HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B.C.A. Semester – III

BCA-301 : Object Oriented Programming using C++

Teaching Scheme (Per week)		Teaching Scheme (Per semester)		Examination Scheme					
				INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Total Hours	Credit	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
4	--	40	4	30	--	70	--	100	--

Unit - I   **[18 Marks]**
   Fundamentals of Programming
   Concept of Procedural, structured and objects oriented programming .Concept of Encapsulation, Data hiding, Inheritance and Polymorphism. Classes and objects. Data types, variable and constants, Expression and operator. Simple I/O statements- reading and writing. Reference variable. Control statements, Looping statements, Array.

Unit - II   **[17 Marks]**
   Functions, Class, Object, Constructor and Destructor
   Functions: Call by reference, call by value, return by reference, inline function, constant argument, function overloading, static member function, static data member**. Classes:** Implementing class, Classes and members, Accessing class members, implements class methods, array of object, friend function**. Constructor & Distracters:** Parameterized constructor, multiple constructor, constructor with default argument, copy constructor, destructor.

Unit - III   **[18 Marks]**
   Operator Overloading & Type Casting
   Operator overloading, unary operator overloading, binary operator overloading, manipulates string using operator overloading. type conversions : basic to class, class to basic, class to class.

Unit - IV   **[17 Marks]**
   Inheritance, Virtual Function
   Inheritance: single Inheritance, multilevel Inheritance, multiple Inheritance, hybrid Inheritance, hierarchical Inheritance, virtual base class, abstract class. **Pointers:** pointer to object, this pointer, virtual function and pure virtual function.

Text Book:

   1. E. Blagurusamy: **Object Oriented Programming with C++,** Tata McGraw Hill.
   2. V. Rajaraman: **Object Oriented Programming with C++,** New age International Publishers.

Question Paper Scheme:

University Examination Duration: 3 Hours.

Q.1 - Unit-I   (18 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Q.2 - Unit-II   (17 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Q.3 - Unit-III   (18 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Q.4 - Unit-IV   (17 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.

Note: All Objective/ Short Questions are compulsory, no option will be given.

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B.C.A. Semester – III

BCA-302 : Advance Database Management System

Teaching Scheme (Per week)		Teaching Scheme (Per semester)		Examination Scheme					
				INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Total Hours	Credit	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
4	--	40	4	30	--	70	--	100	--

Unit - I   **[18 Marks]**
    Structured Query Language (SQL): Introduction to SQL, Constraints, DDL, DML, DCL, Create, Alter, Drop, Rename, Grant, Revoke, Select Clause, Functions, Different Types of Joins, set operators, sub query

Unit - II   **[17 Marks]**
    PL/SQL: Index, View, Sequence, Cursor, Procedure, Trigger, Exception Handling.

Unit - III   **[18 Marks]**
    Decision Support: Introduction, Aspects of decision support, Database design for decision support, Data Warehouses and Data marts, Online analytical processing, Data mining

Unit - IV   **[17 Marks]**
    Transition Management: Recovery, concurrency, security: Introduction, Discretionary access control, Mandatory access control, Statistical databases, Data encryption, **Distributed Databases:** Introduction, Some Preliminaries, The twelve objectives, Problems of distributed systems.

Text Book:
    1. **Introduction to Database System,** C. J. Date (7th edition) Low Price Edition
    2. **SQL, PL/SQL**, Evan Bayross (2nd edition) BPB
    3. **Database system concepts**, Henry F. Korth (3rd edition) TMH

Question Paper Scheme:

University Examination Duration: 3 Hours.

Q.1 - Unit-I   (18 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Q.2 - Unit-II   (17 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Q.3 - Unit-III   (18 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Q.4 - Unit-IV   (17 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Note: All Objective/ Short Questions are compulsory, no option will be given.

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HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B.C.A. Semester – III
BCA-303 : Statistics and Optimization Techniques

Teaching Scheme (Per week)		Teaching Scheme (Per semester)		Examination Scheme					
				INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Total Hours	Credit	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
4	--	40	4	30	--	70	--	100	--

Unit - I [18 Marks]
FREQUENCY DISTRIBUTION
Collection of data, Classification of data, Class interval, Types of Classes, Class frequency, Class mark, Class Boundaries, Width of a class, Frequency density, Relative frequency, Percentage frequency, Cumulative frequency.

MEASURES OF CENTRAL TENDENCY
Introduction, Arithmetic Mean, Simple and weighted for raw data, Discrete frequency, distribution, Continuous frequency distribution, Properties of A.M., Merits & Demerits of A.M.- Median for raw data, Discrete frequency distribution, Continuous frequency distribution (C.F.S.), Merits and demerits of Median, Mode for raw data and for C.F.S., Merits & demerits of mode

MEASURES OF DISPERSION
Introduction, Range, coefficient of range, Quartiles, Quartiles deviations, coefficient of quartile deviations, Mean deviation and coefficient of mean deviation, S.D and variance for all types of frequency distribution, Coefficient of Dispersion, Coefficient of variation

Unit - II [17 Marks]
CORRELATION AND REGRESSION

CORRELATION
Definition of Correlation, Types of Correlation, Scatter Diagram Method, Karl Person's , Correlation Coefficients, Rank Correlation Coefficients, Correlation Coefficients for Bi-variate frequency distribution, Probable error for Correlation Coefficients

REGRESSION
Definition of Regression, Regression lines, Regression Coefficients, Properties of regression Coefficients, Fitting of regression lines and estimation for Bi-variate frequency distribution

Unit - III [18 Marks]
LINEAR PROGRAMMING
Mathematical model, standard form of an LPP, Graphical solution, Simplex method, Duality in LPP, PERT & CPM

Unit - IV   **[17 Marks]**
    TRANSPORTATION & ASSIGNMENT MODEL.
    Introduction, Mathematical Formulation, Tabular Presentation, Special Structure of
    Transportation Problem, Optimum solution of transportation problem, Optimality test,
    Degeneracy transportation problem, Mathematical formulation of the assignment problem,
    Hungarian method for solving an assignment problem, Unbalanced assignment problem,
    Traveling Salesman Problem, Applications.

Text Book:

    For Unit –I & II
    1. **Statistical Methods,** S.P. Gupta
    2. **Business Statistics,** R.S. Bhardwarj
    3. **Fundamental of Statistics,** S.C. Gupta
    For Unit-III and IV
    1. **Sharma S.D.,** Operation Research Kedar Nath & Co. Meerut, 1988-89.

Question Paper Scheme:

University Examination Duration: 3 Hours.

    Q.1 - Unit-I   (18 Marks)
        A. Objective/ Short Questions.
        B. Descriptive/ Long questions.
    Q.2 - Unit-II   (17 Marks)
        A. Objective/ Short Questions.
        B. Descriptive/ Long questions.
    Q.3 - Unit-III   (18 Marks)
        A. Objective/ Short Questions.
        B. Descriptive/ Long questions.
    Q.4 - Unit-IV   (17 Marks)
        A. Objective/ Short Questions.
        B. Descriptive/ Long questions.

Note: All Objective/ Short Questions are compulsory, no option will be given.

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HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B.C.A. Semester – III
Elective-I : BCA-304 : Computer Network

Teaching Scheme (Per week)		Teaching Scheme (Per semester)		Examination Scheme					
				INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Total Hours	Credit	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
4	--	40	4	30	--	70	--	100	--

Unit - I   **[18 Marks]**

Basic of Computer Networks: Advantages and disadvantages of computer networking. Types of Networks - LAN, MAN, WAN, Wireless, **Network Topology**: Star, Ring, Bus, Tree, Complete, Irregular. **Reference Models:** The OSI reference model, the TCP/IP reference model. **Telephone System:** Structure of telephone system, the local loops, trunks and multiplexing (FDM and TDM). **Switching:** Circuit switching, message switching, Packet Switching.

Unit - II   **[17 Marks]**

Transmission Media: Transmission media - Magnetic media, twisted pair, co-axial cable (Baseband and broadband), fiber optics principle, transmission of light through fiber, fiber cables, fiber optics network, comparison of fiber optic and copper wire. Wireless Transmission (The electromagnetic spectrum, Radio Transmission, Microwave Transmission, Infrared and Millimeter Waves)

Unit - III   **[18 Marks]**

Data Communication Components: Modem, Routers, Bridges, Hubs, Switches. **Data Link Protocols**: Asynchronous, Synchronous, Character Oriented and Bit Oriented Protocols. **IP Addressing:** IP Address class, Network and Host Addressing, Subnet, Subnet Mask, Sub netting, Super netting.

Unit - IV   **[17 Marks]**

Mobile computing: Definition, Devices (Personal digital assistant/enterprise digital assistant, Smart Phone, Tablet computer). **Mobile data communication:** Wireless, GSM, CDMA or GPRS, 2G, 3G Wi-Fi.

Text Book:

1. **Computer Networks**, A. S. Tanenbaum. PHI
2. **Data Communications and Networking**, Behrous A. Forouzan. TMH
3. **Introduction to Mobile Computing**, T. Imielinski, H.F. Korth.

Question Paper Scheme:

University Examination Duration: 3 Hours.

Q.1 - Unit-I   (18 Marks)
      A. Objective/ Short Questions.
      B. Descriptive/ Long questions.

Q.2 - Unit-II   (17 Marks)
      A. Objective/ Short Questions.
      B. Descriptive/ Long questions.

Q.3 - Unit-III   (18 Marks)
      A. Objective/ Short Questions.
      B. Descriptive/ Long questions.

Q.4 - Unit-IV   (17 Marks)
      A. Objective/ Short Questions.
      B. Descriptive/ Long questions.

Note: All Objective/ Short Questions are compulsory, no option will be given.

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HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN
B.C.A. Semester – III
Elective-I : BCA-304 : Enterprise Resource Planning

Teaching Scheme (Per week)		Teaching Scheme (Per semester)		Examination Scheme					
				INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Total Hours	Credit	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
4	--	40	4	30	--	70	--	100	--

Unit - I   **[18 Marks]**

Introduction to ERP : Introduction ERP, ERP General Model, Evolution of ERP, Reasons for growth of ERP, Reasons for failure, why ERP Packages are used now ? Enterprise Overview - Integrated Management Information, Business Modeling, Integrated Data Model **ERP Technologies:** - BPR, MIS, DSS, EIS, SCM (Supply Chain Management), ERP Generations.

Unit - II   **[17 Marks]**

ERP Implementation Lifecycle : Pre-evaluation screening, package evaluation, project planning phase, Gap Analysis, Reengineering, Configuration, Team training, Testing, Going live, End-user Training, Post Implementations, Role of Vendors, consultants and user's, Cost of ERP Implementation.

Unit - III   **[18 Marks]**

ERP Modules: Business Modules, Finance, Plant maintenance, Quality Management, Materials Management, Manufacturing, Human resources, Sales and Distribution, ERP Software Vendors: Introduction, SAP AG, Baan, PeopleSoft Oracle and JD Edwards.

Unit - IV   **[17 Marks]**

ERP-Present and Future Directions: Limitation of ERP, Implementation requirements, ERP & E-Commerce, ERP & Internet, Future Directions, **ERP and Related Technologies** :- Business Process Re-engineering ,Data Warehousing, Data Mining ,OLAP ,Product Lifecycle Management ,Customer Relationship Management ,Geographical Information Systems, Intranets and Extranets

Text Book:

1. **ERP Demystified by Alexis Leon** : TMH Publication (10th edition)
2. **ERP**, VinodKumar Garg and NK Venkitakrishan : PHI Publication
3. **Enterprise Resource Planning** , second edition by Alexis Leon, Tata McGraw Hill

Question Paper Scheme:

University Examination Duration: 3 Hours.

Q.1 - Unit-I   (18 Marks)
    A. Objective/ Short Questions.
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Q.2 - Unit-II   (17 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Q.3 - Unit-III   (18 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.
Q.4 - Unit-IV   (17 Marks)
    A. Objective/ Short Questions.
    B. Descriptive/ Long questions.

Note: All Objective/ Short Questions are compulsory, no option will be given.