Security, Testing Object-Oriented Software, Object Oriented | 20% |
| | Testing, Testing Web based systems, Web based system, Web | |
| | Technology Evolution, Traditional Software and Web based | |
| | Software, Challenges in Testing for Web-based Software, Testing a | |
| TX 7 | Data Warehouse, Case Study for Web Application Testing. | |
| 1V | Test Automation Selecting and Installing Software Testing Tesls Software Test | |
| | Automation Skills needed for Automation Scope of Automation | 20% |
| | Automation, Skins needed for Automation, Scope of Automation, Design and Architecture for Automation $-$ Requirements for a Test | 20 / 0 |
| | Tool, Challenges in Automation, Tracking the Bug, Debugging, Case | |
| | study using Bug Tracking Tool | |
| V | Software Testing and Quality Matrices | |
| | Testing Software System Security, Six-Sigma, TQM, Complexity | |
| | Metrics and Models, Quality Management Metrics, Availability | 20% |
| | Metrics, Defect Removal Effectiveness, FMEA, Quality Function. | |
| | Deployment, Taguchi Quality Loss Function, Cost of Quality. Case | |
| Degie / | Study for Complexity and Object, Oriented Metrics | |
| Dasic | William Perry "Effective Methods of Software Testing" Third Edition | n Wiley Publishing |
| 1. | 2007 | n, whey i donshing |
| 2. | Srinivasan Desikan and Gopalaswamy Ramesh. "Software Testing | - Principles and |
| | Practices", Pearson Education, 2007 | · r · ···· |
| 3. | Naresh Chauhan, "Software Testing Principles and Practices" Oxford | l University Press, |
| | NewDelhi, 2010. | • • |
| 4. | Stephen Kan, "Metrics and Models in Software Quality", Addison | - Wesley, Second |
| | Edition,2004. | |
| 5. | Boris Beizer, "Software Testing Techniques" – 2nd Edition, Van N | Nostrand Reinhold, |
| | New York,1990 | |

| Paper | Total Credit : 4 Total Marks : 70 | | | |
|-------|---|----|-------------|--|
| Title | Title of Paper: Software Testing and Quality Assurance | | | |
| | | | | |
| Unit | Description | | Total Marks | |
| | | | | |
| Ι | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 06 | 14 | |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| Π | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 14 | | |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | | 14 | |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) 06 | | 14 | |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 08 | | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 14 | | |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | | | |
| | | | | |

| Course | Course | Name of | Т | Credit | Exam | Component of Marks | | arks |
|---------|----------|------------|---|--------|----------|---------------------------|----------|-------|
| Туре | Code | Course | / | | Duration | Internal | External | Total |
| | | | Р | | in Hours | | | |
| Core | CCCS1041 | Industrial | - | 24 | 4 | 180 | 420 | 600 |
| Courses | | Project | | | | | | |
| Total | | | | 24 | | 180 | 420 | 600 |
Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj Master of Science (Computer Applications & Information Technology) Semester: X

| The project definition examination. "Shodh Yatras" to indu Definition should idea application potential. A "Letter of Accepta college/department by Team size for the proje Project plan along with | Description Guidelines for Pro a should be initiated during the astries will help achieving this fir ally reflect current trends of IT nce" from the company has to the student. | ject e summer break after semester IV rst major step. industry and it should have a high be obtained and submitted to the | | |
|--|--|--|--|--|
| The project definition examination. "Shodh Yatras" to indu Definition should idea application potential. A "Letter of Accepta college/department by Team size for the proje Project plan along with | Description Guidelines for Pro a should be initiated during the astries will help achieving this fir ally reflect current trends of IT nce" from the company has to the student. | ject e summer break after semester IV est major step. industry and it should have a high be obtained and submitted to the | | |
| The project definition examination. "Shodh Yatras" to indu Definition should idea application potential. A "Letter of Accepta college/department by Team size for the project plan along with | Guidelines for Pro a should be initiated during the astries will help achieving this fir ally reflect current trends of IT nce" from the company has to the student. | bject e summer break after semester IV est major step. industry and it should have a high be obtained and submitted to the | | |
| The project definition examination. "Shodh Yatras" to indu Definition should idea application potential. A "Letter of Accepta college/department by Team size for the project plan along with | a should be initiated during the ustries will help achieving this fir ally reflect current trends of IT nce" from the company has to the student. | e summer break after semester IV est major step. industry and it should have a high be obtained and submitted to the | | |
| Troject plan along with and got certified by the of the start of the proje Student must not pay project. Internal guides must determined of the start of the project. | th division of work amongst tea e head of the college/department oct. any fee whatsoever to the cor | hree) students. ammates would have been prepared within a maximum of 10 (ten) days npany where he/she is selected for e time table to guide the students for | | |
| the project the time allocation will be in accordance with the scheme for 6th semester project as given. Coding standards should be followed meticulously. At the minimum, the code should be self documented, modular, and should use the meaningful naming convention. Database design is mandatory. At least portions of code (preferably full code) are mandatory. Student may be asked to write the code related to the project during examination. A report should be prepared for the project work which should be duly signed by the internal project guide and head of the college/department. It should also include a | | | | |
| "Certificate of Completion" from the company. | | | | |
| The report should be printed in colour and or greyscale and should be properly bound in spiral or hard cover. A copy as specified above has to be submitted at the time of external examination. The format of the external examination would consist of following components: | | | | |
| Sr. | Component | Weightage | | |
| 1. 2. | Explanation of Project Explanation of Code – | 20 % 20 % | | |
| | Database | | | |
| 3. | Documentation (Report) | | | |

Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj Master of Science (Computer Applications & Information Technology) Semester: X

| Paper Title (| • Code : CCCS1041 of Paper: Industrial Project | Total Credit : 24 Total Marks : 420 Time : | |
|------------------|---|--|-----|
| Unit | Description | Total Marks | |
| | Q.1 Explanation of Project | 80 | |
| | Q.2 Explanation of Code - Database | 80 | 420 |
| | Q.3 Documentation – Report | 80 | |
| | Q.4 Viva – Voce | 180 | |