

**Bhavnagar University**  
**T.Y.B.C.A.**

**Paper No: BCA-301 Computer Graphics (With C++)**

**100 Marks**

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Unit-1: Introduction

- ❖ A survey of major application of computer graphics
- ❖ Terminology
- ❖ Current software packages for drafting & dtp
- ❖ Software standard

Unit- 2: Hardware

- ❖ Overview of different video display devices like Cathode ray tubes, random scan-raster scan monitors, color CRT monitors, Direct View Storage.
- ❖ Hardcopy devices: printer, plotters
- ❖ Input devices: keyboard, touch panels, light pens, mouse, track Balls, space balls, voice system, joysticks etc.
- ❖ Graphics function.

Unit- 3: Output Primitives & Attributes

- ❖ Primitives : Points, Links, Circles, Line Drawing- algorithms, Circle generating algorithms, Filled area primitives, Scan line polygon fill algorithm, Inside-outside tests, boundary-fill algorithm, etc.
- ❖ Character generations
- ❖ Attributes like: Line, Color, Area-fill and Text.

Unit- 4: Interactive Picture Construction Techniques

- ❖ Rubber bending methods
- ❖ Zooming
- ❖ Dragging
- ❖ Panning

Unit- 5: Two Dimensional Transformations

- ❖ Composites Transformations : Translations, Rotation, Scaling
- ❖ Matrix Representation.
- ❖ Window and Clipping : Line clipping, Area clipping, Text clipping
- ❖ Windows to view point transformations.

**Reference Books...**

1. F. S. Hill : Computer Graphics ( MacMillan Publishing Co )
2. Rajaraman : Objext Oriented Programming and C++ ( New age international publisher )
3. Donald Hearn and M. Paulin Baker : Computer Graphics ( PHI )

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**Paper No: BCA-302 RDBMS & Client Server Programming**

**100 Marks**

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Unit – 1: An Overview of DBMS & Introduction to RDBMS.

- ❖ Introduction to DBMS.
- ❖ Relational Database Structure, Space Management, Memory Structure.
- ❖ E-R Diagram.
- ❖ Client Server Architecture, Distributed processing, Multi tier Architecture.
- ❖ Code's Rules

Unit – 2: Introduction to Oracle

- ❖ How oracle works.
- ❖ Oracle's process architecture.
- ❖ The object relational model.
- ❖ Schema & Schema Object: Tables, Views, Sequences, Synonyms and Indexes.
- ❖ Cluster & Hash Cluster.

Unit – 3: SQL \* Plus.

- ❖ Introduce DDL, DML, DCL. & TCL
- ❖ Oracle data types.
- ❖ Types of integrity, integrity constraints.
- ❖ Simple query generation.
- ❖ Advanced Query generation.
- ❖ Create table, View, Sequence, index.

Unit – 4: PL / SQL

- ❖ PL / SQL Blocks.
- ❖ How PL / SQL works, Control structure.
- ❖ Cursor: Declaring Cursor, Attributes of cursor, Accessing cursor, Closing cursor.
- ❖ Trigger: Components of trigger, types of trigger, creating a trigger.
- ❖ Stored Procedure & Function: Creating stored procedure, Executing stored procedure, Creating Function, Executing Function.

Unit – 5: Introduction to DBA.

- ❖ Role of DBA.
- ❖ Users: Creating a new user, grant command, deleting user.
- ❖ Privileges: System privileges, object privileges, Assigning object privileges to a user, Viewing User & privileges, revoking a system & an object privileges.
- ❖ Role: Creating a role, Granting privileges & roles to a role, granting role to a user, viewing the role of a user.
- ❖ Database Backup & Recovery.

**Reference Books...**

1. Jose A. Ramalho: Learn Oracle 8i., BPB Publication
2. SQL in 21-Days - Techmedia
3. PL/SQL in 21 Days - Techmedia

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**Paper No: BCA-303 Data Communication & Networking**

**100 Marks**

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Unit - 1: Introduction & Transmission Media

- ❖ Communication System
- ❖ Analog & Digital Data
- ❖ Communication Channel
- ❖ Twin Wire
- ❖ Co-axial cable
- ❖ Radio VHF & Microwaves
- ❖ Fiber Optic (Intro.) & satellite.

Unit 2: Optical Fiber Communication & Satellite Communication

- ❖ Optical Source
- ❖ Propagation in Fiber
- ❖ Light Detectors
- ❖ FDDI
- ❖ Satellite Link
- ❖ Satellite Communication

Unit 3: Data Networks & Data Communication System

- ❖ Circuit Switching & Packet Switching
- ❖ PABX
- ❖ Facsimile (Fax)
- ❖ Digital Telephony
- ❖ Introduction to ISDN

Unit - 4: Network Topology, Architecture & Standards

- ❖ Introduction LAN, WAN, MAN
- ❖ Network Topologies
- ❖ OSI Model
- ❖ Local Area Network
- ❖ Ethernet, Token Bus & Token Ring
- ❖ IEEE Standards 802 For LAN and MAN

Unit 5: Network Protocol

- ❖ TCP/IP, ATM, DLP, X.25
- ❖ Inter-networks
- ❖ BRIDGES, ROUTERS AND BROUTERS, GATEWAYS
- ❖ Repeaters, Modems, Hubs

**Reference Books...**

1. Andrews Tananbaum: Computers Networks, PHI
2. Michel and Miller: Introduction to Digital Data Communication
3. James Martin: Telecommunication and Computers

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**Paper No: BCA-304 Internet Technology & Java**

**100 Marks**

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**Unit-1: Internet Fundamentals**

- ❖ Internet Intranet, Extranet.
- ❖ Internet Applications (WWW, E-Mail, FTP, IRC, Web Chat, Newsgroup, Usenet, BBS, NetMeeting, Video Conferencing).
- ❖ E-Mail Protocols (SMTP, POP3, IMAP Types)
- ❖ Introduction to TCP/IP, DNS, MIME Types
- ❖ Search Engines, Popular Search Engines and its working

**Unit-2: HTML**

- ❖ Basic of HTML.
- ❖ Tags, List, Character formatting, Linking, Inline Image, Tables : Table>.....</Table>, <Frame>, <Form>, Development of web Pages

**Unit-3: Java an Programming**

- ❖ An Overview of JAVA
- ❖ Data Type Variables, Arrays & operators
- ❖ Control Structure: If Switch, While, Do – While, Nested Loops etc...
- ❖ Closer Look at methods & classes
- ❖ Inheritance : Inheritance basic & using Superclass overriding, Multiple inheritance, abstract class

**Unit-4: Packages & Interface Using Java**

- ❖ Understanding class path
- ❖ A short package example
- ❖ Defining Interface
- ❖ Applying Interface
- ❖ Extended Interface

**Unit-5: Exception Handling & Multithreading Using Java**

- ❖ Fundamental
- ❖ Exception type
- ❖ Using Try & Catch
- ❖ Throw
- ❖ Java's Built-In Exception
- ❖ Java Thread Model
- ❖ Messaging
- ❖ Creating & Extending Thread
- ❖ Deadlock
- ❖ Using Multithread

**Reference Books...**

1. The Java Complete Reference
2. Duglass Comer : Internet- An Introduction prentice-Hall of India Pvt. Ltd.
3. Ned Snell : Teach Your self to create web pages in 24 hours Techmedia Pub.

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**Paper No: BCA-305 Operation Research**

**100 Marks**

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Unit-1: Basic of OR

- ❖ History of OR?
- ❖ Definitions of OR
- ❖ OR Application

Unit-2: Linear Programming

- ❖ Mathematics model, assumption of linear programming.
- ❖ Graphical solution, simplex method.

Unit-3: Special types of Linear Programming Problem

- ❖ Transportation problem
- ❖ Assignment models
- ❖ Traveling Salesman Problem

Unit-4: Project Scheduling PERT-CPM

- ❖ Diagram representation, Critical path calculations
- ❖ Time Chart, Resource leveling, Cost considerations in project
- ❖ Scheduling, project control.

Unit-5: Sequencing and Replacement Models

- ❖ Processing n jobs through two machines.
- ❖ Processing n jobs through m machines
- ❖ Processing Two jobs through m machines
- ❖ Replacement problem & models

**Reference Books...**

1. Sharma J. K.: Operation Research-Theory & Application, Macmillan Pub.
2. Sharma S. D.: Operation Research-Theory & Application, Macmillan Pub.
3. Mastafi C.K.: Operation Research- Methods & Practice, Wiley Eastern Ltd.

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**Paper No: BCA-306 Project Work**

**100 Marks**

- ❖ The project is to be carried out at IT industries/Computer user organizations.
- ❖ The project is to be considered as part time course work of the syllabus.
- ❖ Total working hours of the project must not be less than the 100 Hrs.
- ❖ Total marks will be divided as under:

(1) Project report evaluation (50 marks)

(2) Viva voce with presentation (50 marks)

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**Paper No: BCA-307 Practical**

**100 Marks**

Unit-1: Practical of Computer Graphics (Using C++) [30]

Unit-2: Practical of Oracle [30]

Unit-3: Practical of Java [40]