



B.Sc. Under Graduate Semester wise Syllabus

(W.e.f. session 2016 onwards)

Class: - B.Sc.

Semester: - IV Semester

Subject: - Computer (BSS 401 T)

Paper: - DATA BASE MANAGEMENT SYSTEM

Marks 85+15 CCE

Unit - 1

Fundamentals of DBMS: Data, Information, Database & Computers, DBMS Definition, DBMS versus file processing system, Components of DBMS Environment, Instances & Schemas, Three Levels Architecture, Data Independence, Data Dictionary, Database Users, Data Administrators.

Unit - 2

Modeling the Real World, Various Data Models & their Comparison, Entity Relationship Models. RDBMS - Concept, Components, Data Integrity, Keys, Relational data Manipulations and Relational Algebra, Tuple Calculus.

Unit - 3

Normalization: Definition, Decomposition, Basic Concepts like FD, Objectives of Normalization. Normal Forms- First, Second, Third Normal Form, BCNF, Concept of Multi Valued Dependencies & Higher Normal Forms.

Unit - 4

Introduction to SQL, DDL, DML, and DCL statements, Creating Tables, Adding Constraints, Altering Tables, Update, Insert, Delete & various Form of SELECT- Simple, Using Special Operators for Data Access. Nested Queries & Exposure to Joins, Aggregate Functions.

Unit - 5

Transaction: Concept of Transaction, Concurrency Control-Problem & its Basis, Concurrency Control -Locks & Deadlocks. Recovery-Kind of Failures, Recovery Techniques, Security-Authentication, Authorization, Access Control

Text Book:

1.H. F. Korth & A. Silverschatz, Database concepts, Tata McGraw Hill, New Delhi.

Reference Books:

2. Elmasri & Navathe, Fundamentals of Database systems, Addison & Weisely, New Delhi.
3. C. J. Date, Database Systems, Prentice Hall of India, New Delhi.
4. Hoffer, Prescott & McFadden, Modern Database Management, 8/e
5. Ivan Bayross, SQL, PL/SQL, BPB Publications , New Delhi.



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Practical

Semester: - IV Semester

Subject: - Computer (BSS 401 P)

Paper: - Practical on Data Base Management System

1. Write a command to create following table structure, item-master.

Column name	datatype
Itemcode	char(4)
Itemdesc	varchar(25)
No_of_item_available	int
Price	int.

Condition are:- (1) itemcode is primary key

- (a) Itemdesc is not NULL
- (b) No_of_item_available is non zero .
- (c) Price value should be 200 Rs.

4. The Department of an employee Raj Sharma table changed from finance to marketing. The department code of marketing is 003 & the employee code of raj Sharma 0015.both the department code & employee code are of char data type. Write update statement to update table employee.

3. News paper attribute

Newspapercode	char (4)
Newspaper name	char(25)
Region	varchar(25)
Type of news paper	varchar(25)
City	char(20)
Country code	char(3)
Phnno	Char(15)

Second table

Newspaperadver	
Newsadvo	varchar (4)
Adstart date	dates time

Write SQL command for:-

Phnno should be [0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]

Country code should be 001 by default.

News paper code
should primary key.

Modify table->

- Newsadvo Should be primary key
- News paper code should be foreign key.



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- 1 Write a command to display the detail of all those employee who name at least 3-5 year experience.

Attribute	data type
Employ code	char
Employ name	char
Department code	char
DOJ	date
YOE	int
Employ grade	char

6. The employee tables contain the employee name, address, age, salary of each employ. Write SQL command for-

- (a) Display all the detail of the employee
- (b) Whose age less than 40 year.
- (c) Salary is greater than 15000.

- 1 In a bank the customer table store's the detail of each customer. the bank has decided to give a 10% discount on all credit card's you want to generate a list of all customer who don't available the credit card facility. How do you generate the list? The structure of customer table.

Column	data type
Customecode	char
Customername	char
Customeraddress	char
Credit card	int

11. Consider title table with column name, title, title type pub ID of char type, while price advance, royalty, ytd-sales is off int type.

- a Display the highest advance paid.
- b Display the lower advance paid.
- c Display the total no. of book.
- d Display total sales of book.

12. Write appropriate SQL command for following-

- a Increase the price of all items by 5%.
- b Update the quantity hold to 500 for item code 1001.
- c Delete a row from the item table where item code is 1001.
- d Update the price of item to 20 RS .

13. Write SQL definition command for each of the following

How would you add an attribute, CLASS, to the STUDENT table.

How would you remove the IS_REGISTERED table?

How would you change the field for FACULTY_NAME from 25 characters to 40 characters?

14. Consider employee table



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Employee (empno., Name, depid, Basic, HRA, Deduction, Tax)

(a) Get the name of employee in the department 'D1' and basic pay less than 6000.

1. Get the average HRA of an employee.
2. Find the total basic pay for all the employee in the department 'D1' whose basic pay is greater than 6000.
3. Find the name of the employee who get the maximum and minimum basic pay.

1. Consider the following table

Emp_master(emp_no, fname, mname, lname, dept, design, branch_no) Branch_mastr(name, branch_no)

List the employee details along with branch names to which they belong.

2. Consider the following table

Cust_mstr (custno, fname, mname, lname) Addr_dtls (code_no,addr1,addr2,city,state,pincode)

List the customer along with their multiple address details.

1 Consider table

Book (Bookid, title, author, Publisher, year, price)

Order_details (Orderno, bookid, quantity) Publisher (pubid, name, city, country)

Catalog (Bookid, title, authorid, pubid, category_id, year, price) Author (authorid, name, city, country)

3. Get the title and price of all the books whose price is less than the average price of the books.
4. Get the name of all authors who have more than two books in the catalog.
5. Get the name of all the books for which an order has been placed.

2 Consider table Order (ordered, order_detail, qty, price)

- 1 Alter table Order add column amount.
- 2 Modify data type of price column from character to int.

3 Consider table

Product_master(Product_no,description,profit_percent,unit_measure,qty_on_hand,reorder, sell_price, cost_price).

Client_master(Clientno, name, city, pincode, state, bal_due)

Salesman_master(Salesmanno, salesmanname,address1,address2, city, pincode, state, sal_amt, tgt_to_get, Ytd_sales, remark)

3. Find out the names of all the clients.
4. Retrieve the entire contents of the client_master table.



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5. Retrieve the list of names and the cities of all the clients.
 6. List the various products available from the product_master table.
 7. List all the clients who are located in Bombay.
 8. Find the names of the salesman who have a salary equal to Rs. 3000.
- 4 Consider table
- Client_master (Client_no, name, city, pincode, state, bal_due).
- Product_master (Product_no, description, profit_percent, unit_measure, qty_on_hand, reorder, sell_price, cost_price).
- Salesman_master (Salesmanno, salesmanname, address1, address2, city, pincode, state, sal_amt, tgt_to_get, Ytd_sales, remark)
3. Change the city of client_no 'C00005' to 'Bombay'.
 4. Change the bal_due of client_no 'C00001' to Rs. 1000.
 5. Change the cost price of '1.22 Floppies' to Rs. 950.00.
 6. Change the city of the salesman to Mumbai.
- 5 Consider table
- Product_master(Product_no,description,profit_percent,unit_measure,qty_on nd, reorder, sell_price, cost_price).
- Client_master(Clientno, name, city, pincode, state, bal_due)
- Salesman_master(Salesmanno, salesmanname,address1,address2, city, pincode, state, sal_amt, tgt_to_get, Ytd_sales, remark)
18. Delete all salesman from salesman_master whose salaries are equal to Rs. 3500.
 19. Delete all products from product_master where the quantity on hand is equal to 100.
 20. Delete from client_master where the column state hold the value 'Tamil Nadu'.
1. Consider employee table
Employee (empno, name, depid, basic, hra, deduction, tax)
 - Get the number of rows in a table
 - Find the department wise average pay of the employees.
 - Find the name of the employees whose basic pay is greater than the average basic pay.
 - Find the name of the employee who gets the basic pay.
 2. The employee table stores the details of employees such as employee code, employee name, department code, date of joining, years of experience and the employee grade. Display only those grades in which the number of employees is more than 100.
The table structure of the employee table is shown
below: Employee(emp_code, emp_name, Dept_code, Doj, Yrs_exp, Emp_grade)
 3. Explain set operation command with example.



B.Sc. Under Graduate Semester wise Syllabus

(w.e.f. session 2016 onwards)

Class: - B.Sc.

Semester: - IV Semester

Subject: - Physics (BSP 403T)

Paper: - Electrostatics, Magnetostatics and Electrodynamics

Marks 85+15 CCE

Unit-1

Electrostatics

Coulombs law in vacuum expressed in vector forms, calculations of electric field E for simple distributions of charge at rest, dipole and quadruple fields. Work done on a charge in an electrostatic field expressed as a line integral, conservative nature of the electrostatic field. Relation between electric field & electric potential ($E = -\nabla V$), torque on a dipole in a uniform electric field and its energy, flux of the electric field, Gauss's law and its application for finding E for symmetric charge distributions, Gaussian pillbox, fields at a surface of a conductor, screening of E field by a conductor.

Capacitors, electrostatic field energy, force per unit area of the surface of a conductor in an electric field, conducting sphere in a uniform electric field, point charge in front of a grounded infinite conductor. Dielectrics, parallel plate capacitor with a dielectric, dielectric constant, polarization and polarization vector P , relation between displacement vector D , E and P . Molecular interpretation of Clausius-Mossotti equation, boundary conditions satisfied by E and D at the interface between two homogenous dielectrics, illustration through a simple example.

Unit-2

Magnetostatics

Force on a moving charge, Lorentz force equation and definition of B , force on a straight conductor carrying current in a uniform magnetic field, torque on a current loop, magnetic dipole moment, angular momentum and gyromagnetic ratio, Biot and Savart's law, calculation of H for simple geometrical situations such as Solenoid, Anchor ring. Ampere's Law, $\nabla \times B = \mu_0 J$, $\nabla \cdot B = 0$. Field due to a magnetic dipole, free and bound currents, magnetization vector (M), relationship between B , H and M . Derivation of the relation $\nabla \times M = J$ for non-uniform magnetization.

Unit-3

Current Electricity and Bio electricity

Current Electricity: Steady current, current density J , non-steady currents and continuity equation, Kirchoff's laws and analysis of multiloop circuits, growth and decay of current in LR and CR circuits, decay constants, LCR circuits. AC circuits, complex numbers and their Applications in solving AC circuits problems, complex impedance and reactance, series and parallel resonance. Q-factor, power consumed by an A.C. circuit, power factor, Y and networks and transmission of electric power.



Bioelectricity: Electricity observed in living systems, Origin of bioelectricity, Sodium and potassium transport, Resting potential and action potential, Nernst's equation, Conduction velocity, Origin of compound action potential, Neuron structure and function, An axon as cable, Membrane resistance and capacitance.

Unit-4

Motion of Charged Particles in Electric and Magnetic Fields

(Note: The emphasis here should be on the mechanical aspects and not on the details of the apparatus mentioned which are indicated as applications of principles involved.)

E as an accelerating field, electron gun, discharge tube, linear accelerator. **E** as deflecting field - CRO, Sensitivity of CRO. Transverse **B** field; 180° deflection, Mass spectrograph and velocity selector, Curvatures of tracks for energy determination for nuclear particles; Principle and working of Cyclotron.

Mutually perpendicular and parallel **E** & **B** fields; Positive ray parabolas, Discovery of isotopes, Elements of Mass Spectrographs, Principle of magnetic focusing (lenses).

Unit-5

Electrodynamics

Electromagnetic induction, Faraday's Laws, Electromotive force, Integral and differential forms of Faraday's laws, Self and mutual inductance, Transformers, Energy in a static magnetic field, Maxwell's displacement current, Derivations of Maxwell's equations, Electromagnetic field energy density.

Poynting vector, Electromagnetic wave equation, Plane electromagnetic waves in vacuum and dielectric media, Reflection at a plane boundary of dielectrics, Fresnel's Laws, Polarization by reflection and total internal reflection, Waves in a conducting medium, Reflection and refraction by the ionosphere.

References:

1. **Introduction to Electrodynamics:** David J. Griffiths, 4th Edition, Printice Hall.
2. **Classical Electrodynamics:** Jhon David Jackson, Jhon Wiley & Sons.
3. **Electrodynamics:** Emi Cossor & Bassin Lorraine, Asahi Shimbunsha Publishing Ltd.
4. **From Neuron to Brain:** Kuffler and Nicholas, Sinauer Associates, Inc Pub. Sunderland, Masschuetts (*Reference for topics of Bioelectricity*)



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Class: - B.Sc.

Semester: - IV Semester

Subject: - Mathematics (BSM 401T)

Paper: - Abstract Algebra, Advanced Calculus Partial Differential Equations, Complex Analysis

UNIT-I

Group automorphisms, inner automorphism, Group of automorphisms, Conjugacy relation and centraliser, Normaliser, Counting principle and the class equation of a finite group, Cauchy's theorem for finite abelian groups and non-abelian groups.

UNIT-II

Introduction to rings, subrings, integral domains and fields, simple properties and examples, ring homomorphism, ideals and quotient rings.

UNIT-III

Maxima, Minima and saddle points of functions of two variables, Improper integrals and their convergence, Comparison test, Abel's and Dirichlet's tests, Beta and Gamma, Relation between β and γ function

UNIT-IV

Partial Differential equations of the first order, Lagrange's solution, Some special types of equations which can be solved easily by methods other than general methods, Charpit's general method of solution, Partial differential equations of second and higher orders, Homogeneous and non-Homogeneous equations with constant coefficients, Partial differential equations reducible to equations with constant coefficients.

UNIT-V

Continuity and differentiability of Complex functions, Analytical function, Cauchy Riemann equation, Harmonic function, Mobius transformations, fixed points, cross Ratio, Harmonic Conjugate function, Cauchy Integral formula.

Text Books:

1. I.N. Sneddon, Elements of partial Differential equations Mc graw Hill, Co. 1988
2. Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi.
3. I.N. Herstein Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1977.



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4. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Co., New York
5. म.प्र हिन्दी ग्रंथ अकादमी की पुस्तकें ।

Reference Books:

1. T.M. Apostol, Mathematical Analysis Narosa Publishing House, New Delhi 1985
2. N. Piskunov , Differential and Integral Calculus, Peace Publishers, Moscow.
3. S.C. Malik, Mathematical Analysis, Wiley Eastern Ltd., New Delhi.
4. N. Jacobson, Basis Algebra, Vols, I & II. W.H. Freeman, 1980 (also published by Hindustan Publishing Company.)
5. Shanti Narayan, A Text Book of Modern Abstract Algebra, S. Chand & Co. New Delhi
6. P.B. Bhattacharya, S.K. Jain and S.R. Nagpaul, Basic Abstract Algebra, Wiley Eastern, New Delhi, 1997.
7. I. S. L.uther and I.B. S. Passi, Algebra Vol- I , II, Narosa Publishing House.
8. R. V. Churchill & J.W. Brown, Complex Variables and Applications, 5th Edition, McGraw-Hill New. York. 1990
9. Mark; J. Ablowitz & A. S. Fokas. Complex Variables : Introduction and Applications, Cambridge University Press, South Asian Edition, 1998
10. Ponnuswamy : Complex Analysis, Narosa Publishing Co.