

**SETH JAI PARKASH MUKAND LAL INSTITUTE OF
ENGINEERING & TECHNOLOGY, RADAUR**



Academic Calendar

Session (2018-2021)

Sixth Semester

Name.....

Roll No......

Department of Computer Science & Applications

(BCA-VI SEM)

EXAMINATION SCHEME FOR BACHELOR OF COMPUTER APPLICATIONS (BCA)

(SIX-SEMESTER PROGRAMME)

Semester – VI					
Paper No.	Title of the Paper	Duration Of Exam	Maximum Marks		Total
			Theory	Sessional*	
BCA-361	Web Designing using advanced tools	3 Hours	80	20	100
BCA-362	Operating System-II	3 Hours	80	20	100
BCA-363	Computer Graphics	3 Hours	80	20	100
BCA-364	Internet Technologies	3 Hours	80	20	100
BCA-365	Advanced Programming Using Visual Basic	3 Hours	80	20	100
BCA-366	Programming in Core Java	3 Hours	80	20	100
BCA-371	Lab – I Based on BCA- 361	3 Hours			100
BCA-372	Lab – II Based on BCA-365	3 Hours			100
Total					800

BCA-361: Web Designing Using Advanced Tools

Maximum Marks:100
Minimum Pass Marks:35
Time: 3 hours

External:80
Internal:20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Interactivity Tool - JavaScript: Introduction, Features, Data types, Operators, Statements, Functions, Event Handling, Use of Predefined Object and Methods, Frames, Windows, Tables, Images, Links
Interactivity Tool - VBScript: Introduction, Features, Variables, Data Types, Numeric and Literal Constants, Arrays, Operators, Subroutine Procedures, Function Procedures, Control Statements, Strings, Message and Input Boxes, Date and Time, Event Handlers, Embedding VBScript in HTML

UNIT – II

Interactivity Tool - Active Script Pages – Introduction, Features, Client-Server Model, Data Types, Decision Making Statements, Control statements, Use of Various Objects of ASP, Various Techniques of Connecting to Database
Other Interactivity Tools - Macromedia Flash, Macromedia Dreamweaver, PHP: Basic Introduction and Features

UNIT – III

DHTML: Introduction, Features, Events, Dynamic Positioning, Layer Object, Properties of STYLE, Dynamic Styles, Inline Styles, Event Handlers; Cascading Style Sheets (CSS): Basic Concepts, Properties, Creating Style Sheets; Common Tasks with CSS: Text, Fonts, Margins, Links, Tables, Colors; Marquee; Mouseovers; Filters and Transitions; Adding Links; Adding Tables; Adding Forms; Adding Image and Sound; Use of CSS in HTML Documents Linking and Embedding of CSS in HTML Document

UNIT – IV

Microsoft FrontPage: Introduction, Features, Title Bar, Menu bar, FrontPage Tool Bar, Style, FontFace and Formatting Bar, ScrollBars
XML: Introduction, Features, XML Support and Usage, Structure of XML Documents, Structures in XML, Creating Document Type Declarations, Flow Objects, Working with Text and Font, Color and Background Properties;

TEXT BOOKS:

1. Jon Duckett, "Beginning web programming with HTML, XHTML, CSS and JavaScript", Wiley India Pvt. Ltd.
2. Paul Wilton, "Beginning JavaScript", Wiley India Pvt. Ltd.
3. Mitchell and Atkinson, "Active Sever Pages", Techmedia Publishing
4. Adrian Kingsley, "VB Script Programming Reference" – Wiley India Pvt. Ltd.

REFERENCE BOOKS:

1. Thomas A. Powell, "Web Design: The Complete Reference", 4/e, /Tata McGraw-Hill
Deitel and Goldberg, "Internet and World Wide Web", How to Program, PHI.
2. Raj Kamal, "Internet and Web Technologies", Tata McGraw-Hill.
3. Ramesh Bangia, "Multimedia and Web Technology", Firewall media.
4. "Internet and Web Design", ITLESL Research and Development Wing, Macmillan India.

Lecture Plan BCA-361

Week	Theory	
	Lecture Day	Topic (including assignment/test)
1st	What are Interactivity Tool	Teaching
	Introduction and Features of Java Script	Teaching
	Data types, Operators, Statements of Java Script	Teaching
	Functions, Event Handling	Teaching
2nd	Use of Predefined Object and Methods	Teaching
	Frames, Windows, Tables, Images, Links	Teaching
	Introduction and Functions of VBScript	Teaching
	Variables, Data Types, Numeric and Literal Constants used in VB Script	Teaching/Assignment
3rd	Arrays, Operators	Teaching
	Subroutine Procedures	Teaching
	Function Procedures	Teaching
	Control Statements	Teaching
4th	Strings, Message and Input Boxes	Teaching
	Date and Time, Event Handlers	Teaching
	Embedding VBScript in HTML	Teaching
	Revision	Teaching/Quiz
5th	Active Script Pages – Introduction, Features	Teaching
	Client-Server Model	Teaching
	Data Types, Decision Making Statements	Teaching
	Control statements , Use of Various Objects of ASP	Teaching/Assignment
6th	Various Techniques of Connecting to Database	Teaching
	-----Do-----	Teaching
	Macromedia Flash	Teaching
	Macromedia Dreamweaver	Teaching
7th	PHP: Basic Introduction and Features	Teaching/Quiz
	DHTML: Introduction, Features	Teaching
	Events, Dynamic Positioning	Teaching
	Layer Object, Properties of STYLE	Teaching
8th	Dynamic Styles, Inline Styles	Teaching
	Event Handlers	Teaching
	Cascading Style Sheets (CSS): Basic Concepts, Properties	Teaching
	Creating Style Sheets	Teaching
9th	Common Tasks with CSS: Text, Fonts, Margins, Links, Tables	Teaching/Assignment
	-----Do-----	Teaching
	Colors; Marquee; Mouseovers	Teaching
	Filters and Transitions	Teaching

10th	Adding Links; Adding Tables	Teaching
	Adding Forms, Adding Image and Sound	Teaching
	Use of CSS in HTML Documents Linking	Teaching/Quiz
	Embedding of CSS in HTML Document	Teaching
11th	Microsoft FrontPage: Introduction, Features	Teaching
	Title Bar, Menu bar, FrontPage Tool Bar	Teaching/Assignment
	Style, Font Face and Formatting Bar, Scroll Bars	Teaching
	XML: Introduction, Features	Teaching
12th	XML Support and Usage, Structure of XML	Teaching
	Documents, Structures in XML	Teaching
	Creating Document Type Declarations, FlowObjects	Teaching
	Working with Text and Font, Color and Background Properties	Teaching/Quiz
13th	Queries	Assessment
	Revision	Teaching

Tutorial Sheet 1

Q1. Explain the following:

- (a) Table
- (b) Strings in VBScript
- (c) Sound
- (d) PHP

Q2. Differentiate between various features of JavaScript and VBScript.

Q3. Describe datatypes in VBScript.

Q4. Explain event handling in JavaScript.

Tutorial Sheet 2

Q1. What is the Client Server model?

Q2. What are various techniques of connectivity to database?

Q3. Explain any two interactive tools with their features.

Q4. What are the various objects of ASP and also explain the making and control statements.

Tutorial Sheet 3

Q1. Make a online admission for a college using CSS.

Q2. What are the different styles available in DHTML? Also give some examples.

Q3. How we can add a sound and image in a document.

Q4. What are the basic properties that we used in CSS for performing any task.

Tutorial Sheet 4

Q1. What is XML? Give its features.

Q2. Write different steps to create an e-book using Front Page?

Q3. Explain the working of objects in XML with example.

Q4. Explain the working of formatting bar and scroll bar in Front Page.

Tutorial Sheet 5

Q1. Explain the following:

- (a) Background properties of CSS.
- (b) Frames
- (c) MenuBar
- (d) Flowobjects

Q2. Differentiate the tools used in JavaScript and VBScript.

Q3. How can we use the control statements in ASP?

Q4. Explain the use of CSS in HTML documents linking and embedding.

Q5. Describe the working of message and input boxes in VB Script using date and time.

BCA/M-18
WEB DESIGNING USING ADVANCED TOOLS
Paper: BCA-361

Time:3 Hours**Maximum Marks: 80**

Note: Attempt five questions in all, selecting at least one question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) What is the use of delete operators inJavaScript?
(b) Discuss the syntax and semantic of “in” operator in JavaScript using suitable Example
(c) What is XML Attribute? What is the use of it? Discuss using suitable example.
(d) Write the CSS code to style an element when a user mouses over it.
(e) What is the difference between == and === operators inPHP?

UNIT-I

2. (a) Explain the use concatenation operators (i.e.+ and &) in VBScript using examples.
(b) What are the common HTML events? How can JavaScript react to these events? Discuss.
3. (a) What are the difference between functions and sub-procedures in VBScript? Explain using suitable examples.
(b) How do you add a method to an object in JavaScript? Explain using an example.

UNIT-II

4. (a) What are the rules for naming PHP variables?Discuss.
(b) What are the different techniques connecting to databases in VBScript? Explain
5. (a) What are the different loops available in ASP?Explain.
(b) Write a brief note on macro-mediaDream-weaver.

UNIT-III

6. (a) What is the difference between id selector and class selector in CSS?Explain using suitable examples.
(b) How can you change the style dynamically using DOM?Discuss.

7. (a) What is the difference between External, Internal and Inline style sheets?
Explain using suitable examples.
- (b) What are the different techniques to specify the color values? Discuss.

UNIT-IV

8. (a) What is a well formed XML Document? Write a note on the syntax of XML.
 - (b) How are the attributes of the element specified using DTD? Explain using suitable examples.
9. (a) Create an XML document specifying the contact address of person. Make the necessary assumption.
 - (b) For the above XML document, create the DTD document.

BCA-362: Operating System-II

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External:80
Internal:20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Process Synchronization: The Critical Section Problem – Single Process/Two Process Solutions; Semaphores – Types, Implementation, Deadlocks and Starvation; Classical Problems of Synchronization – The Bounded Buffer Problem, The Readers and Writers Problem, The Dining-Philosophers Problem, Critical Regions, Monitors
Directory Structure: Single Level, Two Level, Tree Structures, Acyclic Graph, General Graph;
Directory Implementation, Recovery

UNIT – II

Secondary Storage Structure: Disk Structure, Disk Scheduling: FCFS, SSTF, SCAN, C-SCAN, LOOK; Selection of Disk Scheduling Algorithm; Disk Management; Swap Space Management
Network Operating Systems: Remote Login, Remote File Transfer;
Distributed Operating System: Data Migration, Computation Migration, Process Migration

UNIT – III

Linux: Introduction, Features, Architecture, Distributions, Accessing Linux System, Login/Logout/Shutting Down, Comparison of Linux with other Operating Systems, Commands in Linux: General-Purpose Commands, File Oriented Commands, Directory Oriented Commands, Communication Oriented Commands, Process Oriented Commands, Redirection of Input and Output, Pipes

UNIT – IV

Linux File System: Types of Files in Linux, File Attributes, Structure of File System, inode, File Permission, File System Components, Standard File System, File System Types, Disk Related commands Processes in Linux: Introduction, Job Control in Linux using at, batch, cron & time commands. The vi editor: Introduction, Modes of vi Editor, Command in vi Editor.
Shell Programming: Introduction, Shell Variables, Shell Keywords, Operators, Assigning Values to the Variables, I/O in Shell, Control Structures, Creating & Executing Shell Programs in Linux.

TEXT BOOKS:

1. Silberschatz A., Galvin P.B., and Gagne G., “Operating System Concepts”, John Wiley & Sons, Inc., New York.
2. Godbole, A.S., “Operating Systems”, Tata McGraw-Hill Publishing Company, New Delhi. Richard Petersen, The Complete Reference – Linux, McGraw-Hill.
3. Yashwant Kanetkar, UNIX & Shell programming – BPB.

REFERENCE BOOKS:

1. Deitel, H.M., “Operating Systems”, Addison- Wesley Publishing Company, New York. Tanenbaum, A.S., “Operating System-Design and Implementation”, Prentice Hall of India, New Delhi.
2. Sumitabha Das, UNIX- The Ultimate Guide, Tata McGraw-Hill.

Lecture Plan

BCA-362

Week	Theory	
	Lecture Day	Topic (including assignment/test)
1st	Process Synchronization	Teaching
	The Critical Section Problem – Single Process/Two Process solutions	Teaching
	Semaphores – Types, Implementation	Teaching
	Deadlocks and Starvation	Teaching
2nd	Classical Problems of Synchronization – The Bounded Buffer Problem	Teaching
	The Readers and Writers Problem	Teaching
	The Dining- Philosophers Problem	Teaching/ Assignment
	Critical Regions, Monitors	Teaching
3rd	Directory Structure: Single Level, Two Level	Teaching
	Tree Structures	Teaching
	Acyclic Graph, General Graph	Teaching
	Directory Implementation, Recovery	Teaching/ Assignment
4th	Secondary Storage Structure: Disk Structure	Teaching
	Disk Scheduling: FCFS, SSTF	Teaching
	SCAN, C-SCAN, LOOK	Teaching
	Selection of Disk Scheduling Algorithm	Assessment
5th	Disk Management	Teaching
	Swap Space Management	Teaching
	Network Operating Systems	Teaching
	Remote Login, Remote File Transfer	Teaching
6th	Distributed Operating System: Data Migration	Teaching
	Computation Migration, Process Migration	Teaching/ Assignment
	Linux: Introduction, Features	Teaching
	Architecture, Distributions, Accessing Linux System	Teaching
7th	Login/Logout/Shutting Down	Teaching
	Comparison of Linux with other Operating Systems	Teaching
	Commands in Linux: General-Purpose Commands	Teaching
	File Oriented Commands, Directory Oriented Commands	Teaching
8th	Communication Oriented Commands	Teaching/ Assignment
	Process Oriented Commands	Assessment
	Redirection of Input and Output, Pipes	Teaching
9th	Linux File System: Types of Files in Linux	Teaching
	File Attributes, Structure of File System	Teaching
	I Node structure	Teaching
	File Permission	Teaching
10th	File System Components	Assessment
	Standard File System	Teaching
	File System Types	Teaching
	Disk Related Commands	Teaching
11th	Processes in Linux: Introduction	Technical activity
	Job Control in Linux using at, batch, cron & time commands	Teaching/ Assignment
	The vi editor: Introduction, Modes of vi Editor	Teaching

	Command in vi Editor	Assessment
12th	Shell Programming: Introduction, Shell Variables	Teaching
	Shell Keywords, Operators	Teaching
	Assigning Values to the Variables, I/O in Shell	Teaching
	Control Structures	Teaching
13th	-----DO-----	Assessment
	Creating & Executing Shell Programs in Linux	Teaching
	Quiz	Assessment
	Revision/ Doubts	Teaching

Tutorial Sheet-1

1. What is Critical section problem? Also define the types of its solutions.
2. What is Semaphore? Define its type and implementation.
3. What are the necessary and sufficient conditions for the deadlock? Also explain some of the deadlock avoidance techniques.
4. What is Recovery Mechanism? Explain its techniques.
5. Write short note on:
 - (a) The Bounded Buffer Problem
 - (b) The Readers and Writers Problem
 - (c) The Dining- Philosophers Problem

Tutorial Sheet-2

1. What do you mean by Secondary storage structure? Also explain some Disk scheduling algorithms.
2. What is Swap Space Management? Discuss
3. What is the difference between network operating system and distributed operating system?
4. Define briefly: FCFS, SSTF, SCAN, C-SCAN
5. How will you execute shell Script in Linux?

Tutorial Sheet-3

1. What is Linux? Define its architecture and also explain some features.
2. What are general-purpose and file oriented commands? Explain with examples.
3. Explain: Communication Oriented Commands.
4. What do you understand by the term Redirection of Input and Output?
5. Explain Pipe and Grep commands with help of examples.

Tutorial Sheet-4

1. What is Linux File System? Also explain its types.
2. Define the structure of file system. Explain inode entry structure in detail.
3. What is Shell programming? Explain with the help of its variable and keywords.
4. Explain the following:
 - (a) at command
 - (b) batch command
 - (c) cron command
 - (d) time command
5. What is vi editor? Explain its modes and commands used in it.

Tutorial Sheet-5

- 1 On a disk with 1000 cylinders, numbers 0 to 999, compute the number of tracks the disk arm must move to satisfy all the requests in a disk queue. Assume the last request serviced was at track 348 and the head is moving towards zero. The queue in FIFO order contains requests for the following racks: 126, 877, 695, 478, 108, and 379. Perform the computations for the following scheduling algorithms:
 - a) SSTF
 - b) C-SCAN
 - c) C-LOOK
- 2 Write short notes on any three of the following:
 - a) Booting process in UNIX
 - b) Comparison of Windows, Unix and Linux.
 - c) i-node entry structure
 - d) Semaphores.
- 3 For UNIX environment, discuss any two of the following.
 - (i) The shell
 - (ii) The kernel
 - (iii) File management.
- 4 Explain the ways in which the processes communicate with each other.
- 5 Explain the following:
 - a) Single Level Directory
 - b) Two Level Directory
 - c) Three Level
 - d) Asyclic Graph
 - e) General Graph

Roll No.

Total Pages : 03

BCA/M-20

1900

OPERATING SYSTEM-II

BCA-362

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory.

Compulsory Question

1. (a) Define Concurrency. 16
(b) Define Seek Time and Access Time.
(c) Explain disk structure.
(d) What are different types of semaphores ?
(e) What is Remote Login ?
(f) What is Linux Shell ?
(g) What are different types of commands in linux ?
(h) What are differences between Linux and Windows ?

Unit I

2. What is Critical Section problem ? Discuss single and two-process solution. 16

3. Write short notes on the following :
- (i) Deadlock and Starvation
 - (ii) The Bounded buffer problem. **16**

Unit II

4. Explain various Disk Scheduling algorithms. **16**
5. Write short notes on the following :
- (i) Network Operating System
 - (ii) Distributed Operating System. **16**

Unit III

6. (a) Write are advantages and disadvantages of Linux Operating System ? **8**
- (b) Explain Linux Architecture and its features. **8**
7. Explain the purpose, syntax and examples of the following commands : **16**
- (i) cat
 - (ii) cp
 - (iii) cal
 - (iv) mv
 - (v) cd
 - (vi) rm
 - (vii) mkdir
 - (viii) dir

Unit IV

8. (a) Explain the features of Linux file system. **8**
- (b) Explain the various types of files in linux. **8**
9. (a) What is an editor ? Explain various modes of vi editor. **8**
- (b) What are the components of file system ? **8**

BCA-363: Computer Graphics

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Introduction to Computer Graphics; Interactive and Passive Graphics; Applications of Computer Graphics; Display Devices: CRT; Random Scan, Raster Scan, Refresh Rate and Interlacing, Bit Planes, Color Depth, Color Palette, Color CRT Monitor, DVST, Flat-Panel Displays: Plasma Panel, LED, LCD; Lookup Table, Interactive Input Devices, Display Processor, General Purpose Graphics Software, Coordinate Representations;

UNIT – II

Point-Plotting Techniques: Scan Conversion, Scan-Converting a Straight Line: The Symmetrical DDA, The Simple DDA, Bresenham's Line Algorithm; Scan-Converting a Circle: Circle drawing using Polar Coordinates, Bresenham's Circle Algorithm, Scan-Converting an Ellipse: Polynomial Method, Trigonometric Method; Polygon Area Filling: Scan-line Fill and Flood Fill Algorithms;

UNIT – III

Two-Dimensional Graphics Transformation: Basic Transformations: Translation, Rotation, Scaling; Matrix Representations and Homogeneous Coordinates; Other Transformations: Reflection, Shearing; Coordinate Transformations; Composite Transformations; Inverse Transformation; Affine Transformations; Raster Transformation; Graphical Input: Pointing and Positioning Devices and Techniques

UNIT – IV

Two-Dimensional Viewing: Window and Viewport, 2-D Viewing Transformation Clipping: Point Clipping; Line Clipping: Cohen-Sutherland Line Clipping Algorithm, Mid-Point Subdivision Line Clipping Algorithm; Polygon Clipping: Sutherland-Hodgman Polygon Clipping Algorithm; Three-Dimensional Graphics: Three-Dimensional Display Methods; 3-D Transformations: Translation, Rotation, Scaling; Composite Transformations;

TEXT BOOKS:

1. Donald Hearn, M. Pauline Baker, "Computer Graphics", PHI.
2. Apurva A. Desai, "Computer Graphics", PHI, 2010

REFERENCE BOOKS:

1. Newmann & Sproull, "Principles of Interactive Computer Graphics", McGraw Hill.
2. Foley, "Computer Graphics Principles & Practice", Addison Wesley.
3. Rogers, "Procedural Elements of Computer Graphics", McGraw Hill.
4. Zhigang Xiang, Roy Plastock, "Computer Graphics", Tata McGraw Hill.
5. D.P. Mukherjee, "Fundamentals of Computer Graphics and Multimedia", PHI.

Lecture Plan

BCA-363

Week	Theory	
	Lecture Day	Topic (including assignment/test)
1 st	Introduction to Computer Graphics	Teaching
	Interactive and Passive Graphics; Applications of Computer Graphics	Teaching
	Display Devices: CRT; Random Scan	Teaching
	Raster Scan, Refresh Rate and Interlacing, Bit Planes	Teaching
2 nd	Color Depth, Color Palette, Color CRT Monitor	Teaching
	DVST, Flat-Panel Displays	Teaching
	Plasma Panel, LED,LCD	Teaching/Assignment
	Lookup Table, Interactive Input Devices	Teaching
3 rd	Display Processor	Assessment
	General Purpose Graphics Software	Teaching
	Coordinate Representations	Teaching
	Revision	Teaching
4 th	Point-Plotting Techniques: Scan Conversion	Teaching
	Scan-Converting a Straight Line: The Symmetrical DDA	Teaching
	The Simple DDA, Bresenham's Line Algorithm	Teaching
	Scan-Converting a Circle: Circle drawing using Polar Coordinates	Teaching
5 th	Bresenham's Circle Algorithm	Teaching
	Scan-Converting an Ellipse: Polynomial Method, Trigonometric Method	Teaching/Assignment
	Polygon Area Filling: Scan-line Fill and Flood Fill Algorithms	Teaching
	Revision	Teaching
6 th	Two-Dimensional Graphics Transformation: Basic Transformations: Translation, Rotation, Scaling	Teaching
	Matrix Representations and Homogeneous Coordinates	Assessment
	Other Transformations: Reflection, Shearing	Teaching
	Coordinate Transformations	Teaching
7 th	Composite Transformations	Teaching
	Inverse Transformation	Teaching
	Affine Transformations	Teaching
	Raster Transformation	Assessment
8 th	Graphical Input: Pointing	Teaching/Assignment
	Positioning Devices	Teaching
	Techniques	Teaching
	Revision	Teaching
9 th	Two-Dimensional Viewing	Teaching
	Window and Viewport	Teaching
	2-D Viewing Transformation	Teaching

10th	Clipping: Point Clipping	Assessment
	Line Clipping	Teaching
	Cohen-Sutherland Line Clipping Algorithm	Teaching
	Mid-Point Subdivision Line Clipping Algorithm	Teaching
11th	Polygon Clipping	Teaching
	Sutherland-Hodgman Polygon Clipping Algorithm	Teaching/Assignment
	Three-Dimensional Graphics	Teaching
	Three-Dimensional Display Methods	Assessment
12th	3-D Transformations: Translation	Teaching
	Rotation	Teaching
	Scaling	Teaching
	Composite Transformations	Teaching
13th	Queries	Teaching
	Revision	Teaching/Assessment

Tutorial Sheet-1

1. Explain the architecture of Raster and Random scan display with the help of diagram.
2. What is Clipping? Explain the method of Cohen Sutherland Clipping in detail.
3. What are the various transformations possible in 2D? Explain it.
4. What are Computer Graphics and its applications?

Tutorial Sheet-2

1. How we can scan a circle using Bresenham's Circle Algorithm? Explain it.
2. What type of Positioning Devices and their Techniques used for Graphics Input.
3. What is the difference between Window and Viewport? Explain 2-D Viewing Transformation.
4. What are the functioning of CRT monitor. Explain with the help of Diagram.

Tutorial Sheet-3

1. Explain the following:
 - a. LCD
 - b. DVST
 - c. Flat-Panel Displays
 - d. Plasma Panel
 - e. LED
2. Explain the terms:
 - a. Refresh Rate and Interlacing
 - b. Bit Planes
 - c. Color Depth
 - d. Color Palette
3. Which algorithms are used for filling of Polygons? Explain it with Example.
4. Explain the working of CRT monitors.

Tutorial Sheet-4

1. List the different input devices that we used in our daily life.
2. Explain the various Point-Plotting Techniques in detail.
3. Explain the different Transformation Techniques in detail.
4. What is the difference between 2D and 3D transformation? Explain it with suitable Example.

Tutorial Sheet-5

1. Explain the Midpoint subdivision algorithm using a suitable example.
2. What are the various 2D graphics transformations? Explain it.
3. Explain the transformation techniques using Matrix and Homogenous Co-ordinates.
4. What is the difference between DDA and Bresenham Line Algorithm.

Roll No.

Total Pages : 03

BCA/M-20

1901

COMPUTER GRAPHICS

BCA-363

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) Differentiate between interactive and passive computer graphics.
- (b) Define affine transformation.
- (c) What is Clipping ? What is the relationship between clipping and windowing ?
- (d) Name different Cartesian co-ordinate reference frames.
- (e) Name some common problems associated with scan conversion of elementary objects.
- (f) What do you mean by color palette ?
- (g) Define Point Clipping.
- (h) Write a short note on Rubber-Band techniques. **8×2**

(3)L-1901

1

Unit I

2. List the operating characteristics for the following display technologies :
- (a) Raster refresh system
 - (b) Vector refresh system
 - (c) Plasma panels
 - (d) LCDs.

Also write some applications appropriate for each of these display technologies. **10,6**

3. (a) Explain various popular graphics input devices.
(b) Explain the various applications areas of computer graphics. **8,8**

Unit II

4. Write an algorithm to plot a line using Bresenham's method. How is it better than DDA ? **10,6**
5. Explain scan conversion of an ellipse. Compare polynomial method and trigonometric method of scan conversion of an ellipse. **4,12**

Unit III

6. Derive clockwise and anticlockwise transformation matrices about the origin. Give a transformation matrix to rotate an object by 45° in anticlockwise direction and then to scale it in the horizontal direction by one-third of the original. **10,6**
7. (a) Define homogeneous coordinates. What are the advantages of homogeneous coordinates ? **6**
(b) What is Shearing ? Is it possible to shear an object by scaling and rotation only ? Describe. **5**
(c) What is raster transformation ? Where is raster transformation used ? **5**

Unit IV

8. Can a line clipping algorithm be used for clipping a polygon ? Justify your answer.
Explain the Sutherland-Hodgman polygon clipping algorithm. **6,10**
9. (a) Explain composite transformation with reference to 3-D coordinate system. **4**
(b) Derive rotation transformation matrix to rotate a 3-dimensional object about an arbitrary axis with angle θ . **12**

BCA-364: Internet Technologies

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Internet: Introduction; History; Internet Services; TCP/IP: Architecture, Layers, Protocols; TCP/IP model versus OSI Model; World Wide Web (WWW) - The Client Side, The Server Side, Creating and Searching Information on the Web, Popular Search Engines, URL, HTTP, Web Browsers, Chat & Bulletin Board, USENET & NNTP (Network News Transfer Protocol); Internet vs. Intranet;

UNIT – II

TCP, UDP and IP Protocols, Port Numbers; Format of TCP, UDP and IP; IPv4 addressing; The need for IPv6; IPv6 addressing and packet format; TCP Services; TCP Connection Management; Remote Procedure Call; IP Address Resolution- DNS; Domain Name Space; DNS Mapping; Recursive and Iterative Resolution; Mapping Internet Addresses to Physical Addresses: ARP, RARP, DHCP; ICMP; IGMP;

UNIT – III

Application Layer: Electronic Mail: Architecture; Protocols - SMTP, MIME, POP, IMAP; Web Based Mail; File Access and Transfer: FTP, Anonymous FTP, TFTP, NFS; Remote Login using TELNET; Voice and Video over IP: RTP, RTCP, IP Telephony and Signaling, RSVP;

UNIT – IV

Routing in Internet: RIP, OSPF, BGP; Internet Multicasting; Mobile IP; Private Network Interconnection: Network Address Translation (NAT), Virtual Private Network (VPN); Internet Management and SNMP; Internet Security: E-Mail Security; Web Security; Firewall; Introduction to IPSec and SSL;

TEXT BOOKS

1. Douglas E. Comer, "Internetworking with TCP/IP Volume – I, Principles, Protocols, and Architectures", Fourth Edition, Pearson Education.
2. Andrew S. Tanenbaum, "Computer Networks", Pearson Education.

REFERENCE BOOKS:

1. Behrouz A Forouzan, "Data Communications and Networking", McGraw Hill.
2. Michael A. Gallo, William M. Hancock, "Computer Communications and Networking Technologies", CENGAGE Learning.
3. James F. Kurose, Keith W. Ross, Computer Networking, A Top-Down Approach Featuring the Internet, Pearson Education.
4. "Introduction to Data Communications and Networking", Wayne Tomasi, Pearson Education.

Lecture Plan

BCA-364

Week	Theory	
	Lecture Day	Topic (including assignment/test)
1st	Internet Introduction and History, Internet Services	Teaching
	TCP/IP Architecture, and its Layers	Teaching
	Protocols, TCP/IP Model vs OSI Model	Teaching
	World Wide Web Client and Server Architecture	Teaching
2nd	Creating and Searching information on the Web	Teaching
	Revision of above topics	Teaching
	Popular Search Engines URL, HTTP	Teaching
	Web Browsers, Chat and Bulletin Board,	Teaching
3rd	USENET and Network News Transfer Protocol	Teaching/Assignment
	Revision	Teaching
	Test of above topics	Test/Assignment
	Internet Vs Intranet	Teaching/Quiz
4th	TCP, UDP and IP Protocols	Teaching
	About Port Numbers and their uses	Teaching
	Format of TCP, UDP and IP	Teaching
	IPv4 Addressing, Need for IPv6	Teaching
5th	IPv6 Addressing and packet format and TCP Services	Teaching
	Revision of above topics	Teaching
	TCP Connection Management, Remote Procedure Call, IP Address Resolution, DNS	Teaching
	DNS Mapping Recursive and Iterative Resolution	Teaching
6th	Mapping Internet Addresses to Physical Addresses. ARP, RARP, RARP	Teaching/Assignment
	DHCP, ICMP,	Teaching
	IGMP	Teaching/Quiz
	Revision	Teaching
7th	Application Layer, Electronic Mail	Teaching
	Architecture, Protocols SMTP	Teaching
	MIME, POP, IMAP	Teaching
	Web Based Mail, File Access and Transfer FTP,	Teaching
8th	Anonymous FTP, TFTP, NFS	Teaching/Assignment
	Remote Login Using Telnet	Teaching
	Voice and Video Over IP, RTP	Teaching
	RTCP, IP Technology	Teaching
9th	IP Signaling RSVP	Teaching
	Revision	Teaching
	Class Test	Teaching/Test
	Routing in Internet: RIP	Teaching
10th	OSPF, BGP	Teaching
	Internet Multicasting	Teaching
	Mobile IP, Private Network Interconnection	Teaching/Quiz
	Network Address Translation (NAT)	Teaching
11th	Virtual Private Network (VPN)	Teaching
	Internet Management and SNMP	Teaching/Assignment
	Internet Security Email Security,	Teaching
	Web security, Firewall	Teaching
12th	Introduction to IPSec	Teaching
	Secure Socket Layer (SSL)	Teaching
	Revision	Teaching
	Class Test	Class Test
13th	Revision	Teaching

Tutorial sheet-1

1. Differentiate Internet and Intranet. Discuss Internet Services.
2. Explain TCP/IP Architecture with Layers.
3. Differentiate TCP/IP model with OSI Model.
4. Write short note on :
 - i) HTTP
 - ii) Web Browsers
 - iii) Chat & Bulletin Board
 - iv) USENET & NNTP (Network News Transfer Protocol)

Tutorial sheet-2

1. Explain UDP and IP protocols.
2. Discuss IPv4 addressing. Why we need for IPv6 addressing?
3. Describe Remote Procedure Call.
4. Write short note on :
 - i) DNS mapping ii) DHCP
 - ii) RARP iv) IGMP

Tutorial sheet-3

1. Describe E-mail architecture.
2. Discuss FTP AND TFTP.
3. Explain Remote Login using TELNET.
4. Elaborate the concept of IP Telephony and Signaling.

Tutorial sheet-4

1. Explain RIP and OSPF protocols.
2. Discuss Internet Multicasting.
3. Describe Mobile IP and VPN.
4. Write short note on :
 - i) NAT ii) Internet security
 - ii) firewall iv) SNMP

Roll No.

Total Pages : 02

BCA/M-20

1902

INTERNET TECHNOLOGIES

BCA-364

Time : Three Hours]

[Maximum Marks : 80

Note : Q. No. 1 is compulsory. Attempt *Four* more questions by selecting *one* question from each Section. All questions carry equal marks.

1. Compulsory question :

- (a) Differentiate between Internet and Intranet 4
- (b) Explain Domain Name Space with examples. 4
- (c) Explain various protocols used for remote login. 4
- (d) What do you mean by Firewall ? 4

Section I

2. What do you mean by Web Browser ? Explain its purpose and types in detail with examples. 16

3. Differentiate between TCP/IP and OSI Model in details.

16

Section II

4. What do you mean by IP address ? What are advantages of IPv6 over IPv4 ? Discuss various features of IPv6. **16**
5. What is DNS ? How Domain Name is mapped to addresses ? Explain recursive and iterative name resolution techniques. **16**

Section III

6. What is e-Mail ? Explain various protocols and services of e-Mail. **16**
7. What is Real Time Transport Protocol ? Explain its packet format. Also explain three functions of RTCP protocol. **16**

Section IV

8. Explain the concept of Network Address Translation and Virtual Private Network in detail. **16**
9. What do you mean by Internet Security ? Explain various Internet security measures in detail. **16**

BCA-365: Advanced Programming with Visual Basic

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Collections: Adding, Removing, Counting, Returning Items in a Collection, Processing a Collection; Working with Forms: Form Properties, Creating, Adding, Removing Forms in Project, Adding Multiple Forms, Managing Forms at Run Time, Hiding & Showing Forms, Load & Unload Statements, Drag and Drop Operation, Activate & Deactivate events, Form-load event, Example using Forms, Programs in VB using Forms

UNIT – II

Working with Menu: Menu Designing in VB, Adding a Menu to a Form, Modifying and Deleting Menu Items, Adding Access Characters, Adding Shortcut Keys, Manipulating Menus using Common Dialog Box, Attaching Code to Events, Creating Submenus, Dynamic Menu Appearance
Advanced Controls in VB: Scroll Bar, Slider Control, Tree View, List View, Rich Text Box Control, Toolbar, Status Bar, Progress Bar, Cool bar, ImageList
Program Development in VB using Menus and Advance Controls

UNIT –III

File Handling & File Controls: Sequential & Random files, Opening and Closing Data Files, Viewing the Data in a File, Performing Operations on a File, Creating a Sequential Data File, Writing Data to a Sequential File, Reading the Data in a Sequential File, Finding the End of a Data File, Locating a File, Reading and Writing a Random File (get, put, LOF,seek).
Working with Graphics: Using Paint, Line, Circle, Manipulating Graphics Program
Development in VB using Files and Graphics

UNIT – IV

Accessing Databases: Data Controls, Data-Bound Controls, DAO, RDO, ADO, Creating the Database, Setting Properties, Applying Operations on Database, Viewing the Database, Updating the Database (adding, deleting records)
Program Development in VB using Database and Advance Controls

TEXT BOOKS:

1. Steven Holzner, “Visual Basic 6 Programming: Black Book”, Dreamtech Press.
2. Evangelos Petroustos. “Mastering Visual Basic 6”, BPB Publications.
3. Julia Case Bradley & Anita C. Millsbaugh, “Programming in Visual Basic 6.0”, Tata McGraw- Hill Edition

REFERENCE BOOKS:

1. Michael Halvorson, "Step by Step Microsoft Visual Basic 6.0 Professional", PHI "Visual basic 6 Complete", BPB Publications.
2. Scott Warner, "Teach Yourself Visual basic 6", Tata McGraw-Hill Edition Brian Siler and Jeff Spotts, "Using Visual Basic 6", Special Edition, PHI.

Lecture Plan BCA-365

Week	Theory	
	Lecture Day	Topic (including assignment/test)
1st	Collection: Adding, Removing,	Teaching
	Counting, Returning Items in a Collection, Processing a Collection	Teaching
	Working with Forms: Form Properties, Creating forms in Project	Teaching
	Adding, Removing Forms in Project	Teaching
2nd	Adding Multiple Forms	Teaching
	Managing Forms at Run Time	Teaching
	Hiding & Showing Forms, Load & Unload Statements	Teaching
	Drag and Drop Operation, Activate & Deactivate events	Teaching
3rd	Form-load event, Example using Forms	Teaching
	Programs in VB using Forms	Teaching
	Test	Assessment
	Working with Menu: Menu Designing in VB	Teaching
4th	Adding a Menu to a Form, Modifying and Deleting Menu Items	Teaching
	Adding Access Characters, Adding Shortcut Keys	Teaching/Quiz
	Manipulating Menus using Common Dialog Box	Teaching
	Attaching Code to Events	Teaching
5th	Creating Submenus	Teaching
	Dynamic Menu Appearance	Teaching/Assignment
	Advanced Controls in VB: Scroll Bar, Slider Control	Teaching
	Tree View, List View, Rich Text Box Control	Teaching
6th	Toolbar, Status Bar, Progress Bar, Cool bar, Image List	Teaching
	-----do-----	Teaching
	Program Development in VB using Menus	Teaching
	Program Development in VB using Advance Controls	Teaching
7th	Test	Assessment
	File Handling & File Controls: Sequential & Random files	Teaching
	Opening and Closing Data Files	Teaching
	Viewing the Data in a File	Teaching/
8th	Performing Operations on a File	Teaching
	Creating a Sequential Data File	Teaching
	Writing Data to a Sequential File	Teaching
	Reading the Data in a Sequential File	Teaching/Quiz
9th	Finding the End of a Data File	Teaching
	Locating a File	Teaching
	Reading and Writing a Random File (get, put, LOF, seek).	Teaching
	Working with Graphics: Using Paint, Line, Circle, Manipulating	Teaching
10th	Graphics Program Development in VB using Files	Teaching/Assignment
	Graphics Program Development in VB using Graphics	Teaching
	TEST	Assessment
	Accessing Databases: Data Controls	Teaching
11th	Data-Bound Controls: DAO, RDO, ADO	Teaching
	Creating the Database, Setting Properties	Teaching
12th	Applying Operations on Database	Teaching
	Viewing the Database	Teaching
	Updating the Database (adding, deleting records)	Teaching/Quiz

13th	Program Development in VB using Database.	Teaching/Assignment
	TEST	Assessment
	Revision	Teaching

Tutorial Sheet 1

- Q1.** What is a Collection? Name one collection that is automatically built into Visual Basic.
- Q2.** Discuss methods for adding, removing, counting and returning items in a collection with syntax and examples.
- Q3.** Describe the Hide and Show Method with respect to form objects.
- Q4.** Explain how to Activate and Deactivate Events in forms.

Tutorial Sheet 2

- Q1.** Discuss in detail steps to add menu to a form.
- Q2.** Explain steps to modify Menu Items.
- Q3.** Explain how the Tree View control is used to explain various directories on a system.
- Q4.** Discuss Rich Text Box Control with example.

Tutorial Sheet 3

- Q1.** Explain the difference between a menu and a submenu.
- Q2.** Explain the following functions with syntax and examples in context to random files in VB:
 - i) Get
 - ii) Put
 - iii) LOF
 - iv) SEEK
- Q3.** How do we work with sequential and random files in VB.
- Q4.** Explain how to use Paint, Line, Circle in VB Graphics.

Tutorial Sheet 4

- Q1.** Explain briefly different types of Record Set.
- Q2.** How can you connect database with DAO Data Control.
- Q3.** Write a VB application to apply basic operations on a database.
- Q4.** Explain the usage of RDO control through program.

Tutorial Sheet 5

- Q1.** Differentiate between Arrays and Collections.
- Q2.** Write a VB program that uses Scroll Bar Control.
- Q3.** Write a VB program that uses option button and Picture Box. When you click some option button corresponding picture should load in a picture box.
- Q4.** Write a program to express how various file operations are performed on files in VB.
- Q5.** Explain the usage of ADO control through program.

Roll No.

Total Pages : 03

BCA/M-20

1903

ADVANCED PROGRAMMING WITH VB

BCA-365

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. Write short notes on the following :
 - (a) Image List Control
 - (b) Coolbar
 - (c) Reading and Writing a Random File
 - (d) Data Access Mechanisms in VB.

Unit I

2. What do you mean by Collection ? How can we add and remove items in a Collection ? Explain with the help of a sample program.
3. (a) Write a well documented program in VB to create forms at runtime.

- (b) What is a Form_Load event ? Explain difference between Form_Load event and Active events.

Unit II

4. (a) What is Menu Editor ? Write steps to create menu items in VB.
(b) Write a program in VB to change fonts and colors at runtime.
5. (a) What is Tree View Control ? Write a procedure to create Tree View at runtime.
(b) Write short notes on the following :
(i) Rich TextBox Control
(ii) Status Bar Control.

Unit III

6. (a) Explain various commands for Opening and Closing Data files.
(b) Write a program in VB for Reading and Writing a sequential file.
7. Explain different types of Graphic methods in VB with examples.

Unit IV

8. (a) What are Data Controls ? Explain different Data Bound Controls in VB.
(b) Explain different methods to modify database by using Recordset.

9. Create a sample College Database with attributes Teacher number, Course, Salary and Create VB application to add records, delete records and modify records of Teachers with the help of ADO control with steps.

BCA-366: Programming in Core Java

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. QuestionNumber1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Basic Principles of Object Oriented Programming, Introduction to Java, History and Features of Java, Java Virtual Machine (JVM), Java's Magic Bytecode; The Java Runtime Environment; Basic Language Elements: Lexical Tokens, Identifiers, Keywords, Literals, Comments, Primitive Data types, Operators, Assignments; Input/output in Java: Basics, I/O Classes, Reading Console Input, Control Structures in Java: Decision and Loop Control Statements

UNIT – II

Class and Object in Java: Defining Class in Java, Creating Objects of a Class, Defining Methods, Argument Passing Mechanism, Using Class and Objects, Constructors, Nested Class, Inner Class, Abstract Class, Dealing with Static Members; Array & String in Java: Defining an Array, Initializing & Accessing Array, Multi –Dimensional Array, Defining String, Operation on Array and String, Creating Strings using String Class, Creating Strings using StringBuffer Class; Polymorphism in Java: Basic Concept, Types, Overriding vs. Overloading, Implementation

UNIT – III

Extending Classes and Inheritance in Java: Benefits of Inheritance, Types of Inheritance in Java, Access Attributes, Inheriting Data Members and Methods, Role of Constructors in Inheritance, Use of "super"; Packages & Interfaces: Basic Concepts of Package and Interface, Organizing Classes and Interfaces in Packages, Defining Package, Adding Classes from a Package to Your Program, CLASSPATH Setting for Packages, Import Package, Naming Convention For Packages, Access Protection in Packages, Standard Packages

UNIT – IV

Exception Handling in Java: The Idea behind Exception, Types of Exception, Use of try, catch, finally, throw, throws in Exception Handling, In-built and User Defined Exceptions, Checked and Un-Checked Exceptions, Catching more than one Exception; Applet in Java: Applet Basics, Applet Architecture, Applet Life Cycle, Applet Tag, Parameters to Applet, Embedding Applets in Web page, Creating Simple Applets; GUI Programming: Designing Graphical User Interfaces in Java, Components and Containers, Using Containers, Layout Managers, AWT Components, AWT Classes, AWT Controls,

TEXTBOOKS:

1. Patrick Naughton and Herbert Schlitiz, "JAVA-2 Complete Reference", TMH, New Delhi.
2. Ivor Horton, "Beginning JAVA 2", WROX Publications, New Delhi.

REFERENCE BOOKS:

1. "JAVA 2 UNLEASHED", Tech Media Publications, New Delhi.
2. E Balaguruswamy, "Programming with Java", TMH, New Delhi.

Lecture Plan

BCA-366

Week	Theory	
	Lecture Day	Topic (including assignment/test)
1 st	Basic Principles of Object Oriented Programming	Teaching
	Introduction to Java, History and Features of Java	Teaching
	Java Virtual Machine (JVM)	Teaching
	Java's Magic Bytecode, The Java Runtime Environment	Teaching
2 nd	Basic Language Elements: Lexical Tokens, Identifiers, Keywords	Teaching
	Basic Language Elements: Literals, Comments, Primitive Data types, Operators, Assignments	Teaching
	Basics of Input/output in Java, I/O Classes, Reading Console Input	Teaching
	Control Structures in Java: Decision and Loop Control Statements	Teaching
3 rd	Defining Class in Java, Creating Objects of a Class, Defining Methods, Argument Passing Mechanism	Teaching/Assignment
	Using Class and Objects	Teaching
	Constructors	Teaching
	Test	Assessment
4 th	Nested Class	Teaching
	Inner Class	Teaching
	Abstract Class	Teaching
	Dealing with Static Members	Teaching
5 th	Defining an Array, Initializing & Accessing Array	Teaching
	Multi-Dimensional Array, Operation on Array	Teaching
	Defining String, Operation on String	Teaching
	Creating Strings using String Class	Teaching
6 th	Creating Strings using StringBuffer Class	Teaching
	Polymorphism in Java: Basic Concept, Types	Teaching
	Implementation of Polymorphism in Java	Teaching
	do	Teaching
7 th	Overriding vs. Overloading	Teaching
	Benefits of Inheritance, Types of Inheritance in Java	Teaching/Assignment
	Access Attributes, Inheriting Data Members and Methods	Teaching/Quiz
	Role of Constructors in Inheritance	Teaching
8 th	Use of "super"	Teaching
	Basic Concepts of Package and Interface, Organizing Classes and Interfaces in Packages, Defining Package, Adding Classes from Package to Your Program	Teaching
	CLASSPATH Setting for Packages, Import Package, Naming Convention For Packages	Teaching
	Test	Assessment
9 th	Access Protection in Packages, Standard Packages	Teaching
	Exception Handling in Java: The Idea behind Exception, Types of Exception	Teaching
	Use of try, catch, finally in Exception Handling	Teaching
	Use of throw, throws in Exception Handling	Teaching/Assignment
10 th	In-built and User Defined Exceptions	Teaching
	Checked and Un-Checked Exceptions	Teaching
	Catching more than one Exception	Teaching
	Applet Basics, Applet Architecture	Teaching/Quiz
11 th	Applet Life Cycle	Teaching
	Applet Tag, Parameters to Applet	Teaching

	Embedding Applets in Web page	Teaching
	Test	Assessment
12 th	Creating Simple Applets	Teaching
	Designing Graphical User Interfaces in Java, Components and Containers	Teaching
	Using Containers, Layout Managers	Teaching
	AWT Components	Teaching/Quiz
13 th	AWT Classes	Teaching
	AWT Controls	Teaching
	Revision	Teaching/Assignment
	Test	Assessment

Tutorial Sheet 1

- Q1.** What are the various features of Java.
- Q2.** What is Java Virtual Machine (JVM).
- Q3.** Explain Input/Output Classes in Java.
- Q4.** Explain primitive data types in Java.

Tutorial Sheet 2

- Q1.** Write a short note on Classes and Object on java.
- Q2.** Explain Nested Class and Inner Class in Java.
- Q3.** How strings are created using String Class and StringBuffer Class.
- Q4.** What is the purpose of an Abstract Class.

Tutorial Sheet 3

- Q1.** What do you mean by Inheritance? Discuss different types of Inheritance.
- Q2.** What are Constructors? Discuss role of Constructors in Inheritance.
- Q3.** What is the purpose of anInterface?
- Q4.** Explain the use of “super”keyword.

Tutorial Sheet 4

- Q1.** Explain the use of try, catch and throw in exception handling in Java.
- Q2.** What is the difference between a checked exception and an unchecked exception?
- Q3.** Discuss the Life Cycle of an Applet.
- Q4.** What is the difference between a component and a container?

Tutorial Sheet 5

- Q1.** Explain the differences between Overriding and Overloading.
- Q2.** What are various identifiers and keywords in Java.
- Q3.** What is Java Package and how it is used?
- Q4.** What is the use of finally clause in exception handling in Java?
- Q5.** What are Applets. Discuss Applet Architecture.

Roll No.

Total Pages : 03

BCA/M-20

1904

PROGRAMMING IN CORE JAVA

BCA-366

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory.

Compulsory Question

1. (i) Explain JVM and Java Byte Code. 4
- (ii) Explain polymorphism, its advantages and types. 4
- (iii) Explain how to import a package. 4
- (iv) Explain component and containers. Also explain various types of containers. 4

Unit I

2. (a) Explain various features of Java. 6
- (b) Explain the concept of switch statement with the help of an example. 10
3. (a) Explain the concept of console I/O. How many ways are there to get information from user and to display output in Java ? 8

- (b) Write a program to print the prime numbers between two given numbers. **8**

Unit II

4. (a) Explain static members in detail by using appropriate example. **8**
(b) Explain various string operations by using example. **8**
5. (a) Explain Abstract class by using example. What are the characteristics of abstract classes ? **8**
(b) Write a program to overload constructors. **8**

Unit III

6. (a) Explain the purpose of super keyword by using appropriate example. **8**
(b) Explain hierarchical inheritance with example. **8**
7. What is a package ? Explain various types of packages. Also explain various steps to add a class in the user defined package in Java by using example. **16**

Unit IV

8. (a) What is the use of throws keyword In Java ? Explain with example. **8**

- (b) Explain the concept of Exception handling using Multiple Catch block with example. **8**
9. Write short notes on the following :
- (i) Applet Tag **6**
- (ii) Layout Managers and its types. **10**

Software Lab. I (BCA-371)

(Lab – I Based on BCA-361)

Web Designing Fundamentals

Examination:100

Total:100

1. Write a program to change background color, font style and color, font family using CSS.
2. Write a program to change the style of HTML elements using CSS selectors (element, id, class) properties.
3. Write a program to use different font, styles: In the style definition you define how each selector should work (font, color etc.). Then, in the body of your pages, you refer to these selectors to activate the styles.
4. Write a program to create dotted, dashed, groove and ridge border using CSS border property.
5. WAP to create table and list using CSS.
6. Create a CSS Box Model.
7. Embedding java Script in HTML pages
8. Write a program to change HTML content and attribute values using JavaScript.
9. Write a JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient.
10. WAP to create popup and alert boxes in JavaScript
11. WAP to call a function using external JavaScript.
12. Create any catalog using XML.

Software Lab. II (BCA-372)

(Lab Based on BCA-355)

Programming using Visual Basic

Examination: 100

Total: 100

1. WAP to store the city names and temperatures using collections.
2. WAP to show the use of Drag and Drop Operation such that:
 - i. When button is first dragged over the picture box, the picture box is painted red.
 - ii. When the button leaves the picture box, the picture box is painted green.
 - iii. If the user drops the button while it's over the picture box, the picture box is painted blue
3. WAP to create Load Event Handler.
4. WAP to add multiple forms and apply various events on them in a project i.e. Form Handling.
5. WAP to show the use of Menus similar to notepad with shortcut keys.
6. Design a form for speed control program using scrollbars.
7. Design a form using shape control to display signal and change it timely using timer control
8. Design a form contain list box and two command buttons:
 - a) add: to add the element to the list from input box
 - b) delete: to delete the list elements
9. Design a form using Tab control, image list, status bar, tool bar which facilitates different arithmetic operations.
10. WAP to demonstrate the file system in Visual Basics.