

SHRI GOVIND GURU UNIVERSITY

Godhra
B.C.A. Syllabus
Semester-3

Core Course

CC- 301 Database Management System

No. of Credits: 4

Theory Sessions per week: 3

Teaching Hours: 30 hours

Unit-1

Introduction to SQL

10 hrs

- **Introduction to SQL**
- **Data Definition Commands**
- Data Types
- Creating Table Structures
- SQL Constraints
- **Data Manipulation Commands**
- Adding Table Rows
- Saving Table Changes
- Listing Table Rows
- Updating Table Rows
- Restoring Table Contents
- Deleting Table Row
- **Select Query**
- With Conditional Restrictions
- Arithmetic Operators
- Logical Operators
- Special Operators
- **Advanced Data Definition Commands**
- Changing a Column's Data Type
- Changing a Column's Data Characteristic
- Adding a column
- Dropping a column
- Advanced Data Update
- Copying Parts of Table
- Adding Primary and Foreign Key Designations
- Deleting Table From The Database
- **Aggregate Functions**
- **View**

Unit -2

8 hrs

- **Business Intelligence and Data Warehouse**
- **The need for data analysis**

- **Business Intelligence**
- Business Intelligence Architecture
- Decision Support Data
- _ Operational Data Vs. Decision Support Data
- _ Decision Support Database Requirements

- **The Data Warehouse**
- **Online Analytical Processing**
- Multidimensional Data Analysis Techniques
- Advanced Database Support
- Easy-To-Use End-User Interface
- Client/Server Architecture
- **Data Mining**

Unit-3

6 hrs

- **Distributed Database Management System**
- **Distributed Database Management Systems**
- Evolution of DDBMS
- Distributed Processing and Distributed Database
- DDBMS Advantages and Disadvantages
- Characteristics of DDBMS
- Components of DDBMS

- **Levels of Data and Process Distribution**
- Single-Site Processing, Single-Site Data (SPSD)
- Multiple-Site Processing, Single-Site Data (MPSD)
- Multiple-Site Processing, Multiple-Site Data (MPSD)
- **Distributed Database Transparency Features**
- **Distributed Transparency**
- **Transaction Transparency**
- Distributed Requests and Distributed Transactions
- Distributed Concurrency Control
- Two-Phase Commit Protocol
- **Performance Transparency and Query Optimization**

Unit- 4

6 hrs

- **Advanced SQL**
- **Set Operators**
- Union
- Union All
- Intersect
- Minus
- **SQL Join**
- Cross Join
- Natural Join
- Join Using Clause

- Join On Clause
- Outer Join
- **SQL Functions**
- Date and Time
- Numeric
- String
- Conversion

Reference Books:

- 1) Introduction to Database Management Systems (First Edition 2006)
Publisher: Tata McGraw-Hill
By ISRD Group
- 2) An Introduction to Database Systems (Eighth Edition 2006)
Publisher : Pearson
By C. J. Date, A. Kannan & S. Swamynathan

CC- 301(P)RDBMS

1.CUST(CID,CNAME,CCITY,DOB)

PROD(PID,PNAME,PCOST,PPROFIT)

SALE_DETAIL(CID,PID,SALE,SALE_DATE)

- 1) Write a query that display purchase detail of all customers based on sale date.
- 2) Display the Name of customers who are born in 1985.
- 3) Display the name of product starts with "s".
- 4) Display details of product having maximum sales.

2. BRANCH_MASTER(B_NO,B_NAME,LOCATION)

CUSTOMER_MASTER(C_NO,C_NAME,GENDER,DOB,CITY,CONTACT_NO)

ACCOUNT_MASTER(ACC_NO,ACC_TYPE,B_NO,C_NO,OPEN_DATE,CURR_BALANCE)

- 1) Display details of male customers only.
- 2) Display the details of account opened in 1999.
- 3) List all records where current balance not less than 4000.
- 4) List all branch names where branch number is 1 or 3.

3. EMP(EMP_NO,EMP_NAME,DESIGNATION,MGR_NO,HIREDATE,SALARY, COMMISSION,DEPT_NO)

DEPT(DEPT_NO,DEPT_NAME,LOCATION)

- 1) List DEPTNO as DEPARTMENT NUMBER, Count of Employees as "Number of Employees" FROM Employee table.
- 2) List all employees who earn more than the average salary of their departments.
- 3) List DEPTNO, sum of salary department wise of employees who earn more than 2000.
- 4) Create a view on all the employee details of deptno=10.

4. PERSON (P_ID, LASTNAME, FIRSTNAME, ADDRESS, CITY)

ORDER (O_ID, ORDERNO, P_ID,ORDER_PRICE)

- 1) List all persons in Norway and USA:
- 2) Select only the records with NULL values in the "Address" column
- 3) List firstname,lastname with an Order month "November".
- 4) Count the no of persons having average order price=20;

5. PROGRAMMER(NAME,DOB,DOJ,PROF1,PROF2,SALARY)

SOFTWARE(NAME,TITLE,DEV_IN,SCOST,DCOST,SOLD)

STUDIES (NAME,SPLACE,COURSE,CCOST)

- 1) How many programmers have done the PGDCA course.
- 2) Display the institute names from the Studies table without Duplicates.
- 3) Display details of software having maximum scost.
- 4) Display the names of the programmers whose names contain 2 Occurrences of the letter 'A':

Object Oriented Concepts and Programming

BCA0C-302

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	OOPS Introduction	10 hours
	→Overview of Object Oriented Programming	
	o Introduction to Object Oriented Programming	
	o Procedure Oriented and Object Oriented	
	o Difference Between C and C++	
	o C++ Output/ Input	
	o Keywords in C++	
	o New style of header file specification	
	o Comments in C++	
	o Variables in C++	6 hrs
	o Reference Variables in C++	
	o The bool Data type	
	o Importance of function prototyping in C++	
	o Function Overloading	
1	o Default Arguments	
	o Inline Function	
	o Scope Resolution Operator	
	→Classes And Object	
	o Structures in C	
	o Structure in C++	
	o Access Specifier	
	o Classes	
	o Objects in C++	4 hrs
	o Characteristics of Access Specifier	
	o Function outside a class	
	o Initialization of variable in C++	
	o Arrow Operator	
	o 'this' pointer	
	More on++Classes and Object, Dynamic Memory Management, Constructor & Destructor	10 hours
	→More on Classes and Objects	
	o Member Functions and Data Members	
	o Friend Functions	
	o Friend Class	
	o Array of Class Object	5 hrs
2	o Passing Class Objects to Function	
	o Returning Objects from Functions	
	o Nested Classes	
	o Namespaces	
	→Dynamic Memory Management	
	o Introduction	
	o Dynamic Memory Allocation Using "new"	2 hrs
	o Dynamic Memory Deallocation	
	o "Set_New_Handler" Function	

→Constructor and Destructor

- o Constructor
- o Characteristics of Constructor
- o Types of Constructor
- o Destructor
- o Characteristics of Destructor

3 hrs

3 Inheritance and Polymorphism

10 hours

→Inheritance

- o Introduction
- o Advantages of Inheritance
- o 'Protected' Access specifier
- o Inheritance using different access specifier
- o Initialization of Base class members through derived class object
- o Different forms of Inheritance
- o Function Overriding

5 hrs

→Virtual Functions and Inheritance

- o Introduction
- o Pointers to derived class
- o Rules for virtual function
- o Internals of Virtual Functions
- o Pure virtual function
- o Virtual Base class
- o Virtual destructor
- o Abstract class
- o Limitations of virtual Function
- o Early binding v /s Late binding

5 hrs

Textbook:

Object Oriented Programming with C++
Publication: Pearson
By Subhash KU

Reference Book:

1. Object-Oriented Programming with C++ (Second Edition)
Publication: PHI
By Poornachandra Sarang
2. Object Oriented Programming using C++
Publication: Cengage Learning
By Joyce Farrell

Object Oriented Concepts and Programming

BCA0C(P)-302

UNIT	TOPICS / SUBTOPICS
	Introduction to OOP, Classes & Objects
1	1 Write a program to calculate the area of circle, rectangle and square using function overloading.
	2 Write a program to demonstrate the use of default arguments in function overloading.
	3 Write a program to demonstrate the use of returning a reference variable.
	4 Create a class student which stores the detail about roll no, name, marks of 5 subjects, i.e. science, Mathematics, English, C, C++. The class must have the following: <ul style="list-style-type: none"> ➤ Get function to accept value of the data members. ➤ Display function to display values of data members. ➤ Total function to add marks of all 5 subjects and store it in the data
	5 Create a function power() to raise a number m to power n. the function takes a double value for m and int value for n, and returns the result correctly. Use the default value of 2 for n to make the function calculate squares when this argument is omitted. Write a main that gets the values of m and n from the user to test the function.
	6 Write a basic program which shows the use of scope resolution operator.
	7 Write a C++ program to swap the value of private data members from 2 different classes.
	8 Write a program to illustrate the use of this pointer.
	9 An election is contested by five candidates. The candidates are numbered 1 to 5 and the voting is done by marking the candidate number on the ballot paper. Write a program to read the ballots and count the votes cast for each candidate using an array variable count. In case a number is read outside the range of 1 to 5, the ballot should be considered as a 'spoilt ballot' and the program should also count the number of spoilt ballots.
	10 Write a program to call member functions of class in the main function using pointer to object and pointer to member function.
	Dynamic Memory Management, Constructor & Destructor, Inheritance
2	1 Using friend function find the maximum number from given two numbers from two different classes. Write all necessary functions and constructors for the program.
	2 Using a friend function, find the average of three numbers from three different classes. Write all necessary member functions and constructor for the classes.
	3 Define currency class which contains rupees and paisa as data members. Write a friend function named AddCurrency () which add 2 different Currency objects and returns a Currency object. Write parameterized constructor to initialize the values and use appropriate functions to get the details from the user and display it.

	4	Create Calendar class with day, month and year as data members. Include default and parameterized constructors to initialize a Calendar object with a valid date value. Define a function AddDays to add days to the Calendar object. Define a display function to show data in “dd/mm/yyyy” format.
	5	Create a class named ‘String’ with one data member of type char *, which stores a string. Include default, parameterized and copy constructor to initialize the data member. Write a program to test this class.
	6	Write a base class named Employee and derive classes Male employee and Female Employee from it. Every employee has an id, name and a scale of salary. Make a function ComputePay (in hours) to compute the weekly payment of every employee. A male employee is paid on the number of days and hours he works. The female employee gets paid the wages for 40 hours a week, no matter what the actual hours are. Test this program to calculate the pay of employee.
	7	Create a class called scheme with scheme_id, scheme_name, outgoing_rate, and message_charge. Derive customer class from scheme and include cust_id, name and mobile_no data. Define necessary functions to read and display data. Create a menu driven program to read call and message information for a customer and display the detail bill.
	8	Write a program with use of inheritance: Define a class publisher that stores the name of the title. Derive two classes book and tape, which inherit publisher. Book class contains member data called page no and tape class contain time for playing. Define functions in the appropriate classes to get and print the details.
	9	Create a class account that stores customer name, account no, types of account. From this derive classes cur_acc and sav_acc to include necessary member function to do the following: <ul style="list-style-type: none"> • Accepts deposit from customer and update balance • Compute and Deposit interest Permit withdrawal and Update balance.
	10	Write a base class named Employee and derive classes Male employee and Female Employee from it. Every employee has an id, name and a scale of salary. Make a function ComputePay (in hours) to compute the weekly payment of every employee. A male employee is paid on the number of days and hours he works. The female employee gets paid the wages for 40 hours a week, no matter what the actual hours are. Test this program to calculate the pay of employee.
		Virtual Functions, Operator Overloading
3	1	Create a class vehicle which stores the vehiclno and chassisno as a member. Define another class for scooter, which inherits the data members of the class vehicle and has a data member for a storing wheels and company. Define another class for which inherits the data member of the class vehicle and has a data member for storing price and company. Display the data from derived class. Use virtual function.
	2	Create a base class shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get_data() to initialize the base class data members and another member function display_area() to compute and display the area of figures. Make display_area() as a virtual function and redefine this function in the derived class to suit their
	3	Write a program to demonstrate the use of pure virtual function.
	4	For multiple inheritance, write a program to show the invocation of constructor and destructor.

5	Create a class string with character array as a data member and write a program to add two strings with use of operator overloading concept.
6	Create a class distance which contains feet and inch as a data member. Overhead = =, <and> operator for the same class. Create necessary functions and constructors too.
7	Create a class MARIX of size mxn. Overload + and – operators for addition and subtraction of the MATRIX.
8	Define a class Coord, which has x and y coordinates as its data members. Overload ++ and – operators for the Coord class. Create both its prefix and postfix forms
9	Create one class called Rupees, which has one member data to store amount in rupee and create another class called Paise which has member data to store amount in paise. Write a program to convert one amount to another amount with use of type conversion.
10	Create two classes Celsius and Fahrenheit to store temperature in terms of Celsius and Fahrenheit respectively. Include necessary functions to read and display the values. Define conversion mechanism to convert Celsius object to Fahrenheit object and vice versa. Show both types of conversions in main function.

Core Course
CC- 303 Operating System & Concepts

No. of Credits: 4

Theory Sessions per week: 3

Teaching Hours: 30 hours

Teaching Hours

Unit-1 - Introduction to Operating System

8 hrs

& Processor Management

Introduction to Operating System

- What is Operating System?
- Operating system software
- Types of Operating System

Processor Management

- Job Scheduler, Process Scheduler,
- Job and Process Status
- Process Control Block
- Process Scheduling Algorithms:
 - First Come First Serve, Shortest Job Next, Priority
 - Scheduling, Shortest Remaining Time, Round Robin

Process Synchronization

- What is parallel Processing?
- Process Synchronization Software-test and set, Wait and Signal
- Semaphores
- Process Cooperation-Producers and consumers

Unit-2- Deadlock & Device Management

7 hrs

Deadlock

- Seven cases for dead lock
- Conditions for Deadlock
- 5 hrs
- Strategies for handling Deadlocks
- Starvation(Dining Philosophers Problem)

Device Management

- Types of System Devices
- Component of I/O subsystem
- Device Handler Seek Strategies
 - FCFS
 - SSTF
 - Elevator(Look)
- RAID

Unit-3 Memory Management

8 hrs

Memory Management: Early System

- Single User Contiguous Scheme
- Fixed Partitions
- Dynamic Partitions
- Allocation and deallocation methods
- Relocatable Dynamic Partitions

Memory Management: Virtual Memory

- Paged Memory Allocation
- Demand Paging
- Page Replacement Algorithms
- First In First Out
- Least Recently Used
- Virtual Memory

Unit-4 File Management & Security

7hrs

- The File Manager
- File Organization
- Physical storage allocation
- Data Compression

Text Book:

Operating Systems

Publication: Cengage learning

By Flynn/Mc Hoes

Reference Books:

1. Operating Systems Concepts

2. Operating Systems: Internals and Design Principles, 5/E

Publication: Pearson Higher Education

By William Stallings

Core Course
CC- 304 Basic of Networking

No. of Credits: 4

Theory Sessions per week: 3

Teaching Hours: 30 hours

Unit-1 - Introduction of networking

[7 hours]

- Fundamental concepts
- Data communications
- Protocols
- Standards

Types of Network

- LAN
- MAN
- WAN
- PAN

Switching

- **Basics of switching**
 - Types of switching
 - o Circuit
 - o Packet
 - o Message

Unit-2-Transmission Media

[8 hours]

- Introduction
- **Guided media**
 - o Twisted pair
 - o Coaxial cable
 - o Optical fiber
- **Unguided media**
 - o Microwave
 - o Satellite communication
 - o Cellular telephones

Network topologies

- Introduction
- **Topologies**
 - o Mesh
 - o Star
 - o Tree
 - o Ring
 - o Bus
 - o Hybrid
- **Analog and Digital Signal**

Unit-3- Network protocols, OSI, TCP/IP model

[7 hours]

- Introduction
- Protocols in computer communications
- OSI model and layer functions
- **TCP/IP**
 - o Introduction
 - o TCP/IP basics

- ARP
- IP
- RARP
- ICMP
- UDP
- DNS
- EMAIL
- FTP
- WWW
- HTTP
- TELNET

Unit-4

[8 hours]

- ISDN, Architecture, Channel types, interfaces
- Bluetooth
- Infrared communication
- Wireless LAN
- Internetworking devices
 - o Repeaters
 - o Bridges
 - o Routers
 - o Gateway

Modes of data transmission

- Introduction
- Parallel and Serial communication
- Asynchronous, Synchronous communication
- Simplex, half duplex and full-duplex communication

Multiplexing and Demultiplexing

- Multiplexing and Demultiplexing
- Types of multiplexing

Textbook:

Data Communications and Networks, 2nd Edition
Publisher: McGraw Hill

By Achyut S Godbole, Atul Kahate

Reference Books:

1. Business data communication

Publisher: Cengage publications

By Selly Cashman

2. Data communications and networking

Publisher: McGraw Hill

By Behrouz Forouzan

3. Computer networks

Publisher: Pearson

By Andrew S. Tanenbaum

Core Course
CC- 305 Statistical Computing

No. of Credits: 4

Theory Sessions per week: 3

Teaching Hours: 30 hours

Unit - 1

Introduction and Measures of Central Tendency
hrs

8

Definitions, Functions, Scope and Limitations of Statistics

- o Introduction
- o Meaning of Statistics
- o Functions of Statistics
- o Scope or Importance of Statistics
- o Limitations of Statistics

Measures of Central Tendency

- o Introduction
- o Characteristics of a Good Average.

Different Types of Measures of Central Tendency

- o Mean
 - _ Arithmetic Mean
 - _ Arithmetic Mean of Grouped Frequency Distribution
 - _ Short-cut Method and Step-Deviation Method of Obtaining Arithmetic Mean (Excluding Mathematical Properties of A.M)
 - _ Combined Arithmetic Mean
 - _ Cumulative Arithmetic Mean
 - _ Weighted Arithmetic Mean

o Median

- _ Individual Frequency Distribution
- _ Ungrouped Frequency Distribution
- _ Grouped Frequency Distribution
- _ Advantages, disadvantages and uses of Median

o Mode

- _ Individual Frequency Distribution
- _ Ungrouped Frequency Distribution
- _ Grouped Frequency Distribution
- _ Advantages, disadvantages and uses of Mode

Unit - 2

Measures of Dispersion Or Variation

9

hrs

Quartiles, Deciles and Percentiles

Introduction, Objectives and essentials of a good measure

Absolute and Relative Measures of Dispersion

- o Range
- o Quartile Deviation
- _ Coefficient of Quartile Deviation

o Mean Deviation

- _ Coefficient of Mean Deviation
- _ Advantages and disadvantages of M.D.
- o Standard Deviation
- _ Alternative Method of Standard Deviation

- o Variance (Excluding Properties of S.D)
- _ Coefficient of Variation
- _ Direct Method
- _ Step-Derivation Method

Unit – 3

Probability and Mathematical Expectation

4

hrs

Probability

- o Introduction
- o Definitions of Some Important Terms
 - Equally Likely Events
 - _ Mutually Exclusive Events
 - _ Exhaustive Events
 - _ Dependent Events
 - _ Independent Events
- o Classical approach to probability
- o Statistical approach to probability
- o Modern approach to probability
- o Symbols associated with probability
- o Algebra of sets
- o Conditional Probability

Unit – 4

Correlation Analysis And Regression Analysis

9

hrs

Correlation Analysis

- o Introduction
- o Types of Correlation
 - _ Positive, Negative and Zero Correlation
 - _ Linear and non-linear Correlation

- _ Simple, Multiple and Partial Correlation
- _ Positive, Negative and Zero Correlation
- _ Methods of Measuring Correlation
- _ Karl Pearson's Product Moment Method
- _ Spearman's Rank Method
- _ Concurrent Deviation Method

Regression Analysis

o Definition

- _ Regression Equation.
- _ Method of Least Squares.
- _ The regression equation of Y on X
- _ The regression equation of X on Y
- _ Regression Coefficient & Its Properties (without proof)

Practical Demo should be given for Correlation and Regression in Excel

Textbook:

Business Statistics (Third Revised Edition)

Publication: S.Chand

By Padmalochan Hazarika

- **Chapter-1**(1.1,1.2,1.3,1.4,1.5)
- **Chapter-5**(5.1,5.2,5.4,5.5)
- **Chapter-6**(6.1,6.2,6.3,6.4,6.5(Excluding Lorenz Curve))
- **Chapter-8**(8.1,8.2,8.3)
- **Chapter-13**(13.1, 13.2)

Reference Book:

1. Business Mathematics and Statistics

Publication: Tata McGraw Hill Education Private Limited

By N G Das and J K Das

Foundation Course

FC-301 E-learning and it's application

No. of Credits: 4

Theory Sessions per week: 3

Teaching Hours: 30 hours

Unit-1 Introduction to the E-learning

[7 hours]

- Introduction to the E-learning topics
- What is e-learning? Is it important in education?
- The history of e-learning
- The benefits and drawbacks of online learning
- Can we learn online by utilizing e-Learning tools?
- Best practices of online training
- Learning vs. Training, what is the difference?
- Corporate E-learning vs. E-learning in the education sector
- What is the future of e-learning?

Unit-2-Learning platforms

[8 hours]

- **What is a LMS?**
- **What are the types of learning management systems?12. What are content authoring tools and how can we use them?**
- **Synchronous e-learning vs. asynchronous e-learning tools and technologies**
- **What is SCORM ?**
- **E-learning tools and technologies used in online training**

Unit-3- Online courses

[7 hours]

- **The important elements of online learning courses**
- **The importance of tests & quizzes for students in eLearning**
- **How to make e-learning effective and tips to increase it's effectiveness**
- **What are the best tools to help us create an online course?**

Unit-4 Applications of online training

[8 hours]

- **What is Blended learning and how can it be used?**
- **The advantages of social and collaborative e-Learning**
- **Gamification in online training and learning management systems**
- **Micro-learning and its advantages for amazing e-Learning!**
- **How to best utilize video in e-Learning**
- **Rapid e-Learning development process and resources**
- **How Personalization in e-Learning works**
- **Continuous learning**
- **Benefits of using e-Learning tools in Sales training**
- **Effective online Customer training**

Elective Course

Disaster Management

Course Introduction:

This course aims to provide an insight into immensely significant area of common welfare. The course will enable a student to understand the major types of natural and man-made disasters and also methods of mitigating their ill-effects on the human race. The course also covers a few modern disasters which are hitherto not experienced by humankind across the globe.

No. of Credits: 2

Theory Sessions per week: 2

Teaching Hours: 20 hours

UNIT	TOPICS / SUBTOPICS	
1	Introduction to Disasters / Hazards	5 HRS
	<ul style="list-style-type: none">◆ Definition of disaster:◆ General Effects of disasters◆ Causal Factors◆ Disasters and development (cause and effect)◆ Meaning of Disaster Management◆ Types of Disaster/Hazards:<ul style="list-style-type: none">◆ Natural◆ Anthropogenic◆ Sociological◆ Technological◆ Transport◆ Climate change◆ Coping with stress, anxiety and fears◆ Latest Technological equipment◆ Disaster Response:	

- 2 **Disaster Management** **5 HRS**
- ◆ Definition
 - ◆ Need
 - ◆ Obstacles
 - ◆ Disaster Relief and Factors
 - ◆ Risk Mitigation Strategies

 - ◆ Participatory assessment of disaster risk
 - ◆ Disaster Reduction
 - ◆ Communicable diseases occurring after natural disasters
 - ◆ Their prevention
- 3 **Relief, Rehabilitation, Recovery and Role of NGO and Government** **5 HRS**
- ◆ Relief
 - ◆ Rehabilitation
 - ◆ Displacement and Development
 - ◆ Priorities and opportunities in Rehabilitation and reconstruction
 - ◆ Relevance of Mitigation and its techniques
 - ◆ Mitigation measures
 - ◆ People's Participation
 - ◆ Disaster Recovery
 - o Business continuity planning
 - ◆ India's natural disaster's proneness:
 - o Management of disasters in India
 - o Institutional and policy framework
 - o Government Policies for Disaster Planning
- 4 **Use of IT in Disaster Management, Applications and Future of Disaster Management** **5 HRS**
- ◆ **Use of IT in Disaster Management:**

- o Computer Attack

- GPS (Global Positioning System)

- o Laser Scanning
 - o Remote Sensing-GIS Integration

◆ **Applications in Disaster Management:**

- o Bio-terrorism

Textbook: Disaster Management

Publisher: Himalaya Publishing House

By M. Saravana Kumar

Reference Books:

1. Introduction to Disaster Management

Publisher: Macmillan

By Satish Modh

2. The Disaster Recovery Handbook

Publisher: PHI

By Michael Wallace and Lawrence Webber

3. Citizen's Guide to Disaster Management

Publisher: Macmillan

By Satish Modh