

## **Second Year B.C.A.**

(Effective from session 2016-17)

### **BCA 201: Computer Communications and Networking**

#### **UNIT-I**

**Protocol Architecture :** Overview: Communication model, Communication Tasks, Data Communication Networking: WAN, LAN, Wireless Networks. Basics of Network Software: Protocol and protocol architecture, Protocol functions, Design Issues for the layers, interfaces & Services, Connection oriented and connectionless services, service primitives, relationship of services to protocols, ISO REF Models, TCP/IP Model.

**Data Communications:** Data Transmission: Concepts of Frequency, Spectrum, bandwidth, Electromagnetic spectrum and frequencies for data communication, Fourier analysis, Data and signal, Transmission impairments, channel capacity, Nyquist bandwidth, Shannon capacity formula, decibels and signal strength, Transmission media: Coaxial, twisted pair, Comparative study of Categories of cables, Coaxial, Optical Fibers, Wireless transmission: Terrestrial Microwave, satellite, Broadcast Radio, Infrared,.

#### **UNIT-II**

Data Encoding: (Brief idea of NRZ, Bipolar AMI, B8ZS, HDB3, ASK, FSK, PSK, PCM, AM, FM, PM), Spread Spectrum. Asynchronous and Synchronous transmission, Full and Half duplex, Interfacing, Functional and Procedural aspects of V.24,

Data Link Control: Flow control: Stop and Wait, Sliding window, Error detection: Parity Check, CRC. Error control: Stop and Wait ARQ, Go back-N ARQ, Selective-Reject ARQ, Brief idea of HDLC and other Data Link control protocols

#### **UNIT-III**

Circuit Switching: Simple switching Network, Circuit Switching Networks, Brief idea of following (detail working) not required:

Circuit Switching Concepts: Space Division switching, Time Division Multiplexing, Routing in circuit switching Networks, Control Signalling, Inchannel & common channel signaling, Brief idea of SS7. Packet Switching: Packet switching principles, Routing, X.25

#### UNIT-IV

LAN Technology: LAN architecture, IEEE 802 standards, Ethernet ( CSMA/CD): Medium Access Control, 10Mbps, 100Mbps, Gigabit Ethernet. Brief survey of other LAN systems (Token ring,FDDI,ATM, Fiber channel). Wireless LANS, Bridges, Latest trends in LANtechnologies

LAN Devices: Study of specifications of L2 and L3 switches, Structured cabling, Passive components.

#### UNIT-V

Principles of Internetworking, connection less Internetworking, IP, IPv6, IP multicasting. Routing protocols, TCP, UDP, SNMP,SMTP and MIME, HTTP.

#### **Recommended Books :**

3. William Stallings: Data & Communications,SixthEdition
4. A. S. Tanenbaum : ComputerNetworks

# BCA- 202: Database Management Systems

## UNIT-I

**Introduction** : Purpose of the data base system, data abstraction, data model, data independence, data definition language, data manipulation language, data base administrator, data base users, overall structure.

**ER Model** : entities, mapping constrains, keys, E-R diagram, reduction E-R diagrams to tables, generatio, aggregation, design of an E-R database scheme.

## UNIT-II

**Relational Model** : The catalog, base tables and views. Relational Data Objects - Domains and Relations: Domains, relations, kinds of relations, relations and predicates, relational databases.

**Relational Data Integrity** - Candidate keys and related matters: Candidate keys. Primary and alternate keys. Foreign keys, foreign key rules, nulls. Candidate keys and nulls, foreign key and nulls.

## UNIT-III

**The SQL Language**: Data definition, retrieval and update operations. Table expressions conditional expressions, embedded SQL.

**Views**: Introduction, what are views for, data definition, data manipulation, SQL support.

## UNIT-IV

**Network model** : basic concepts, data structure diagrams, DBTG CODASYL model, DBTG data retrival facility, DBTG update facility, DBTG set processing facility, mapping networks to file, networks system.

**Hierarchical model** : basic concepts, tree structure diagrams, data retrieval facility, update facility, virtual records, maping hierarchical to files, hierarchical system.

## UNIT-V

**File and system structure** : overall system structure, file organisation, logical and physical file organization, sequential and random, hierarchical, inverted, nullist, indexing and hashing, B-tree index files.

### Recommended Books

3. Date C.J., Database Systems, AddisonWesley.
4. Korth, Database Systems Concepts, McGrawHill.

# BCA 203: Fundamentals of Operating Systems

## UNIT-I

**Introduction:** What is an operating system? Mainframe, desktop, multiprocessor, distributed, clustered, real-time and handheld systems.

**Operating System Structures:** System components, operating system services, system calls, systems programs, system structure, virtual machines.

## UNIT-II

**Process:** Process concept, process scheduling, operations on processes, cooperating processes. Inter process communication.

**CPU Scheduling:** Basic concepts, scheduling criteria, scheduling algorithms, algorithm evaluation.

## UNIT-III

**Process Synchronization:** The critical section problem, semaphores, classical problems of synchronization.

**Deadlocks:** Deadlock characterization, methods for handling deadlocks. Deadlock prevention, avoidance and detection. Recovery from deadlocks.

## UNIT-IV

**Memory Management:** Swapping, contiguous memory allocation, paging, segmentation, segmentation with paging.

**Virtual Memory:** Demand paging, page replacement, allocation of frames, thrashing.

## UNIT-V

**Linux:** History, design principles, kernel modules, process management, scheduling, memory management, file systems, input and output, inter process communication, network structure, security.

**Recommended Books:**

3.Silberschatz G.G., Operating System Concepts, John Wiley & SonsInc.

## **BCA 204: Data Structures using C**

### **UNIT-I**

**Linear Structure:** Arrays, records, stack, operation on stack, implementation of stack as an array, queue, operations on queue, implementation of queue.

### **UNIT-II**

**Linked Structure :** List representation, operations on linked list - get node and free node operation, implementing the list operation, inserting into an ordered linked list, deleting, circular linked list, doubly linked list.

### **UNIT-III**

**Tree Structure :** Binary search tree, inserting, deleting and searching into binary search tree, implementing the insert, search and delete algorithms, tree traversals

### **UNIT-IV**

**Graph Structure :** Graph representation - Adjacency matrix, adjacency list, adjacency multilist representation. Orthogonal representation of graph . Graph traversals - bfs and dfs. Shortest path, all pairs of shortest paths, transitive closure, reflexive transitive closure.

### **UNIT-V**

**Searching and sorting :** Searching - sequential searching, binary searching, hashing. Sorting - selection sort, bubble sort, quick sort, heap sort, merge sort, and insertion sort, efficiency considerations.

#### **Recommended Books**

- Horowitz E Sartaj Sahni, Fundamentals of Data Structure, Galgotia Publication Private Limited., NewDelhi.

## **BCA 205: Business Organization and Management**

### **UNIT – I**

Business and Management: Business Meaning and Contents, Business as a system, Business Environment.

Management Concept and Nature, Management Process, Basic function of Management, Management Level, Role of Manager, Management Principles (Henry fayol's principle of management, Taylor's Scientific Management) .

### **UNIT – II**

Organizational Behaviour: Need of Understanding human behaviour in organization, Challenges and Opportunities for OB.

Management by Objective (MBO), Decision making process and models, Conflict Management, Strategies & Policies.

### **UNIT- III**

Managing Personnel: HRM- Meaning and Functions, Man Power Planning, Job Analysis and Design, Training, Career Planning & Development.

Motivation Theories & Practices, Leadership Concept theories & Style, Compensation Management.

### **UNIT- IV**

Marketing Management and Finance: Basic Concepts of Marketing, Nature & Scope of Marketing, Sales Promotion, Product Life Cycle, Marketing Information System (MIS) and Marketing Research.

Main Sources of Finance, Concept of Fixed & Working Capital, Introduction of Tax – Income Tax, Service Tax & VAT, Basic Concept of Invoice & Quotations.

### **UNIT- V**

Case Study: IT & BPO Industry, HR & Finance, Case Study of Local Industry with around Hundred Employees, Industry Visit, Project.

### **Recommended Books:**

1. B.P. Singh & T.N. Chabbra, "Business Organization and Management Functions", Dhanpat Rai & Co. 2000.
2. P.C Tripathi & P. N. Reddy, "Principles of Management", Tata McGraw Hill Publishing Company NewDelhi.
3. L.M. Prasad, "Principles and Practices of Management".
- 4 Stephen P. Robbins, "Organisational Behaviour", (8<sup>th</sup> Ed.) Prentice Hall of India.
- 5 K. Aswathappa, "Human Resource Management", Tata McGraw Hill Publishing Company NewDelhi.
- 6 Philip Kotler, "Marketing Management", (9<sup>th</sup> Ed.) Prentice Hall of India.
- 7 Ramaswamy. V.S. and Namakumari.S. "Marketing Management : Planning, Control." New Delhi, MacMillan.1990.
- 8 Dr. S.N. Maheshwari, "Financial Management – Principles and Practices" (6<sup>th</sup> revised Ed.) S. Chand & Sons.

## BCA 206: Business Communications

(Note: All institutions offering BCA course shall be required to establish a language laboratory for English speaking and other softskills. Institution may use Software from reputed firms like Linguaphone or any other firms for active learning with well defined curriculum)

### UNIT-I

**Concepts and Fundamentals :** Meaning of communication, Importance of communication, Communication scope, Process of communication, Communication models and theories, Essentials of good communication - The seven Cs of communication, Factors responsible for growing importance of communication, Channels of communication, Verbal and Non-Verbal communication Formal and Informal communication Barriers of communication.

### UNIT-II

**Written Communication :** Objectives of written Communication, Media of written communication, Merits and demerits of written communication, Planning business messages.

**Writing Letters :** Business letters, Office memorandum , Good news and bad news letters , Persuasive letters , Sales letters , Letter styles/ layout.

### UNIT-III

**Report Writing :** Meaning & Definition, Types of report (Business report & Academic report) ,Format of report, Drafting the report ,Layout of the report, Essential requirement of good report writing.

**Language Skills :** Improving command in English ,Choice of words, Common problems with verbs, adjectives, adverbs, pronouns, conjunctions, punctuation, prefix, suffix etc.

### UNIT-IV

**Oral Communication :** Principles of effective oral communication, Media of oral communication, Advantages of oral communication, Disadvantages of oral communication, Styles of oral communication.

**Interviews :** Meaning & Purpose, Art of interviewing, Types of interview, Interview styles, Essential Features, Structure , Guidelines for Interviewer, Guide lines for interviewee.

**Arts of Listening :** Good listening for improved communications, Art of listening, Meaning, nature and importance of listening, Principles of good listening, Barriers in listening.

**Meetings :** Definition, Kind of meetings, Advantages and disadvantages of meetings/ committees, Planning and organisation of meetings.

### UNIT-V

**Job Application :** Types of application, Form & Content of an application, Drafting the application, Preparation of resume.

**Project Presentations :** Advantages & Disadvantages, Executive Summary, Charts, Distribution of time (presentation, questions & answers, summing up), Visual presentation, Guidelines for using visual aids, Electronic media (power-point presentation).

**Business Negotiation :** Definition of negotiation, Factors that can influence negotiation, What skills do we need to negotiate, Negotiation process (preparation, proposals, discussions, bargaining, agreement, implementation).

### **Recommended Books**

3. Communication by C.S. Rayudu, Himalaya PublishingHouse.
4. Communication Today - Understanding Creative Skill by Reuben Ray, Himalaya PublishingHouse.
5. Successful Communication by MalraTreece.
6. Business Communication Today by Bovee & Thill, McGrawHill.
7. Principles of Business Communication by Murphy andHilderbrandth.
8. Effective Communication Skills by O. N. Kaul & K. K. Sharma, CreativePublishers
9. Chicago Manual of stylePHI.
10. Essentials of Business Communication by Rajendra Pal & J. S. Korlahalli, Sultan Chand & Sons.
11. Business Communication by K. K. Sinha.



**BCA 207: Practical I: Database Management & Data Structure Lab.**

Experiments based on the paper BCA 202. & 204

**BCA 208: Practical II: Business Communications Lab**

Experiments based on the paper BCA 206.

Atleast a 10 seat Language Lab must be established using Linguaphone or equivalent software and used for English Communication(Language Skill, Oral Communications and Art of listening). Students are expected to go through well defined curriculum offered with English Language Lab Software and their competency shall be checked during external evaluation.(50Marks)

Candidates competency in other aspects of business communications shall be evaluated for remaining 50 marks. (list of assignments will be available on university web site)