



# VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T. Y. B.Sc. Computer Science

## ENGLISH (Higher Level)

Unit No.	Topic
	<b>Text – The return of Vaman</b>
<b>1</b>	<b>The Container</b>
	1.1 The Transfer 1.2 The Find 1.3 The Archaeologist 1.4 The New Hounds 1.5 The Task Force 1.6 The Expert 1.7 The Agent 1.8 The Opening 1.9 The Committee 1.10 The Fortress 1.11 The Suspect
<b>2</b>	<b>Guru</b>
	2.1 The Trojan House 2.2 The Machine 2.3 The Client 2.4 The Wiretapper 2.5 The Computer 2.6 The Rendezvous 2.7 The Challenge
<b>3</b>	<b>Vaman</b>
	3.1 The Monads 3.2 The Little One 3.3 The Precaution 3.4 The Decoy 3.5 The Watcher 3.6 The Kidnap 3.7 The Ransom 3.8 The Mole 3.9 The Document 3.10 Farewell
	<b>Text – English for competitive examination by Bhatnagar and Bhargav</b>
<b>1</b>	Basics of English
<b>2</b>	Errors and How to Avoid Them
<b>3</b>	Spotting Errors
<b>4</b>	Sentence Completion

<b>5</b>	Letter Writing
<b>6</b>	Spellings
<b>7</b>	Vocabulary

**CAN COURSE  
OPERATION RESEARCH**

Unit No.	Topic
<b>1</b>	<b>General Discussion of Linear Programming Problem:</b>
	1.1 Model formulation. 1.2 Basic, Non-basic. 1.3 Degenerate, Non- degenerate and basic feasible solutions of LPP. 1.4 Slack & surplus variables LPP in the standard matrix form.
<b>2</b>	<b>Method of Solving LPP:</b>
	2.1 Simplex method. 2.2 Two Phase method. 2.3 Big-M method. 2.4 Duality of LPP. 2.5 The symmetric and non-symmetric dual Problems. 2.6 Relation between primal & dual problems.
<b>3</b>	<b>Transportation Problems:</b>
	3.1 Methods for finding initial basic feasible Solution. 3.2 Optimal solution of TP problem by MODI methods. 3.3 Unbalanced TP. 3.4 Assignment problems: 3.4.1 The Hungarian method. 3.4.2 Balanced & Unbalanced assignment problems.
<b>4</b>	<b>Game Theory:</b>
	4.1 Competitive games. 4.2 Two person zero-sum game. 4.3 Maximin and Minimax Principle. 4.4 Saddle points and the value of the game (based on pure strategies). 4.5 Mixed strategies. 4.6 Solution of games with saddle point, 4.7 Dominance rule. 4.8 Solution of $m \times 2$ and $2 \times n$ games using graphical method.
<b>5</b>	<b>Inventory Models:</b>
	5.1 Basic definition of parametric association with inventory problems. 5.2 Various costs associated with inventory Problems. 5.3 Inventory models with finite and infinite rate of replenishment with shortages. 5.4 Inventory models with finite and infinite rate of replenishment without shortages.

**COMPUTER SCIENCE SOFTWARE ENGINEERING**  
**Paper VI**

<b>Unit No.</b>	<b>Topic</b>
<b>1</b>	<b>INTRODUCTION TO SOFTWARE ENGINEERING</b>
	1.1. Software, Software Characteristics and Software Engineering 1.2. Software Development Phase, Requirement Analysis, Design, Coding, Testing, Maintenance 1.3. Effort Distribution with phases 1.4. Software Development Process Models, Waterfall Model, Prototyping
<b>2</b>	<b>SOFTWARE PROJECT PLANNING AND MANAGEMENT</b>
	2.1 Role of Management in Software Development 2.2 Role of Matrix and Measures 2.3 Cost Estimation, Single Variable Models 2.4 Project Scheduling, Project Scheduling and Milestones 2.5 Team Structure, Project Monitoring and Planning, Timesheets, Reviews
<b>3</b>	<b>REQUIREMENT ANALYSIS</b>
	3.1. Study of Requirements 3.2. Structured Analysis 3.3. Data Flow Diagram And Data Dictionary 3.4. Requirement Specification, Characteristics of SRS, Components of SRS 3.5. Validation
<b>4</b>	<b>SYSTEM DESIGN</b>
	4.1. Design Objectives 4.2. Design Principles, Problem Partitioning, Abstraction, Top-Down and Bottom-up Strategies
<b>5</b>	<b>TESTING</b>
	5.1. Testing Fundamentals, Error Faults, Failure and Reliability, Levels of Testing, Test Cases and Criteria
<b>6</b>	<b>INTRODUCTION TO CASE TOOLS</b>
<b>7</b>	<b>A CASE STUDY</b>

**COMPUTER SCIENCE**  
**COMPUTER NETWORKS**  
**Paper VII**

Unit No.	Topic
<b>1</b>	<b>NETWORKING FUNDAMENTALS</b>
	<b>1.1 An Introduction to Networks, Network Topologies and Types of Networks</b> 1.1.1 What is Networking? 1.1.2 Exchange, Sharing, preserving and protecting Information, Sharing Hardware and Software Resources, Need, Uses and Advantages of Network. 1.1.3 Networks in the work place ( Tools, and Task) 1.1.4 Network Topologies( Bus, Star, Ring, Star Bus, Star Ring and Physical Mesh). 1.1.5 Client/Servers, Hybrid and Peer to Peer Network. 1.1.6 Transmission Media (H/W Protocols, S/W Protocols, H/W – S/W Interface)
	<b>1.2 The OSI Model</b> 1.2.1 Introduction to OSI Model 1.2.2 The OSI Model Lower Layer Functions (Physical and Data Link Layers), The OSI Model Middle Layers(Network and Transport Layers), The OSI Model Upper Layers (Session, Presentation and Application Layers) 1.2.3 Upper Layer Devices
	<b>1.3 Major Protocol Suites</b> 1.3.1 What is protocol 1.3.2 Internet Protocols(Middle and Upper Layer Protocols)
<b>2</b>	<b>NETWORK Hardware and Software</b>
	<b>2.1 Network Cards and Cables, Repeaters, Hubs, Routers, and Bridges</b> 2.1.1 Network Cards, Repeaters – its uses and selection criteria, Hubs (Chasis Hubs and Stackable Hubs) 2.1.2 Splitting Up Networks 2.1.3 Bridges – Use and working of bridges 2.1.4 Switches – Use and working of Switches 2.1.5 Routers – Use and working of Routers  <b>2.2 Network Operating Systems</b> 2.2.1 Peer Network Operating Systems (Windows XP) – Netwroking features of Windows XP) 2.2.2 Client-Server Operating System(Windows NT- and LINUX) – Their common network features 2.2.3 Linux Installationm, creating users, groups and granting permissions
<b>3</b>	<b>NETWORK SECURITY ISSUES, CONCEPT AND TERMINOLOGY</b>
	3.1 Defination of various types of security 3.2 Security problems and possible(Theft, Unauthorized Disclosure, Information warfare, AccidentalData Loss) 3.3 Security issues with LINUX
<b>4</b>	<b>BASIC OF TCP / IP</b>
	4.1 The TCP / IP protocol layer 4.2 IP addressinig – IP Subnets – IP routing 4.3 Method of delivering – Unicast, Broadcast, Multicast and Anycast. 4.4 ICMP protocol, ARP protocol 4.5 Concepts of Port and Sockets. 4.6 User Datagram Protocol 4.7 TCP protocol
<b>5</b>	<b>EMAIL SERVICES AND ITS BASIC</b>
	5.1 Architecture and Services

	5.2 The User Agent 5.3 Message Formats, Message Transfer, Final Delivery System 5.4 Simple mail transfer protocol (SMTP) 5.5 SMTP and Domain Name System 5.6 WWW 5.7 HTTP
<b>6</b>	<b>CONCEPTS OF CELLULAR PHONES</b>
	6.1 Working and Signaling system 6.2 GSM and CDMA technology 6.3 3G and 4G technology of mobile 6.4 GPRS System and its working
<b>7</b>	<b>BLUETOOTH TECHNOLOGY</b>
	7.1 Bluetooth Architecture 7.2 Bluetooth Application 7.3 The Bluetooth protocol stack 7.4 Bluetooth Frame Structure

**COMPUTER SCIENCE COMPUTER GRAPHICS**  
**Paper VIII**

Unit No.	Topic
<b>1</b>	<p><b>Overview of Computer Graphics</b></p> <p>1.1 Historical background of Computer Graphics</p> <p>1.2 Applications of Computer Graphics</p> <p style="padding-left: 20px;">1.2.1 Entertainment</p> <p style="padding-left: 20px;">1.2.2 Advertisement</p> <p style="padding-left: 20px;">1.2.3 Simulation Modeling</p> <p style="padding-left: 20px;">1.2.4 Architecture</p> <p style="padding-left: 20px;">1.2.5 Virtual Reality</p> <p style="padding-left: 20px;">1.2.6 Image Processing</p> <p>1.3 Popular graphics software</p> <p>1.4 Pixel graphics versus Vector Graphics</p> <p>1.5 Hard Copy Graphics Devices</p>
<b>2</b>	<p><b>Mathematical foundation for Computer Graphics</b></p> <p>2.1 Basic geometry</p> <p style="padding-left: 20px;">2.1.1 Straight Line and Line segment</p> <p style="padding-left: 20px;">2.1.2 Circle</p> <p style="padding-left: 20px;">2.1.3 Ellipse</p> <p style="padding-left: 20px;">2.1.4 Conic sections</p> <p>2.2 Three Dimension geometry</p> <p>2.3 Trigonometry</p> <p>2.4 Matrix Algebra</p> <p style="padding-left: 20px;">2.4.1 Some Special types of Matrix</p> <p style="padding-left: 20px;">2.4.2 Matrix Operations</p>
<b>3</b>	<p><b>Graphics Primitive</b></p> <p>3.1 Line Drawing Algorithms</p> <p style="padding-left: 20px;">3.1.1 Vecgen Algorithm</p> <p style="padding-left: 20px;">3.1.2 Brasenham Line Drawing Algorithm</p> <p>3.2 Circle generating algorithms</p> <p style="padding-left: 20px;">3.2.1 Parametric circle drawing algorithm</p> <p style="padding-left: 20px;">3.2.2 Brasenham Circle Algorithm</p> <p>3.3 Different Line Styles</p> <p style="padding-left: 20px;">3.3.1 Thick Line</p> <p style="padding-left: 20px;">3.3.2 Line Caps</p> <p style="padding-left: 20px;">3.3.3 Thick line joins</p> <p style="padding-left: 20px;">3.3.4 Pens and Brushes</p> <p>3.4 Curves</p> <p style="padding-left: 20px;">3.4.1 DDA approach for drawing a circular arc</p> <p>3.5 Text and Character Attributes</p> <p>3.6 Anti Aliasing</p>
<b>4</b>	<p><b>Polygons</b></p> <p>4.1 Polygon formation</p> <p>4.2 Polygon inside tests</p> <p style="padding-left: 20px;">4.2.1 Even – Odd method</p> <p style="padding-left: 20px;">4.2.2 Winding number method</p> <p style="padding-left: 20px;">4.2.3 Some other method for performing inside test</p> <p>4.3 Polygon area filling</p>

	<ul style="list-style-type: none"> <li>4.3.1 Flood fill method</li> <li>4.3.2 Scan line fill method</li> <li>4.3.3 Boundary fill</li> </ul>
<b>5</b>	<p><b>Geometric Transformation</b></p> <ul style="list-style-type: none"> <li>5.1 Basic transformation <ul style="list-style-type: none"> <li>5.1.1 Scaling</li> <li>5.1.2 Translation</li> <li>5.1.3 Rotation</li> </ul> </li> <li>5.2 Homogeneous Coordinates</li> <li>5.3 Rotation relative to and Arbitrary point</li> <li>5.4 Some other transformations <ul style="list-style-type: none"> <li>5.4.1 Reflexion</li> <li>5.4.2 Sharing</li> </ul> </li> <li>5.5 Coordinate Transformation</li> <li>5.6 Inverse Transformation</li> <li>5.7 Affine Transformation</li> <li>5.8 Rastar Transformation</li> </ul>
<b>6</b>	<p><b>Viewing in two dimensions</b></p> <ul style="list-style-type: none"> <li>6.1 Window and View port</li> <li>6.2 Viewing Transformation</li> <li>6.3 Clipping <ul style="list-style-type: none"> <li>6.3.1 Point Clipping</li> <li>6.3.2 Line Clipping</li> <li>6.3.3 Polygon Clipping</li> </ul> </li> <li>6.4 Sutherland – Hodgman Polygon clipping algorithm</li> <li>6.5 Text Clipping</li> <li>6.6 Multiple windowing</li> </ul>
<b>7</b>	<p><b>Color and Shading</b></p> <ul style="list-style-type: none"> <li>7.1 Light Sources</li> <li>7.2 Illumination</li> <li>7.3 Shading <ul style="list-style-type: none"> <li>7.3.1 Constant Shading</li> <li>7.3.2 Ground Shading</li> </ul> </li> <li>7.4 Transparency</li> <li>7.5 Shadow</li> <li>7.6 Colors <ul style="list-style-type: none"> <li>7.6.1 RGB color model</li> <li>7.6.2 CMY color model</li> <li>7.6.3 HSB color model</li> </ul> </li> <li>7.7 Graphics File formats <ul style="list-style-type: none"> <li>7.7.1 Bitmap</li> <li>7.7.2 JPEG</li> <li>7.7.3 GIF</li> </ul> </li> </ul>
<b>8</b>	<p><b>Graphics in 3-Dimension</b></p> <ul style="list-style-type: none"> <li>8.1 3-D Transformation</li> <li>8.2 Rotation of 3-Dimensional object</li> </ul>

**COMPUTER SCIENCE JAVA PROGRAMMING**  
**Paper IX**

Unit No.	Topic
<b>1</b>	<b>Concept of Java Programming</b> 1.1 Concept of Java virtual machine (JVM), Byte code 1.2 Java compiler, Java interpreter 1.3 One Dimensional and multi dimensional arrays 1.4 Using new and this key word, Garbage collection concepts 1.5 Concept of Inheritance, Super Keyword, method overriding 1.6 Finalizer() method, Overloading methods, Overloading constructors 1.7 Concepts of Static class, nested class Inner classes and Abstract Class
<b>2</b>	<b>Packages, Interfaces, Exception handling and Multithreading</b> 2.1 Defining Package and concept of packages 2.2 Defining interface and concept of interface 2.3 Concept of Exception handling and use of try, catch throw and finally 2.4 Java Thread 2.5 Thread priorities and Synchronization, Concept of Multithreading
<b>3</b>	<b>String Handling in Java</b> 3.1 String constructors, Special string operation, Character extraction 3.2 String Comparison, Searching a string, modifying string, Data conversion, Case Conversion, String buffer methods
<b>4</b>	<b>Java.util package</b> 4.1 Data Class and its methods, Calendar class and its methods and currency class and its methods
<b>5</b>	<b>JDBC – Java Data Connectivity</b> 5.1 The JDBC APL, JDBC Drivers, JDBC-ODBC Bridge. 5.2 Connectivity to Object Databases, Connectivity with Web based database system
<b>6</b>	<b>Applet Class</b> 6.1 Applet concept, Architecture of Applet, Applet methods 6.2 Graphic class, using status window
<b>7</b>	<b>AWT class</b> 7.1 Layouts, Component class, Container class, Panel class, window class, frame and canvas, Hiding and showing windows, Setting the windows direction, graphic class 7.2 AWT controls, their constructors, properties and methods 7.3 Menubar, MenuItem class and their methods, Dialog Box
<b>8</b>	<b>Event Handling Mechanism in Applet</b> 8.1 Event, Event Source and Event Listeners 8.2 Key Event Class, Mouse Event Class, Mouse Wheel Event Class, Text Event Class, Window Event Class
<b>9</b>	<b>Advanced Java features</b> 9.1 Introduction to Java Swing, Benefits of Swing, Working with Swing – basic user interface components, Handling user events with Swings 9.2 Web Server – Tomcat Apache 9.3 JSP – Concept, application and implementation 9.4 Servlet – Concept, application and implementation 9.5 J2EE – Concept, application and implementation