

UNIVERSITY OF KOTA, KOTA

B.Sc. (COMPUTER SCIENCE) IInd Year- 2013

1. Courses of Study and Examination

Paper	Paper Name	Duration of exam. (hours)	Max. Marks		Total
			University Exam.	Internal Assessment	
Paper-I (BCS-201)	Computer Oriented Statistical Method	3	75	25	100
Paper-II (BCS-202)	Database Management System	3	75	25	100
Paper-III (BCS-203)	Fundamentals of Operating Systems	3	75	25	100
Paper-IV (BCS-204)	Web Technology I	3	75	25	100
Paper-V (BCS-205)	Microprocessor Interfacing & Computer Hardware - I	3	75	25	100
Practical-I (BCS-206)	Database Management Lab	3	100	-	100
Practical-II (BCS-207)	Web Technology Lab	3	100	-	100
	TOTAL		575	125	700

BCS -201- Computer Oriented Statistical Methods:

Time: 3 Hrs

Max.Marks: 75

Unit - 1

Frequency distribution measures of central tendency, mean, mode, partition values (quartiles); measures of dispersion, range, inter-quartile range, mean, deviation, standard deviation, moments, skewness and kurtosis.

Unit - 2

Probability, event, sample space, probability of an event, addition and multiplication theorems. Random variable, mathematical expectations, expectation of sum and product of random variables, moment generating function.

Unit - 3

Theoretical distribution, binomial, geometric, negative binomial, uniform, poisson, normal, rectangular and exponential, and Gamma distribution, their properties and uses.

Unit - 4

Methods of least squares, curve fitting correlation and regression. Introduction of multiple and partial correlation. (up to three variables only).

Unit - 5

Elementary theory of testing of hypothesis. Errors of first and second kinds Critical region, level of significance based on Chi-square t and f statistics.

Note: Students should be given sample problems to write computer programs based on units I, III, IV and V.

References:

1. Gupta and Dasgupta : Fundamental Mathematical Statistics Vol. I.
2. Kishor S. Trivedi : Probability and Statistics with Reliability.
3. Kapoor & Saxena : Mathematical Statistics.
4. Gupta & Kapoor : Fundamentals of Mathematical Statistics.
5. P. Mayer : Introductory Probability
6. Weather Burn : Mathematical Statistics.

BCS 202: Database Management Systems

Time: 3 Hrs

Max.Marks: 75

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.

Unit II

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

Unit III

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 IV

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

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

Unit V

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

Suggested Book

1. Date C.J., Database Systems, Addison Wesley.
2. Korth, Database Systems Concepts, McGraw Hill.

BCS 203: Fundamentals of Operating Systems

Time: 3 Hrs

Max.Marks: 75

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.

Unit IV

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

Unit V

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

Suggested Book

1. Silberschatz G.G., Operating System Concepts, John Wiley & Sons Inc.

BCS 204: Web Technology I

Time: 3 Hrs

Max.Marks: 75

Unit I

Introduction to Internet Basic

The Basic of the Internet, Concepts of Domain, IP Addressing, Resolving Domain Names, Overview of TCP/IP and its Services, WWW.

Unit II

Designing Pages with HTML

Introduction to HTML, Essential Tags, Deprecated Tags, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags (DIV, MARQUEE, NOBR, DFN, HR, LISTING, Comment, IMG), Color and Background of Web Pages, Lists and their Types, Attributes of Image Tag,

Unit III

Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Footnote and e-Mailing, Creating Table, Frame, Form and Style Sheet.

Unit IV

DHTML

Dynamic HTML, Document Object Model, Features of DHTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute, DHTML Events.

Unit V

Front Page

Front Page Basics , Web Terminologies, Phases of Planning and Building Web Sites, The FTP, HTTP and WPP, Features, Front Page Views, Adding Pictures, Backgrounds, Links, Relating Front Page to DHTML.

Books Suggested

1. HTML Black Book – Steven Holzner – Dreamtech Press
2. HTML, Java Script, DHTML, PERL, CGI – Evan Bayross – BPB

BCS 205: Microprocessor Interfacing and Computer Hardware-I

Time: 3 Hrs

Max.Marks: 75

Unit - 1

Overview of earlier 8088/86 system, middle: age 80486 system and new Pentium, Pentium MMX and Pentium II based computers and their basic capabilities. Earthing Concept, site preparation, wiring Diagram and control of earth to neutral voltage.

Unit - 2

Hardware -BIOS -DOS interaction, The PC family, PC-Hardware, CPU, Peripherals, Product Engg. interconnection between the boxes, inside the system BOX, SMPS, Mother Board, Mother Board Components, Power connections to Mother Board, PCB edge connectors, mode switches form Panel indicators and controls. EPROM/ROM types, FD and HD drives, CDROM drives, Mother Board logic, Memory space and I/O port addresses. (Suggested level section 3.1 to 3.10 chapter 3 reference 2).

Unit -3

Data communication fundamentals Asynchronous and synchronous communication serial and current loop Interface. RS 232C, RS232C signal levels and Pins, serial port in PC, UART, 8250, RS232. interface chips, serial port basic circuit, Real time clock and counter, Magnetic tape subsystems, LAN, memory expansion options, Professional Image Board, (Suggested level section 2.1, Chapter 12 of reference 2).

Unit - 4

Digital interfacing of Printer controller and parallel ports Centronics interface, Printer cable list, programming sequence, Data buffer, Hardware overview of print controller : I/O port decoder, Printer, Printer Mechanisms, New Generation Printer Controllers, (Suggested levels section 8.1 to 8.7 chapter 8 of reference 2)

Unit - 5

Floppy Disk Controller :

Error detection Techniques of parity check, Multiple bit error detection scheme, CRC, ECC floppy disk controller overview, Disk Format, FDC system interface, FDD interface, Floppy cables, overall operation of Floppy disk subsystem, FDCIC block diagram, Read Data command write data command, Read deleted data commands, write deleted data commands, Read ID commands, format tracks command, seek alt'd other commands, sector interleaving FDC logic functional block diagram (Section 1.11 chapter 9 reference 2)

References:

1. Winn I., Rosch : Hardware Bible. Published by PHI.
2. B. Govind Rajalu : IBM PC and clones, Hardware. Troubleshooting and Maintenance (Tata McGraw Hill Publishing Co. Ltd. 1991)

BCS 206: Practical I: Database Management Lab.

Experiments based on the paper BCA 202.

BCS 207: Practical II: Web Technology Lab.

Experiments based on the paper BCA 204.