

FIRST SEMESTER

MCA- 110 MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

Maximum Time : 3 Hrs.

University Examination : 70 Marks

Total Marks : 100

Continuous Internal Assessment : 30 Marks

Minimum Pass Marks : 40%

A) Instructions for paper-setter

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each.

Section E will have 10-20 short answer type questions which will cover the entire syllabus

uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the

question paper and the entire section E.

2. Use of non-programmable scientific calculator is allowed.

SECTION – A

Sets and Elements, universal set and Empty set, subsets, Venn Diagrams, Set Operations, Algebra of sets, Cartesian product, Relations, mappings, Countable and Uncountable sets, Domain and range, propositional logic, FOPL, Logical equivalences, Quantifiers.

Section – B

Partially ordered sets, Extremal elements of partial ordered sets, least upper bound and greatest lower bound, Finite Boolean algebra, Functions on Boolean algebra, Lattices, Bounded lattices, Distributive lattices, complemented lattices.

Section – C

Matrices, Matrix addition and scalar multiplication, Matrix multiplication, Transpose, Inverse, Determinants, Eigen values and Eigen vectors.

Permutations, Combinations, Pigeon hole principle, Elements of Probability, Conditional probability, Baye's Theorem.

Section – D

Tree, Binary tree, traversals, Huffman's algorithm, Minimum spanning trees, Euler graph, Hamiltonian cycle, Cutsets, Matching, Coloring.

Reference:-

1. C. L. Liu, "Elements of Discrete Mathematics", TMH

2. Lipschutz & Seymour, "Discrete Mathematics", (2Th Edition), Schaum's outlines,.

3. Trembley Manohar, "Discrete Mathematical Structures with Application to computer science", TMH.

MCA- 120 INTRODUCTION TO INFORMATION TECHNOLOGY

Maximum Time : 3 Hrs.
Total Marks : 100
Minimum Pass Marks : 40%

University Examination : 70 Marks
Continuous Internal Assessment : 30 Marks

A) Instructions for paper-setter

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uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Definition of Information Technology, Use of IT, Definition of information system, need of information system, definition of knowledge, Range of application : Scientific, business, educational, whether forecasting, and remote sensing, planning, e-commerce, web publishing, Management Information System, Decision Support System, inventory control, medical, industrial control, banks, railways, etc.

SECTION B

Computer Fundamentals: Block structure of computer, Characteristics of computers, Problem solving with computers, Generation of computers, Classification of computers.

Number System : Bit, Byte, Binary, Decimal, Hexadecimal, and Octal system, Conversion from one system to the other, Error detecting codes, Representation of characters, Integers and fractions.

Binary Arithmetic : Addition, Subtraction and Multiplication.

SECTION C

Input and Output units : Their functional characteristics, main memory , cache memory read only memory, overview of storage devices – floppy disk, hard disk, compact disk, tape.

SECTION D

Computer Networks and Communication : Network types, Network topologies, Network communication devices, Physical communication media, TCP/IP.

Internet and its Applications : E-mail, Telnet, FTP, WWW, Internet chatting.

Reference:-

1. D. H. Sanders, "Computers Today", McGraw Hill, 1988.
2. T. N. Trainer, "Computers" (4th Edition) McGraw Hill, 1994.
3. Kenneth C. Laudon, Jane P. Laudon "Management Information System"(7th Edition),
4. V. Rajaraman, "Fundamentals of Computers" (2nd Edition), Prentice Hall of India, New Delhi, 1996.
5. B. Ram, "Computer Fundamentals", Wiley, 1997.

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Total Marks : 100
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University Examination : 70 Marks
Continuous Internal Assessment : 30 Marks

A) Instructions for paper-setter

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus

uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Data types, constants, Variables, Arithmetic and logical expressions, Data input and output, Assignment statements, Conditional statements.

SECTION B

Iteration, Arrays, String processing, User-defined data types, functions, recursion, Parameter passing by reference & by value.

SECTION C

Structures, Multiple Structure, Array of Structure, Unions, Pointers, Character pointers, Pointers to arrays, Array of pointers, Pointers to structures.

SECTION D

File handling, Opening & closing file Binary files, Structured programming concepts, Top down & Bottom-Up desing approaches.

Reference:-

1. Rajarman V., "Fundamentals of Computers", (PHI, 1992).
2. D.Dromey, "How to solve it by Computer", Prentice-Hall, 1985.
3. E. Balguruswami "Programming in C" Tata McGraw Hill.
4. Kanetkar, "Let Us C", BPB Publications.

Maximum Time : 3 Hrs.
Total Marks : 100
Minimum Pass Marks : 40%

University Examination : 70 Marks
Continuous Internal Assessment : 30 Marks

(A) Instructions for the Paper setter:

The question paper will consist of five sections: A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% of the total marks (12 marks) each. Section E will consist of 10 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% of the total marks (32 marks) in all.

(B) Instructions for the Candidates:

1. Candidates are required to attempt one question each from the section A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Database V/s File system, Architecture of DBMS(External, Conceptual, Internal), Data Independence (Logical Physical) DBA and his responsibility, DBMS structure (DDL Compiler, Data manager, File manager, Disk Manager, Query Processor).

SECTION B

Entity, Entity Set, Attributes Keys(Primary, Secondary, Candidate, Super, Alternate), Mapping cardinalities, N-array relationships, E-R- Diagram, Hierarchical Model ,Relational Model, Network Model, Object oriented Model, Mapping of E-R diagrams to tables.

SECTION C

Anomalies in Design, Functional Dependency, Logical implications, Closure of FD, Canonical Core, Full and Partial FD, Prime and Non-prime attributes, 1-NF, 2-NF, 3-NF, BCNF, Decompositions, lossless and Dependency preservice.

SECTION D

Integrity rules (Entity integrity, Referential Integrity) Union, Difference, Intersection, Cartesian product Division, Projection, Selection, Joins.

Type calculus, Type calculus Formula, Domain calculus, SQL, Basic data retrieval, Data manipulation and table study comments, views,

Recovery techniques, check points, concurrency control, View & conflict serializability, Lock, based concurrency control, strict two phase locking, multiple granularity locking, time stamp based concurrency control.

References:

1. Bipin C. Desai, "An Introduction to Database Systems", Galgotia Publications Nt. Ltd.
2. Elmarni Navathe, "Fundamental of Database Systems", Pearson Edition.
3. C.J. Date, "An Introduction to Database System"(7th Edition) Pearson Edition.

MCA- 150

MANAGEMENT INFORMATION SYSTEM

Maximum Time : 3 Hrs.

University Examination : 70 Marks

Total Marks : 100

Continuous Internal Assessment : 30 Marks

Minimum Pass Marks : 40%

A) Instructions for paper-setter

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus

uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the

question paper and the entire section E.

2. Use of non-programmable scientific calculator is allowed.

SECTION A

Organisation, Management and Network Enterprises :- Information system in enterprises, Information system, Organisation, Management and Strategy : The changing role of Information system in organization, Decision making, Business strategy.

SECTION B

Information technology Infrastructure: Computer hardware & Information technology infrastructure, Storage input and output technology, Categories of computer and Computer system, what is software, System software telecommunication and Networks.

SECTION C

Managing knowledge : Knowledge management in organization, Information and knowledge work system. Enhancing management decision making : Decision support system (MIS & DSS, Types of DSS, DSS application and Digital term), Group Discussion Support System (GDSS) What is GDSS, Characteristics of GDSS.

SECTION D

Redesigning the organization with Information system : - Business process reengineering and Total quality management.

Managing international information system : The growth of international information system, Organising international information system managing global system.

Reference:-

1. Management information system (7th Edition) by Kenneth C. Laudon Jone & P. Laudon.

MCA-160 P

PROGRAMMING LAB- (PROGRAMMING IN C)

Maximum Time : 3 Hrs.

University Examination : 70 Marks

Total Marks : 100

Continuous Internal Assessment : 30 Marks

Minimum Pass Marks : 40%

This laboratory course will mainly comprise of exercises on what is learnt under paper : MCA-130 (Computer Programming using C).