KAKATIYA UNIVERSITY
U.G. Skill Enhancement Course - IV
(Under CBCS)
B.Sc. Final Year
SEMESTER - VI
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

QUANTITATIVE APTITUDE TEST

Credits: 2

Theory: 2 hours/week **Marks - 40**

Unit – I ARITHMETICAL ABILITY

1.1 Arithmetical Ability: Ratio & Proportion

1.2 Arithmetical Ability: Time & Work, Time & Distance

1.3 Arithmetical Ability: Simple Interest, Compound Interest

1.4 Arithmetical Ability: Stocks & Shares

Unit – II DATA INTERPRETATION

2.1 Data Interpretation: Tabulation

2.2 **Data Interpretation**: Bar Graphs

2.3 **Data Interpretation**: Pie Charts

2.4 **Data Interpretation**: Line Graphs

Text Book: Quantitative Aptitude by Dr. R.S.Aggarwal

KAKATIYA UNIVERSITY
U.G. B.Sc. Final Year (Under CBCS)
Semester – VI: Generic Elective Paper-II
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

WATER RESOURCES MANAGEMENT

UNIT-I

1. Importance of Natural Resources – Different Types Resources
2. Significance of Water Resources and their uses
3. Conservation of water and recycling of the water – Global distribution of water
4. Water shed programmes and their management
5. Storing the rain water in tanks and recharging ground water.

Unit-II

6. Rain water harvesting in rural areas (chekdam, trenches etc.,)
7. Over use of surface and ground water and control measures.
8. Aims, objectives and implementation of Mission Bhagiratha (Telangana Government Drinking water programme)
9. Aims, objectives and implementation of Mission Kakatiya (Telangana Government minor irrigation programme)
10. Issues and challenges in Water Resources Management

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SEMESTER - VI

Elements of Scripting Languages

Unit I

HTML**,** Browsers and their types, URL's, web sites, Domain Names, static and dynamic sites and active web pages, Files Creation, Web Server, Web Client/Browser Hyper Text Markup Language, HTML Tags, Paired Tags, Commonly used HTML Commands Titles and Footers, Paragraph Breaks, Line Breaks, Heading Styles, Drawing Lines, Text Styles, Other Text Effects, Indenting Text, Lists, Types of Lists.

Unit II

Using the Border attribute, Using the Width and Height Attribute, Using the Align Attribute, Tables - Header, Data rows, The Caption Tag, Attributes - Width and Border, BGCOLOR, COLSPAN, ROWSPAN, External Document References, Internal Document References, Images as Hyperlinks, Introduction to Frames, tag, <FRAME> tag.

DHTML Introduction, use and its elements, Cascading Style Sheets – Introduction, Using Inline Styles, Sample Examples, Defining Your Own Styles, Properties in Values in Styles, A worked example, Formatting Blocks of Information, Layers, Embedded Style Sheets, Linking external sheets.

Unit III

JavaScript, Advantages, JavaScript Syntax, Data Types and Literal, Type Casting, Variables, Incorporating variables in a Script, Array, Operators and Expressions, Arithmetic Operators, Logical Operators, Comparison Operators, String Operators, Assignment Operators, Conditional Expression, Ternary and Special Operators

JavaScript Programming Constructs, If - then - else, Immediate If, For Loop, Built-in Functions, User Defined functions, Declaring functions, Place of Declaration, Passing Parameters, Variable Scope, Return Values, Recursive Functions, Placing text in a Browser, Dialog Boxes - Alert dialog box, Prompt dialog box, Confirm dialog box.

Unit IV

The Form Object, The Form Object's Methods, Text Element, Password Element, Button Element, Submit Button Element, Reset Button Element, Checkbox Element, Radio Element, Text Area Element, Select and Option Element, Multi Choice Select Lists Element, Form Validations using JavaScript.

Built-In Objects in JavaScript - String, Math, Date Object, Creating a User Defined Object.

Text Books:

1. Web Programming –Chris Bates – Third Edition.(Wiley)
2. Internet & World Wide Web- H. M. Deitel, P.J. Deitel, A. B. Goldberg-Third Edition

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SEMESTER - VI

Elements of Scripting Language Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. a. Write a HTML program using basic text formatting tags, <p>,
, <pre>.
   b. Write a HTML page for Example Cafe using above text formatting tags.
2. a. Write a HTML program using presentational element tags <b>, <i>, <strike>, <sup>, <sub>, <big>, <small>, <hr>
   b. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
3. a. Write a HTML program using different list types.
   b. Write a HTML page that displays ingredients and instructions to prepare a recipe.
4. a. Write a HTML program using grouping elements and .
   b. Write a HTML Menu page for Example cafe site.
5. a. Write a HTML program using images, audios, videos.
   b. Write a HTML program to create your time table.
6. Write a HTML program to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file select boxes.
7. Write a HTML program to create frames and links between frames.
8. Write a HTML program to create different types of style sheets.
9. Write a HTML program to create CSS on links, lists, tables and generated content.
10. Write a HTML program to create your college web site using multi column layouts.
11. Write a HTML program to create your college web site using for mobile device.
12. Write a HTML program to create login form and verify username and password.
13. a. Write a JavaScript program to calculate area of rectangle using function.
    b. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the current time.
14. a. Write a JavaScript program using switch case?
    b. Write a JavaScript program to print multiplication table of given number using loop.
15. a. Write a JavaScript programs using any 5 events.
    b. Write a JavaScript program using JavaScript built in objects.
16. Write a JavaScript program to create registration Form with Validations.

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SEMESTER - VI

Elective 2

A) Operating Systems

Unit I

Introduction: Computer-System Architecture, Computing Environments.

Operating-System Structures: Operating-System Services, User Interface for Operating-System, System Calls, Types of System Calls, Operating System Structure.

Process Management: Process Concept, Process Scheduling, Operations on Processes, Inter process Communication, Examples–Producer-Consumer Problem.

Unit II

CPU Scheduling: Concepts, Scheduling Criteria, Scheduling Algorithms.

Process Synchronization: Critical-Section Problem, Peterson's Solution, Synchronization, Semaphores, Monitors.

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Unit III

Main Memory: Introduction, Swapping, Contiguous Memory Allocation, Segmentation, Paging.

Virtual Memory: Introduction, Demand Paging, Page Replacement, Allocation of Frames, Thrashing.

Unit IV

Mass-Storage Structure: Overview, Disk Scheduling, RAID Structure.

File Systems: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, Protection. File System Implementation, Directory Implementation, Allocation Methods, Free-Space Management.

Text Book:

Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts (9e)

References:

1. Naresh Chauhan, Principles of Operating Systems
2. Thomas W. Doeppner, Operating Systems in Depth
3. Andrew S. Tanenbaum, Modern Operating Systems
4. William Stallings, Operating Systems – Internals and Design Principles
5. Dhananjay M. Dhandhere, Operating Systems – A Concept Based Approach

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SEMESTER – VI

A.) Operating Systems Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. a) Use vi editor to create different files, writing data into files, modifying data in files.
   b) Use different types of Unix commands on the files created in first program.
2. Write shell programs using 'case', 'then' and 'if' & 'else' statements.
3. Write shell programs using while, do-while and for loop statements.
4. a) Write a shell script that accepts two integers as its arguments and compute the value of first number raised to the power of the second number.
   b) Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.
5. a) Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers..
   b) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
6. a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
   b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.
7. Write a program to simulate the UNIX commands like ls, mv, cp.
8. Write a program to convert upper case to lower case letters of a given ASCII file.
9. Write a program to program to search the given pattern in a file.
10. Write a program to demonstrate FCFS process schedules on the given data.
11. Write a program to demonstrate SJF process schedules on the given data.
12. Write a program to demonstrate Priority Scheduling on the given burst time and arrival times.
13. Write a program to demonstrate Round Robin Scheduling on the given burst time and arrival times.
14. Write a program to implementing Producer and Consumer problem using Semaphores.
15. Write a program to simulate FIFO, LRU, LFU Page replacement algorithms.
16. Write a program to simulate Sequential, Indexed and Linked file allocation.

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SEMESTER - VI

Elective 2

B) PHP with My SQL

Unit I

Introducing PHP – What is PHP? Why use PHP? Evolution of PHP, Installing PHP, Other ways to run PHP, Creating your first script.

PHP Language Basics – Using variables, Understanding Data Types, Operators and Expressions, Constants. Decisions and Loops – Making Decisions, Doing Repetitive Tasks with Looping, Mixing Decisions and Looping with HTML.

Unit II

Strings – Creating and Accessing Strings, Searching Strings, Replacing Text with Strings, Dealing with Upper and Lowercase, Formatting Strings. Arrays – Creating Arrays, Accessing Array Elements, Looping Through Arrays with for-each, Working with Multidimensional Arrays, Manipulating Arrays.

Functions – What is a Function? Why Functions are useful? Calling Functions, Working with Variable Functions, Writing your own Functions, Working with References, Writing Recursive Functions.

Unit III

Objects – Introduction OOP Concepts, Creating Classes and Objects in PHP, Creating and using Properties, Working with Methods, Object Overloading with _get(), _set() and _call(), Using Inheritance to Extend Power of Objects, Constructors and Destructors, Automatically Loading Class Files, Storing as Strings.

Handling HTML Forms with PHP – How HTML form works, Capturing Form Data with PHP, Dealing with Multi-Value Fields, Generating Web Forms with PHP, Storing PHP Variables in Forms, Creating File Upload Forms, Redirecting After a Form Submission.

Unit IV

Working with Files and Directories - Getting Information on Files, Opening and Closing Files, Reading and Writing to Files, Copying, Renaming, and Deleting Files, Working with Directories.

Introducing Databases and SQL – Deciding How to Store Data, Understanding Relational Databases, Setting Up MySQL, A Quick Play with MySQL, Connecting MySQL from PHP.

Retrieving Data from MySQL with PHP – Setting Up the Book Club Database, Retrieving Data with SELECT, Creating a Member Record Viewer. Manipulating MySQL Data with PHP – Inserting, Updating, and Deleting Records, Building a Member Registration Application.

Text Book:

Matt Doyle, Beginning PHP 5.3 (Wrox – Wiley Publishing)

References:

1. Ellie Quigley, PHP and MySQL by Example
2. Joel Murach, Ray Harris, Murac h's PHP and MySQL
3. Brett McLaughlin , PHP & MySQL: The Missing Manual
4. Luke Welling, Laura Thomson, PHP and MySQL Web Development
5. W. Jason Gilmore, Beginning PHP and MySQL From Novice to Professional
6. Andrew Curioso, Ronald Bradford, Patrick Galbraith, Expert PHP and MySQL

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SEMESTER - VI

Elective 2

B.) PHP with My SQL Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1.
a) Write a PHP script to find the factorial of a given number.
b) Write a PHP script to find the sum of digits of a given number.

2.
a) Write a PHP script to find whether the given number is a prime or not.
b) Write a PHP script to demonstrate the use of break, continue statements using nested loops.

3.
a) Write a PHP script to display the Fibonacci sequence with HTML page.
b) Write a PHP script to create a chess board.

4.
a) Write a PHP script using built-in string function like strstr(), strops(), substr_count(), etc...
b) Write a PHP script to transform a string to uppercase, lowercase letters, make a string's first Character uppercase.

5.
a) Write a PHP script that inserts a new item in an array in any position.
b) Write a PHP function to check whether all array values are strings or not.

6.
a) Write a PHP script to count number of elements in an array and display a range of array elements.
b) Write a PHP script to sort a multi-dimensional array set by a specific key.

7.
a) Write a PHP script using a function to display the entered string in reverse.
b) Write a PHP script using function for sorting words in a block of text by length.

8.
a) Write a PHP script for creating the Fibonacci sequence with recursive function.
b) Write a PHP script using pass by value and pass by reference mechanisms in functions.

9.
a) Write a PHP script to demonstrate defining and using object properties.
b) Write a PHP script to demonstrate inheritance.

10.
a) Write a PHP script to demonstrate the object overloading with _get(), _set(), and _call().
b) Write a PHP script to demonstrate the overloading property accesses with _get() and _set().

11.
a) Write a PHP script to demonstrate the method overloading and method overriding mechanisms.
b) Write a PHP script to demonstrate the use of final classes and final methods.

12.
a) Write a PHP script to demonstrate the use of interfaces.
b) Write a PHP script using constructors and destructors.

13. Write a PHP application to handling HTML forms with PHP script.

14.
a) Write a PHP script to create a file, write data into file and display the file's data.
b) Write a PHP script to check and change file permissions, copying, renaming and deleting files.

15.
a) Write a PHP application for connecting to MySQL and reading data from database table.
b) Write a PHP application for inserting, updating, deleting records in the database table.

16. Write a PHP application for student registration form.

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Elective 2

C) Cryptography

Unit I
Introduction: Security Trends, Security Attacks, Security Services, Security Mechanisms, Model for Network Security, Symmetric Ciphers: Classical Encryption Techniques, Substitution Techniques, Transposition Techniques, Rotor Machines, Steganography.

Unit II
Data Encryption Standard: Block Cipher Principles, The Data Encryption Standard, The Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles. Advanced Encryption Standard: Evaluation Criteria For AES, The AES Cipher.

Unit III
Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, the RSA Algorithm, Public-Key Cryptosystems: Key Management, Diffie-Hellman Key Exchange, Elliptic Curve Arithmetic, Elliptic Curve Cryptography.

Unit IV
Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs.
Digital Signatures and Authentication Protocols: Digital Signatures, Kerberos, X.509 Authentication Service, Public-Key Infrastructure.

Text Books:

1. W. Stallings, Cryptography and Network Security Principles and Practices, 4th Ed., Prentice-Hall of India, 2006.

References

1. C. Pfleeger and S.L. Pfleeger, Security in Computing, 3rd Ed., Prentice- Hall of India, 2007.

2. M.Y. Rhee, Network Security, John Wiley and Sons, NY, 2002.

Elective 2

C) Cryptography Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Implement various cryptography techniques.
2. Implement the Pure Transposition Cipher
3. Implement Additive cipher
4. Implement DES Encryption and Decryption
5. Implement double transposition cipher
6. Implement RSA Encryption Algorithm
7. Implement RSA algorithm to achieve confidentiality
8. Implement RSA algorithm to create Digital Signatures
9. Implementation of Hash Functions
10. Implement Diffie Hellman Key Exchange.

**** The above programs can be implemented either in 'C' or in C++ or in Java.**