College of Computer, Science & Information Technology - Junagadh

AFFILIATED TO BHAKTA KAVI NARSINH MEHTA UNIVERSITY

✦ Syllabus ✦

B.Sc.(IT) [Bachelor of Science in Information Technology]

B.C.A. [Bachelor of Computer Application]

[Semester – I & II]

Academic Year : 2020 – 21

(Effective from June – 2018)

◄ **ADDRESS : C.C.S.I.T. - JUNAGADH** ►

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(SEMESTER-I)					
Subject code	**Subject Name**	**Credit**	**Int. Marks**	**Ext. Marks**	**Total Marks**
CS-01	Programming in C	5	30	70	100
CS-02	Networking, Internet & Web Page Development	5	30	70	100
CS-03	Comp. Fundamentals & Emerging Tech.	5	30	70	100
CS-04	English Language & Communication Skills	5	30	70	100
CS-05	Practical – 1 (Based on CS-01)	5	-	-	100
CS-06	Practical – 2 (Based on CS-02 & PC Software / Libre Office)	5	-	-	100
Total Credits		**30**	**Total Marks**		**600**

(SEMESTER-II)					
Subject code	**Subject Name**	**Credit**	**Int. Marks**	**Ext. Marks**	**Total Marks**
CS-07	Data Structure & File Structure using C Language	5	30	70	100
CS-08	Web Programming using PHP	5	30	70	100
CS-09	Computer Organization & Architecture	5	30	70	100
CS-10	Foundation of Mathematics & Statistics	5	30	70	100
CS-11	Practical – 1 (based on CS-7)	5	-	-	100
CS-12	Practical – 2 (based on CS-8)	5	-	-	100
Total Credits		**30**	**Total Marks**		**600**

Structure of Theory Examination Paper – External

Question Paper contains 5 Questions (each of 14 marks). Every Question is divided in four parts like (a), (b), (c) and (d). Every Question will be asked from corresponding unit as specified in the syllabus of each course. (i.e. Question-1 is from Unit No. 1 and remaining questions from their corresponding Units).

TOTAL MARKS : 70, TOTAL TIME : 2½ HOURS

General Instructions:

1. Time duration of each theory paper will be of Two and Half hours.
2. Total marks of each theory paper will be 70 marks.
3. There will be five questions.
4. All questions are compulsory.

Instructions to the candidates for Practical Examination:-

1. Practical Exam. would be conducted for 1 ½ days, All the students have to remain present at the examination center 15 minutes before the scheduled time for examination.
2. Students have to carry with them certified Journal, I – card, Examination Receipt, and other necessary requirements for examination.
3. Student should not leave the laboratory without the permission of examiner.
4. Use of calculator is allowed but the use of mobile phones is strictly prohibited.
5. The candidate has to leave the laboratory only after the submission of all the answer sheets of the exercises performed.

B.Sc.(IT) & B.C.A. SEMESTER – I

CS-01 : PROGRAMMING IN C

Objective: To develop basic programming skill, concept of memory management and file concept.

Unit-1 : Introduction of C Language

- Introduction to Programming
- Various Computer Languages
- History & Overview of C Language
- Difference between traditional C and modern C
- C character set
- C tokens
    - Keywords
    - Constants
    - Strings
    - Identifiers and variables
    - Operators
- Operators & Hierarchy of operators
- Data types in c
- Type casting & Type Conversion
- Pre – Processors in C

Introduction of Logic Development Tools

- Introduction of Logic & Basic of Algorithm.
- Basics of Flow Chart
- Dry-run and its Use.
- Other Logic development techniques (Algorithm and Flowchart Based on Programming)

Unit-2 : Branching & Looping

- Decision structure
    - If statements(All Types)
    - Switch statement
    - Conditional ternary operator
- Looping Structures
    - For loop
    - Do…while loop
    - While loop
    - Nesting of loops
- Jumping statements
    - Break statement
    - Continue statement
    - Go to statements

Unit-3 : Library Functions

- Introduction of Library Function
- Brief overview of Header Files (stdio.h, conio.h, math.h, string.h, stdlib.h, ctype.h, graphic.h, process.h, dos.h)
- Types of library functions

String Function: strcpy, strncpy, strcat, strncat, strchr, strcmp, strncmp, strlen, strstr
Mathematical Functions: ceil, div, exp, fabs, floor, fmod, log, pow, sqrt
Date & Time Functions: clock, time, gmtime, localtime
Graphics Functions: initgraph, closegraph, arc, line, circle, ellipse, getx, putx, setcolor, setbkcolor

I/O Formatting Functions: printf, scanf, getc, getchar, gets, putc, putchar, puts
Miscellaneous Functions: delay, clrscr, isalnum, isalpha, isdigit, islower, isprint, isspace, isupper, toupper, tolower
Standard Library functions: abs, atof, atol, exit, free, rand
Memory Allocation Functions: malloc , realloc , calloc
User Define Functions (udf)

- Concept of User Define Function
- Types of user defined functions
- call by value & call by reference
- Nesting & Recursion
- Storage classes

Unit-4 : Array

- Concept of Array
- Types of arrays
  - Single dimensional array
  - Two dimensional array
  - Multi-dimensional array
- String arrays
- Array with functions using UDF
- Use of Arrays in Programming

Structures

- Concept of Structure
- Initializations and declarations
- Array with structures
  - Array of Structure
  - Array Within Structure
- Udf with structures
- Nested structures
- Introduction to union
- Difference between Structure & Union

Unit-5 : Pointers

- Concept of Pointers
- Pointer to Variables
- Pointer to Array
- Pointer within Array
- Pointer To Structure
- Pointers within structure
- Pointer to Pointer
- Use of pointers in Dynamic Programming

File Handling

- Concept of data files
- Importance of file handling
- I/O Operation
- Command line arguments

Reference Books:

1. Programming in ANSI C : E. Balagurusami
2. Let Us C : Yashwant Kanetkar.
3. Working with C : Yashwant Kanetkar.
4. Programming in C : Schaum Series publication.

Web Site References:

- https://www.tutorialspoint.com/cprogramming/index.htm
- http://www.eskimo.com/~scs/cclass/notes/top.html
- http://c-faq.com/
- http://www.learn-c.org/
- https://www.tutorialspoint.com/cprogramming/cprogramming_tutorial.pdf
- https://www.w3schools.in/c-tutorial/
- https://www.javatpoint.com/c-programming-language-tutorial

CS – 02 : Networking, Internet & Web Page Development

Objective: To understand basic terms of computer networks and Internet, to give knowledge of Scripting languages like HTML, CSS and Java Script

Unit-1 : Introduction to Computer Network

- Basics of Computers
- Computer Network
- Type of Computer Network
- Network Topology
- OSI Reference Model (Introduction)
- TCP/IP
- Internet Terminology
- ISP (Internet Service Provider)
- Intranet
- VSAT (very small aperture terminal)URL

Unit-2 : Application of Internet

- World Wide Web (WWW)
- Types of Search Engine
- Remote Login
- Electronic Mail (Email)
- Concept and use of : E-Commerce, E-Business, E-Governance, Mobile Commerce
- Website Basics (WebPages; Hyper Text Transfer, Domain name server, Protocol, File Transfer Protocol, Domain Names; URL, Protocol Address; Website[Static, Dynamic, Responsive], Web browser, Web Servers; Web Hosting, web portal, domain name server
- Network Security Concepts: Cyber Law, Firewall, Cookies, Hackers and Crackers
- Types of Payment System (Digital Cash, Electronic Cheque, Smart Card, Debit/Credit Card)

Unit-3 : Basic of HTML & Advance HTML 5

- Fundamental of HTML
- Basic Tag and Attribute
- The Formatting Tags
- The List Tags & Link Tag
- inserting special characters,
- adding images and Sound,
- Table & Frame in HTML
- Forms
- HTML 5 Document Structure & Syntax (section, article, aside, header, footer, nav, dialog)
    - Attributes of HTML 5
    - Web Form (datetime, date, month, week, time, number, range, email, url)
- Audio / Video

Unit-4 : Cascading Style Sheet & CSS 3

- Introduction to CSS
- Types of Style Sheets
- Class, ID Selector
- CSS Text & Font Properties
- CSS Background Properties
- CSS List Properties
- CSS Margin & Padding Properties
- CSS Comments
- CSS 3
    - Border Property
    - Background & Gradient Property
    - Drop Shadow Property
    - 2D & 3D Transform Property
    - Transition Property

Unit-5 : Java Script

- Introduction to JavaScript
- Variables
- JavaScript Operators
- Conditional Statements
- JavaScript Loops
- JavaScript Break and Continue Statements
- Dialog Boxes
- JavaScript User Define Function
- Built in Function (string, Maths, Array, Date)
- Events (onclick, ondblclick, onmouseover, onmouseout, onkeypress, onkeyup, onfocus, onblur, onload, onchange, onsubmit, onreset)
- Form Validation & E-mail Validation

Reference Books:

1. HTML in 10 steps or less Laurie Ann Ulrich, Robert G. Fuller
2. Internet The Complete Reference Young.
3. World Wide Web Design with Html C Xavier.
4. Internet for Every One Leon.
5. Practical Html 4.O Lee Philips.
6. Mastering In FrontPage BPB

Web site References :

1. https://www.javatpoint.com/html-tutorial
2. https://www.tutorialspoint.com/html/index.htm
3. https://www.w3schools.com/html/
4. https://www.csstutorial.net/

CS – 03 : COMPUTER FUNDAMENTALS & EMERGING TECHNOLOGY

Objective: To aware basics of computer and emerging technology

Unit-1 : Introduction of Computers

- Basics of Computers
    - What is Computer?
    - Characteristics of Computer
    - Data Processing Cycle(Data → Process → information)

- Classification of Computer by Data Processed
  - Analog, Digital and Hybrid Computers
- History and Generations of Computers
  - First to Fifth Generation Computers
- Classification of Computer by Processing Capabilities
  - Micro, Mini, Mainframe and Super Computers
- History and Generations of Computers.
  - First to Fifth Generation Computers
- Simple Model of Computer
  - Input Devices
  - CPU (Central Processing Unit)
  - Arithmetic & Logic Unit
  - Control Unit
  - Internal Memory
- Output Devices
- Secondary Storage Devices

Internal/External parts used with Computer Cabinet

- Introduction to Mother board
- Types of Processors.
  - Dual Core, Core 2 Duo, i2, i3, etc ...
- Memory structure and Types of Memory
  - RAM (SRAM, DRAM, DDR.)
  - ROM (ROM, PROM, EPROM, EEPROM, Cache)
- Slots
  - ISA Slots / PCI Slots / Memory Slots/SATA
- Sockets
- Cables
  - Serial Cable / Parallel Cable / USB Cable/HDMI
- Ports
  - USB (2.0 &3.0)/ Serial / Parellel
- Power Devices :UPS
- Graphic Cards
- Network card, Sound Card

Unit-2 : Input Devices

- Introduction
- Types of Input Devices
  - Keyboard / Mouse / Trackball / Glide - Pad / Game Devices Joystick, etc.) / Light Pen / Touch Screen / Mic (Sound Input) / Camera (Photo and Video Input) / POS (Point of Sale) Terminal (Scanners, etc)
  - MIDI(Musical Instrument Digital Interface) Keyboard,
  - Wireless Devices (Keyboard, Mouse, etc)
- Types of Scanners
  - OMR, MICR, OBR
- Output Devices
- Introduction
- Types of Output Devices
- Types of Monitors
  - CRT Display Units
  - LCD
  - LED
  - OLED
- Types of Printers
  - Impact (Dot Matrix Printer, Daisy Wheel Printer)
  - Non Impact(Ink Jet Printer, Laser Printer)

- Plotters
- Other Devices
    - Fascimile(FAX)
    - Headphone
    - SGD (Speech Generating Device)
    - COM (Computer Output Microfilm)
    - Google Glass

Unit-3 : Data Storage

- Introduction
- Types of Magnetic Storage Devices
    - Floppy Disk / Hard Disk / Magnetic Tape / Magnetic Disks
- Storage Mechanism of Magnetic Storage Devices
    - Tracks / Sectors / Clusters / Cylinders
- Reading / Writing Data to and from Storage Devices
- Seek Time / Rotational Delay - Latency / Access
- Time/Response Time
- Other Storage Devices
    - USB - Pen Drive/CD/DVD/Blu-Rav Disk. Flash Memory, Cloud Storage(Like Google
- Drive, OneDrive

Unit-4 : Numbering System and Codes

- Introduction to Binary Codes /
    - Nibble / Bit / Byte / Carry Bit / Parity Bit / Sign Bit
    - KB / MB / GB / TB / HB (etc ...
- Types of Numbering System
    - Binary / Octal/Decimal / Hex-Decimal
- Conversion
    - Binary to Octal, Decimal and Hexa-Decimal
    - Decimal to Binary, Octal and Hexa-Decimal
    - Octal to Binary, Decimal and Hexa-Decimal
    - Hexa-Decimal to Binary, Octal and Decimal
- Binary / Arithmetic
    - Addition
    - Subtraction (1's Compliment and 2's Compliment)
    - Division.
    - Multiplication
- Types of Codes
    - ASCII/BCD / EBCDIC / UniCode
- Parity Check
    - Event Parity System / Odd Parity System

Languages, Operating Systems and Software Packages

- Introduction
- Translator (Assembler / Compiler / Interpreter)
- Types of Languages
    - Machine Level Language
    - Assembly Level Language
    - High Level Language (3GL, 4GL, 5GL, etc.)
- Types of Operating Systems
    - Batch Operating System
    - Multi Processing Operating System
    - Time Sharing Operating System
    - Online and Real Time Operating System

- Uses and applications of Software Packages
    - Word Processing Packages
    - Spread Sheet Packages
    - Graphical Packages
    - Database Packages I
    - Presentation Packages
    - Animation / Video / Sound Packages

Unit-5 : Emerging Technologies and Virus

- Different Communication methods
    - GIS / GPS / COMA / GSM/ VOLTE
- Communication Devices
    - Cell Phones / Modem / Infrared / Bluetooth / WiFi / LiFi
- Virus
    - Introduction to Virus and related terms
    - Origin and History
    - Types of Virus
    - Problems and Protection from Virus
- Cloud Computing
    - What is Cloud Computing?
    - Characteristic & Service Models(Iaas, Paas, Saas)
    - Architecture
    - Security & Privacy

Reference Books:

1. Computer Fundamentals By P.K.Sinha
2. Fundamental of IT for BCA By S.Jaiswal
3. Engineering Physics By V.K.Gaur
4. Teach Yourself Assembler By Goodwin.

Web site References :

1. https://www.javatpoint.com/computer-fundamentals-tutorial
2. https://www.tutorialspoint.com/computer_fundamentals/index.htm
3. https://www.tutorialspoint.com/computer_fundamentals/computer_fundamentals_tutorial.pdf
4. http://www.kvadilabad.org/admin/downloads/1788662251computer_fundamentals_tutorial.pdf

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CS – 04 : TECHNICAL COMMUNICATION SKILL

- SUBJECT: English
- Course Title: English Language and Communication Skills
- Course Code:
- Total Teaching Hours: 45
- Time for Semester End Exam:2:30 Hours for 70 Marks
- Internal Assessment: Assignment/ presentation/MCQ test: 30 Marks
- Credit: 05
- Total Teaching Hours: 75 Hrs.

Learning Objectives:

- To enhances the knowledge of the subject particularly from non-urban areas.
- To make students proficient in English language and subject related terminology.
- To make them able to master in grammar.
- To make them develop the power of understanding the passage critically.

Detailed Syllabus:

Unit	Item	Marks	Hours
1	Text : The Room on the Roof by Ruskin Bond	14	09
2	**Basics of Communication:** Meaning of communication, Importance of communication, Process of communication, and SevenCs of Communication. Formal and Informal communication, Barriers of Communication and How to Overcome them.	14	09
3	**Written Communication:** Objectives of written communication, Merits and demerits of written communication, Types of Written Communication. **Oral Communication:** Principles of effective oral communication, Advantages of oral communication, Disadvantages of oral communication, Types of Oral Communication. **Interviews:** Meaning & Purpose, Art of interviewing, Types of interview, Its Essential Features. **Project Presentations:** Advantages & Disadvantages, Executive Summary, Charts, Distribution of time (presentation, questions & answers, summing up), Visual presentation, Guidelines for using visual aids, Electronic media (power- point presentation).	14	09
4	**Grammar:** Verbs, adjectives, adverbs, pronouns, tenses, conjunctions, punctuations and prepositions.	14	09
5	**Language Skills:** How to Improve Listening, Speaking, Reading, Writing Skills	14	09
Total Teaching Hours			**45**

Reference:

1. Technical Communication: Principles and Practice by Meenakshi Raman & Sangeeta Sharma. OUP
2. Principles and Practice of Business Communication by Rhoda Doctor. Sheath publishers
3. A Communicative Grammar of English by Geoffrey Leech & Jan Svartvik. Routledge Publication
4. Spoken English: A Foundation Course by Kamlesh Sadanand and Susheela Punitha (Part I and Part II

CS-05 : Practical-1 Based on CS – 01	
Topic	**Marks**
Programming in C Language	**100**

CS-06 : Practical-2 Based on CS – 02	
Topic	**Marks**
HTML-5, CSS-3, MS – Word, MS – Excel, MS – Power Point, MS - Access and Macromedia Dream Weaver Programming in C Language	**100**

B.Sc.(IT) & B.C.A. SEMESTER – II

CS-07 : Data Structure & File Structure using C Language

Objective : To learn algorithm analysis, data structures, sorting and searching techniques.

1. **Algorithm Analysis**
   - The analysis of algorithm.
   - Time and space complexities.
   - Asymptotic notation.
   - Classes of algorithm.
   - Big-Oh Notation
   - Big-Omega Notation

   Advanced Concepts of C and Introduction To data Structures
   - Data types
   - Arrays
   - Handling arrays : Initializing the arrays
   - Multidimensional arrays : Initialization of two dimensional array
   - Pointers
     - Advantages and disadvantages of pointers
     - Declaring and initializing pointers
     - Pointer arithmetic
   - Array of pointers
   - Passing parameters to the functions
   - Relation between pointers and arrays
   - Scope rules and storage classes
     - Automatic variables
     - Static variables
     - External variables
     - Register variable
   - Dynamic allocation and de-allocation of memory
     - function malloc(size)
     - function calloc(n,size)
     - function free(block)
   - Dangling pointer problem.
   - Structures.
   - Enumerated constants
   - Unions

2. **Sorting and Searching**
   - Bubble sorting
   - Insertion sorting
   - Quick sorting
   - Bucket sorting
   - Merge sorting
   - Selection sorting
   - Shell sorting
   - Basic searching technique
   - Index searching
   - Sequential searching
   - Binary searching

   Graph
   - Adjacency matrix and adjacency lists
   - Graph traversal
     - Depth first search (dfs)

- Implementation
- Breadth first search (bfs)
- Implementation
- Shortest path problem
- Minimal spanning tree

3. Introduction To Data Structure

Primitive and simple structures
Linear and nonlinear structures file organization.

Elementary Data Structure

Stack

Definition, Operations on stack, Implementation of stacks using arrays, Function to insert an element into the stack, Function to delete an element from the stack, Function to display the items

Recursion and stacks
Evaluation of expressions using stacks

Postfix expressions, Prefix expression

Queue

Introduction
Array implementation of queues
Function to insert an element into the queue
Function to delete an element from the queue

Circular queue

Function to insert an element into the queue
Function for deletion from circular queue
Circular queue with array implementation

Deques
Priority queues

4. Link List

Singly linked lists.

Implementation of linked list, Insertion of a node at the beginning, Insertion of a node at the end, Insertion of a node after a specified node, Traversing the entire linked list, Deletion of a node from linked list

Concatenation of linked lists
Merging of linked lists
Reversing of linked list
Doubly linked list : Implementation of doubly linked list
Circular linked list
Applications of the linked lists

5. Tree

Objectives, Properties of a tree, Binary trees, Properties of binary trees, Implementation
Traversals of a binary tree

In order traversal, Post order traversal, Preorder traversal

Binary search trees (bst) :

Insertion in bst, Deletion of a node, Search for a key in bst

- Height balanced tree
- b-tree : Insertion, Deletion

CS-08 : WEB PROGRAMMING

Objective : To learn web programming, Learn to develop web site using PHP

1. **Web Programming**
   - Static and Dynamic Web
   - Client side & Server Side Scripting
   - Introduction to other server side languages
   - Webserver (IIS & Apache)
   - HTTP & HTTPS protocol
   - FTP
   - Web Hosting, Virtual Host, Multi-Homing
   - Distributed Web Server Overview,
   - Document Root

   Web Services
   - XML and JSON
   - Introduction to JSON
   - Installation & Configuration
   - Resource Types
   - JsonSerializable
   - JSON Functions : json_decode, json_encode

2. **PHP Basic**
   - 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
   - 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 Functions (Gettype, settype, isset, unset,strval, floatval, intval, print_r)
   - String Function(Chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim trim, substr, strcmp, strcasecmp, strpos, strrpos, strstr, stristr, str_replace, strrev, echo, print, explode(), implode(), join(), md5(), str_split(), str_shuffle(), strcspn(), strpbrk(), substr_compare(), substr_count(), ucfirst(), ucwords())
   - Math Function(Abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand, cos(), acos(), sin(), asin(), tan(),
   - atan(), bindec(), decbin(), hexdec(), dechex(), is_finite(), is_infinite(), log(), base_convert(), deg2rad())
   - Date Function (Date, getdate, setdate, Checkdate, time, mktime, date_add(), date_create(),
   - date_format(), gmdate(), localtime(), strftime(), strptime(), strtotime(), gettimeofday())
   - Array Function (Count, list, in_array, current, next, previous, end, each, sort, rsort, assort, arsort,
   - array_merge, array_reverse, array_diff(), array_merge_recursive(), array_shift(), array_slice(),
   - array_unique(), array_unshift(), array_keys(), array_key_exists(), array_push(), 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_uploaded_file)

3. Handling Form, Session Tracking & PHP Components

- Handling form with GET & POST
- Cookies
- Session
- Server variable
- PHP Components
  - PHP GD Library
  - PHP Regular expression
  - Uploading file
  - Sending mail using mail()
  - Sending mail using smtp()

AJAX

- What is AJAX
- PHP with AJAX
- How AJAX works with PHP
- Working with AJAX as background process
- Using JQuery with PHP
- JQuery AJAX with PHP

4. Introduction of SQL

- Working with MySQL using PhpMyAdmin
- SQL DML Statement (Insert, Update, Select, Delete) Command
- PHP-MySQL Connectivity
- PHP-MySQL Functions
- mysql_connect, mysql_close,mysql_error, msyql_errno, mysql_select_db, mysql_query, mysql_fetch_array, mysql_num_Rows, mysql_affected_Rows, mysql_fetch_assoc, mysql_fetch_field, ysql_fetch_object, mysql_fetch_row, mysql_insert_id, mysql_num_fields,mysql_result, mysql_tablename, mysql_list_tables, mysql_list_fields, mysql_field_type, mysql_db_name, mysql_db_query, mysql_data_seek

5. jQuery

- What IsjQuery?
- jQuery Syntax
- jQuery Selector : Element Selector, Class Selector, id Selector
- jQuery Events : Click, dbclick, keypress, keydown, keyup, submit, change, focus, blur, load, resize, scroll, unlode
- jQuery Effects
  hide show, fade, slide

Reference Books:

1. Modern PHP: New Features and Good Practices by Josh Lockhart (ORELLY)
2. PHP Cookbook: Solutions & Examples for PHP Programmers by David Sklar and Adam Trachtenberg (ORELLY)
3. Programming PHP by Kevin Tatroe and Peter MacIntyre ORELLY)
4. PHP for the Web: Visual QuickStart Guide (4th Edition) by Larry Ullman (Peachpit Press)

Additional Topics (Not to be asked in examination) :

Student should be aware of followings

- Uses and Advantages of CMS
- Wordpress [Introduction & Installation]
- Joomla [Introduction & Installation]
- Magento [Introduction & Installation]

CS - 09 : Computer Organization & Architecture

1. **Digital Logic Circuits**
   Logic Gates: AND,OR,NOT,NAND,NOR,XOR,Exclusive NOR, Boolean Algebra: What is Boolean Alg., Explanation about Boolean variable and Boolean Function (analog & digital signals), Describe truth table, Discuss postulates, Discuss theorem related to postulates. Simplified Boolean function using postulates and draw logical diagram of simplified function, simplified Boolean function using karnaugh map method and discuss Don't care condition, Sequential And Combinational Circuits: What are clock Pulses, What is Combinational circuit and sequential circuit after discussion of adders and flip flops, Flip Flops: SR, Clocked SR, D, JK, JK- master & salve, T, Universal Gate: Why it is called universal gate explain.
2. **Digital Component**
   Integrated Circuits, Decoders (2 × 4, 3 × 8), Encoders (Octal to Binary - 8 × 3), Multiplexer (4 × 1), Demultiplexer (1 × 4), Register : Block diagram of register, how it works, Parallel register and shift register, how it transfer data, asynchronous 4-bits binary counter
3. **Data Representation**
   Multiplication and Division of two binary numbers, Floating point representation, Fixed point representation, Error Detection code - (Parity Bit)
4. **Central processing Unit**
   Introduction of CPU, Major Component of CPU, General Register Organization: What is Control Word, Accumulator Register, Stack Organization: What is register stack, what is memory stack, what is polish notation & reverse polish notation, Why we use polish notation? Explain with an example. Arithmetic And Logic Unit, Block Diagram of ALU, Explain how it works. Interrupts : What is interruption, how it useful and work
5. **Input-Output organization**
   Memory Buses: explain with block diagram, how it works, data bus, address bus, control lines, Input Output Buses, Concept of input Output interface, Input Out Processor (IOP), Direct Memory Access: intro, DMA works, explain DMA controller, How DMA transfer data in computer system

Reference Books:

1. Computer System Architecture - Morries Mano (PHI)
2. Digital Logic And Computer Design - Morries Mano
3. Digital Computer Electronics - Malvino And Leach

CS-10 : Mathematical And Statistical Foundation of Computer Science

Objective:

- To Aware about basic Mathematics and Statistics
- To develop Reasoning ability and Logical ability
- To develop Arithmetic's ability
- To develop a positive attitude towards learning Mathematics & statistics
- To perform mathematical & statistical operations and manipulations with confidence, speed and accuracy.

1. **Determinants**
   - Introduction
   - 2 × 2 , 3×3 order determinant
   - Cramer's method for solving linear equation(Two and Three Variables)
   - Properties of Determinants
   - Examples

2. **Matrices**
   - Introduction,
   - Different types of matrix(square matrix, column matrix, row matrix, Diagonal matrix. Unit matrix, null matrix),
   - Transpose of matrix,
   - Addition, subtraction & multiplication of two matrices,
   - Adjoint of a square matrix,
   - Inverse of matrix

3. **Co-ordinate Geometry**
   - Introduction,
   - Quadrants & Axes,
   - Distance between two points in R2(without proof),
   - Section formula(without proof),
   - Area of triangle(without proof),
   - Typical examples

   Set Theory
   - Introduction,
   - Method of representation of a set,
   - Operation on sets & its properties(with only Logical proof),
   - De'Morgan laws with Logical proof,
   - Difference of two sets,
   - Cartesian products(up to two sets),
   - Typical examples

4. **Measures of Central Tendency & Dispersion**
   - Mean(ungroup data, group data),
   - Median(ungroup data, group data),
   - Mode(ungroup data, group data),
   - Range,
   - Quartiles,
   - Standard Deviation,
   - Typical examples

5. **Arithmetic & Geometric progression**
   - Sequence,
   - Series,
   - Arithmetic progression(Definition & Nth term, sum of n terms),
   - Geometric progression
   - (Definition & Nth term, sum of n terms),
   - Harmonic Progression
   - Relation Between AM GM HM (Two Numbers)
   - Typical examples

Reference Books:

1. Business Mathematics By Sancheti & Kapoor Sultan & Chand
2. Statistical Method By Gupta Sultan & Chand
3. Discrete Mathematical Structures with Applications to Computer Science By J.P. Tremblay & R. Manohar TMH
4. Business Mathematics : V.K. Kapoor
5. Business Mathematics : Dr. Kachot
6. Fundamentals of Statistics : S. C. Gupta

CS-11 : Practical-1 and Viva Based on CS – 7	
Topic	**Marks**
Data Structure Using C Language	**100**

CS-12 : Practical-2 and Viva Based on CS – 8	
Topic	**Marks**
Web Programming	**100**

Examination and Evaluation Guidelines

1. The internal exams, assignments are compulsory for the students.

Attendance Guideline

1. It is necessary for the students to remain present during theory and practical during the semester. The presents of the students shall not be less than 80%.
2. Absence even for one lecture or reporting late for the lectures will be marked as absence for whole day.
3. Students may take leave only for genuine reasons after submitting leave application in writing to the class teacher.

Computer Lab Rules

1. Operate the equipment's with care.
2. For any hardware, software problem, please contact lab assistance.
3. Use of internet is strictly prohibited during the lab session.
4. Do not eat or drink in the lab.
5. Do not touch, connect or disconnect any plug or cable without your lecturer/laboratory technician's permission.
6. Keep your bags and shoes outside the lab.
7. Please turn off the computer properly.
8. After allocating the seat to the students. They are not supposed to change without prior permission.
9. Keep the noise level to a minimum.
10. During the lab session, student has to follow the time table and faculties instructions.
11. Students have to be present on time in the lab session and leave the lab after completion the lab or prior permission of the lab faculty.
12. All students have to be presents with ICARD and subject books.
13. The data will be given to the students at their allocated time schedule only.
14. Do not read or modify other user's files. Save your work often.

College of Computer, Science & Information Technology - Junagadh

AFFILIATED TO BHAKTA KAVI NARSINH MEHTA UNIVERSITY

Courses Offered

- B.Sc. – Bachelor of Science
  (Microbiology, Biotechnology, Biochemistry, Chemistry, Mathematic, Physics)
- B.Sc.(IT) – Bachelor of Science in Information Tech.
- B.C.A. – Bachelor of Computer Application
- D.M.L.T. – Diploma in Medical Laboratory Technology
- M.Sc.(IT) – Master of Science in Information Technology
- M.Sc.(Micro.) – Master of Science in Microbiology
- M.Sc.(Chem.) – Master of Science in Chemistry

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