BCA: 601 - Computer Graphics & Multimedia

Level of Knowledge: Expert Knowledge

Course Objective: The objective of this course is to introduce the concept of Computer Graphics and Multimedia.

Scheme of Examination
Total marks 100.
Internal marks 20.
Practical Marks 20
External Marks 60

The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

Unit 1

Pixel, frame, buffer, application of computer graphics, Raster Graphics fundamentals. Display Devices- Random Scan, Raster Scan Monitors, Color CRT Monitor, DUST and Plasma Panel.

Unit 2

Graphics primitives: - Algorithms for Line Generation, circle generation, polygon generation and polygon filling algorithms, Anti aliasing. 2-D Transformation: - Translation, Scaling, Rotation, Reflection, homogeneous Co-ordinates.

Unit 3

3-D Transformation:- Translation, Scaling, Rotation, windowing & clipping- window, view port, line clipping, polygon clipping, window & view port transformation, Display file, Segment table, Segment creation, deletion, rename.

Unit 4

Multimedia: Text – Fonts, Faces, animating Text, Hyper Text Sound – MIDI, Digital audio basics, audio file formats, audio editing, MCI. Image – Bitmaps, Vector drawing, color palate, concept of 3D Modelling, Image file formats (BMP, JPG). Animation – Principles of animation, cell animation, kinematics, morphing.

Unit 5

Video – Broadcast video standards (NTSC, PAL), Integrating Computer and television, video capture board, video, colour, shooting and editing video, recording formats (S- VHS) video hardware resolution, video compression (JPEG, MPEG). Hard copy devices: printers & Plotters, Input devices: Mouse, Trackball, Lightpen, Scanner, Digital Camera.

Text Readings:

1. Hearn Donald and Baker M.Pauline: **Computer Graphics**, , Prentice Hall of India, New Delhi 2001.

2. Vaughan Tay, **Multimedia: Making it Work**, Tata McGraw Hill Publishing Co., New Delhi, 2001.

List of Suggested Practicals

1. Write a program for DDA line Method.
2. Write a program for Brasnham's line drawing Algorithm.
3. Write a program for Brasnham's circle drawing Algorithm.
4. Write a program for Brasnham's circle drawing using Midpoint Subdivision Method.
5. Write a program for Drawing a polygon.
6. Write a program for Scan-Filling a Polygon.
7. Write a program for Sutherland hodgman Polygon clipping.
8. Write a program for composite Transformation.
9. Write a program to write your name in Hindi using any character generation method.
10 Write a program for Cohen-Sutherland Line Clipping method and clip a line using this.

BCA – 602: Computer Oriented Numerical Methods

Level of Knowledge: Expert Knowledge
Course Objective: To introduce the concept of Computer Oriented Numerical Methods.
Scheme of Examination
Total marks 100.
Internal marks 20.
Practical Marks 20
External Marks 60
The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

Unit 1

Computer Arithmetic: Floating Point Number Operations, Normalization and their consequences.
Iterative Methods: Bisection Method, False Position Method, Newton Raphson Method, Secant Method, Graffes Root Squaring Method and Convergence of Solution.

Unit 2

Simultaneous Linear Equations: Solution of simultaneous Linear Equations – Gauss Elimination Method, Gauss – Seidal Method, Gauss – Jordan Elimination Method, Triangularization Method & Pivoting, Condensation, Ill Conditioned Equation & Refinement of solutions.
Curve Fitting: Curve Fitting Methods like Least Square Curve fitting, Non Linear curve fitting.

Unit 3

Difference Operators and Interpolation: Definition Of Forward, Backward, Shifting, Divided Difference, Central and Averaging Operators and their Relationships. Newton's Forward Interpolation Formula, Newton's backward Interpolation Formula, Newton's Divided Interpolation Formula, Lagrange's Interpolation Formula.

Unit 4

Numerical Differentiation: Numerical Differentiation using Newton's Forward Interpolation Formula, Newton's backward Interpolation Formula, Newton's Divided Interpolation Formula.
Numerical Integration: General Quadrature Formula, Newton – Cote's Formula, Trapezoidal Rule, Simpson's One Third Rule, Simpson's Three Eighth Rule.

Unit 5

Numerical Solutions Of Ordinary Differential Equations: Euler's Method, Euler's Modified Method, Taylor's Series Method, Picard's method, Runge Kutta Second Order and Fourth order Method.

Text Readings:

1. V Raja Raman Computer Oriented Numerical Methods By. PHI Learning
2. Shastri.:**Numerical Analysis** PHI Learning
3. Krishnamurthy :**Computer based Numerical Algorithm** Preintice hall of India pvt ltd
4. Grewal B.S **Numerical Methods in Engineering & Science,** Khanna Publication

List of Suggested Practicals

Practicals related to iterative Methods

- Zeros of a Single transcendental equation.
- Zeros of a polynomial using Bisection Method
- Zeros of a polynomial using False Position Method
- Zeros of a polynomial using Newton Raphson Method

Practicals related to solution of linear simultaneous equations by

- Gauss elimination Method
- Gauss Siedal Method
- Solution related to pivoting
- Ill conditioned equations and refinement of solutions

Practicals related to

- Newton's Forward Interpolation Formula
- Newton's Backward Interpolation Formula
- Newton's Divided Interpolation Formula
- Lagrange's Interpolation Formula
- Trapezoidal Rule
- Simpson's One-Third Rule
- Simpson's Three Eighth Rule

Practicals related to numerical solutions of ordinary differential equations

- Euler's Method
- Euler's Modified Method
- Taylor's Series Method
- Runge Kutta Second Order Method
- Runge Kutta Fourth Order Method

BCA – 603: Microprocessor & Assembly Language Programming

Level of Knowledge: Expert Knowledge
Course Objective: To introduce the concept of Microprocessor and Assembly Language Programming
Scheme of Examination
Total marks 100.
Internal marks 20.
Practical Marks 20
External Marks 60
The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

Unit 1

Microprocessor Architecture: Architecture & Programming of 8085, Organization of CPU, Various Addressing Modes.

Unit 2

Programming: Assembly Language Programming, Instruction and Data Flow, Instruction set of 8085.

Unit 3

Interfacing Memory And I/O Devices: Memory interfacing, Various Schemes, Address space partitioning, Interfacing Techniques with various I/O Devices, Latches and Tri State Buffers.

Unit 4

Interfacing Devices & Peripheral Subsystems: Programmable Peripheral Interfaces like 8155, 8255, and 8259, their features, programming and applications, Keyboard controller 8279.

Unit 5

Applications: Microcontroller**,** Architecture of 8051 Microcontroller, Comparison of Microprocessors of different series .

Text Readings:

1. Gaonkar R.S.: **Microprocessor:** Penram International Publishing (i) Pvt Ltd
2. Laventhal L. A: **Introduction to Microprocessor Software, Hardware & Programming,**
3. Peter Norton: **Assembly Language programming 8085/8086**
4. B.Ram :**Microprocessor:** Dhanpat Rai
5. Ayala and Ayala **Microcontroller**: Thomson

List of Suggested Practicals

- Study of Pin Out diagram of 8085 Microprocessor.
- Study of Functional Block diagram of 8085 Microprocessor.
- 15-20 Assembly Language Programs decided by the concerned teacher.
- Interfacing of peripherals kits like 8255, 8251, 8253 and 8259 with Microprocessor Kit.

BCA – 604: Principal and Practices of Management

Level of Knowledge: Expert Knowledge
Course Objective: To aware with the Principles and Practices of Management
Scheme of Examination
Total marks 100.
Internal marks 40.
External marks 60.
The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

Unit 1

The Nature of Management : Definition and Role of Management, Management Functions, Principles of Management, Human Relations School of management Contingency theory of Management, The Management Science School.

Unit 2

Planning: Nature and Purpose of Planning, Types and Steps in instruments of Planning, Management by objectives, Decision Making, Process and types of decisions.

Unit 3

Organizing: Nature and Purpose of Organizing, Departmentation, Span of Management, Delegation of Authority, Decentralization, Line and Staff Relationships.

Unit 4

Directing Process: Principles of Direction, Problems in Human Relation, Strategies for establishing Healthy Human Relations.

Unit 5

Control: Meaning and Process of Control, Control Techniques.

Text Readings:

1. Harrod, Koonth, Heinz, Werhrich :**Management**,Mc Graw Hill (9th Edition)
2. Newman and warren: The **process of management concept, behavior and practices**, (PH)
3Agrawal. R.D.: **Organization and Management** : Tata McGraw Hill 1982.

BCA – 605: Visual Basic Programming

Level of Knowledge: Expert Knowledge
Course Objective: To introduce the concept of Visual Basic Programming
Scheme of Examination
Total marks 100.
Internal marks 20.
Practical Marks 20
External Marks 60
The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

Unit 1

Environment of Visual Basics: Integrated Development Environment of VB, User Interface Designing, Basics of Event driven programming. Form - Designing, Showing & Hiding

Unit 2

Data types & Control Statements, Data Types, Variables & Constant, Arrays, Dynamic Arrays, Array as function, Collections, Procedures, Arguments passing, Functions Return Values. , Control Flow Statements : if-then, if-then-else, Select case, looping statement: Do- Loop, For-next, While-Wend, Nested Control Structure, Exit stmt.

Unit 3

Building Blocks of Visual Basic , Basic Active X Control & Their Use - Text box, List box, combo box, Scroll bar, Slider & Fire Controls, Advance Active X Control Common Dialog controls, Color, font, File open, file save, print help, tree View & list View Controls.

Unit 4

Components of Visual Basic , Graphics controls, Image Handling in VB, Coordinate System, Graphics methods- Text Drawing, Lines & Shape, Filling Shapes, Grid methods, Menu editor: Pull-down and Pop-up menus, Multiple Document interface- Parent & Child Forms & Methods, Error handling: Types of Errors, Error handling methods and functions

Unit 5

Database programming with Visual Basic, Database programming with VB – DATA Control, ADODC Control - methods, Properties, Visual data manager, Connectivity with database, DATA bound controls.

TEXT Readings :

1. Sahoo Reeta &. Sahoo G.B:**Beginner's Guide to Visual Basic 6** , Khanna Publishing House
2. Peter Wright :**Beginning Visual basic 6** , Shroff Publishers
3. Petroutsos Evangelos: **Mastering Visual Basic 6** , BPB Publications
4. Azam Mohammed **Programming in Visual Basic 6.0,** Vikas Publishing
5. Jung David**, Visual Basic 6 Super Bible**, Techmedia Publication

List of Suggested Practicals

1. Write a program which asks login, password from user three times. if the password is right it wishes the user else it gives proper massage to the user.

2. Write a program which has three text boxes and four buttons are like
   a. add
   b. subtract
   c. multiply
   d. divide

   User will enter two no. in first and second textbox and there result will be displayed in third text box.

3. Program which takes 10 records from the user. there are two buttons on the form. Display, Modify. on clicking the button display information about the requested record.onclicking modify information of particular student should be changed.

4. Create a manu

Color	Font	Case
Red	Bold	Lower
Green	Italic	Upper
Blue	Bold & Italic	
	Font Name	

   Form has one textbox on clicking any option properties of textbox should change accordingly.

5. Take two LISTBOXS. First list box has 10 elements.

There are three buttons

i. >
ii. >>
iii. remove

on clicking first button selected item from first list box should be inserted into second one .if second button is clicked than all items of first should be inserted into second one (no duplicate element in second list box).on clicking third button selected element from the second list box should be deleted.