

FOLDER-4

बिलासपुर विश्वविद्यालय

बिलासपुर (छत्तीसगढ़)



पाठ्यक्रम

रूग्म. रूग्म. वी. (अंग्रेज़ी)

कम्प्यूटर विज्ञान

परीक्षा : 2014

:: प्रकाशक ::

कुलसचिव बिलासपुर विश्वविद्यालय

बिलासपुर (छत्तीसगढ़)

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2009

:: GURU GHASIDAS UNIVERSITY, BILASPUR.C.G. ::

SYLLABUS OF
M.Sc COMPUTER SCIENCE [FINAL]

SESSION 2003.-04. 2007-08

Sr.No	Code	Paper	Max Mark	Min Mark
1	201	Computer Network	100	20
2	202	DBMS	100	20
3	203	Introduction to Software Engineering	100	20
4	204	Soft Computing.	100	20
5	205	Introduction to Theory of Computing.	100	20
6	206	Interactive Computer Graphics	100	20
7	207	JAVA-Programming Language.	100	20
8	208	LAB-I	200	40 72
9	209	LAB-II	200	40 72
10	210	PROJECT VIVA	300	60 00

A-1571

~~AM-1630~~

MSC-201.

Max Marks:100
Min Marks:20

~~AL-6664~~
~~AS-92~~ ~~AK-3660~~
~~3673~~

1. INTRODUCTION:-

Network Hardware-LAN,MAN,WAN,Internetworks: Network Software-protocol Hierarchies, Design Issue of the layers, Interfaces and services, Connection oriented and connection less services, Service Primitives, Reference Models-The OSI Reference model, The TCP/IP Reference Model.

2. PHYSICAL LAYER:The Theoretical Basis for Data Communication -Fourier Analysis, Band Width-limited signals, The maximum data control rate of a channel.

Transmission Media-Magnetic Media, Twisted pair, Base band coaxial Cable, Broadband Coaxial Cable, Fibre optics.

Switching Techniques-Circuit Switching, Message Switching Packet Switching, Virtual Circuit.

3. THE DATA LINK LAYER: The Data Link Layer design issues- Services provided to the Transparent Layer, Framing Error control, Flow control.

Error Detection and Control-Error Detecting codes, error correcting codes.

Elementary Data Link Layers- An Unrestricted Simplex protocol, A Simplex Stop and Wait protocol, A Simplex protocol for noisy channel.

Data Link Layer in the Internet-SLIP, PPP.

4. THE NETWORK LAYER: The Network Layer Design Issue-Services provided to the Transport Layer, Internal Organisation of the Network Layer, comparison of Virtual circuits and data-gram subnets.

Internetworking- Concatenated, virtual circuits, connectionless internetworking. Tunneling Internetwork routing, Fragmentation, Firewalls.

The Network Layer in the Internet-The IP Protocol, IP Address, subnets, Internet control protocols, internet multicasting.

5. THE TRANSPORT LAYER:The Transport service-Services provided to the upper layers, Quality of service, Transport service, primitives and buffering, Multiplexing, Crash Recovery.

The Internet Transport protocols(TCP/IP)-The TCP Service Model, The TCP protocol, the TCP Segment header, TCP connection management, TCP transmission policy, TCP congestion control, TCP timer management, UDP.

6. THE APPLICATION LAYER:Network security-Traditional Cryptography, Two fundamental cryptographic principles Secret Key Algorithms,

3

Authentication protocols, Digital Signal.
DNS-Domain Name System -The DNS Name space, Resource
Records, Name servers.

Suggested Readings:

1. Computer Networks: A.S.Tanenbaum.

DBMS

MSC-202

~~AI-665~~

A-1572

Max Marks:100

~~AM-163~~

~~AK-366~~
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Min Marks:20

Integrity

INTRODUCTION: The Entity -Relationship models, relational models, SQL,
Constraints, Relational Database Design, Query processing,
Transactions, Concurrency control, Recovery systems.

REFERENCES:-

1. Data Base System Concepts-H.F.Korth and A. Silberschatz
2. An introduction to Data Base systems-C.IJDate, Addison Wesley.

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INTRODUCTION TO SOFTWARE ENGINEERING

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MSC-203.

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A-1573
Max Marks:100
Min Marks:20

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1. SOFTWARE

What is software, Characteristics of Software, Application of Software.
An introduction to Software Engineering, Software process Models
-Linear Sequential. Model, Prototyping Model, RAD Model, Incremental Model, Component Based Development Model, Fourth Generation Techniques.

2. MANAGING SOFTWARE PROJECTS.

The Management spectrum-People, product, process,
Software process and Project Metrics-Measures, Metrics and Indicators.
process and Project Metrics.
Software Measurement-Size Oriented metrics, Function Oriented Metrics.
Metrics for Software Quality-Overview, Measuring Quality, DRE.
Software project planning-Objectives, Software scope, Resources, Empirical Estimation Models, The Make/Buy Decision.

3. SOFTWARE QUALITY ASSURANCE:

Quality Concepts, Software ^{Quality} Assurance, Software Reviews, Formal Technical Reviews, The ISO 9000 Quality Standards.

4. SYSTEM ENGINEERING

Computer Based Systems, The System Engineering Hierarchy, An Overview of Business process Engineering, A Overview of product Engineering, Requirements Engineering system Modelling.
Analysis Concepts and principles-Requirements Analysis, Analysis principles, Software prototyping.
Analysis Modelling-History, Elements of the Analysis Model, Data Modelling-ER Diagrams, Functional Modelling-Data Flow Diagrams, Behavioural Modelling, The Data Dictionary.
Design concepts and principles-Software Design and Software Engineering, Design principles and Design Concepts.

5. SOFTWARE TESTING-

Fundamentals of Software Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, The Art of Debugging.

6. SYSTEM IMPLEMENTATION, OPERATION AND MAINTENANCE.

REFERENCES:

- 1. Software Engineering: Roger S. Pressman.

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SOFT COMPUTING:

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~~AK-3663~~
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MSC-204

Max Marks:100

Min Marks:20

Fuzzy Set Theory: Crisp and fuzzy sets, Fuzzy complementary, fuzzy union, fuzzy intersection, combination of operations, fuzzy relations, binary relations, binary relation on a single set, fuzzy relation equations.

Artificial Neural Networks and Applications: Definition of neural networks, biological and artificial neural networks, model of neuron, learning process, different types of learning -error correction, competitive, supervised, ^{learning} unsupervised perceptron -Introduction, Single layer and Multi layer perceptron. Derivation of back propagation algorithm, Applications of ANN.

REFERENCES:

1. Neural Networks-Simon Haykins
2. Fuzzy sets and fuzzy logic: theory and applications- G.J.Kliv and B.O.Yuvan, P.H.I

INTRODUCTION TO THEORY OF COMPUTING:

~~8676~~
~~4596~~ A-1575
~~AK-3664~~
~~AM-1634~~ AI-6668

MSC-205

Max Mark:100

Min Mark:20

Principles of Mathematical induction Finite Automata & Regular Expressions, properties of regular sets, context free grammars, Pushdown Automata, Turing Machines & Linear Bounded Automata, Undecidability, The Chomsky Hierarchy, properties of Context free Languages, Context free languages, Deterministic context free languages.

REFERENCES:

1. Introduction to automatic theory languages and Computation -Hopcraft J.E and Ullman J.D-Narosa Publication House, NewDelhi.
2. Introduction Theory of Computer-E.V Krishanmurthy, E.W.P.

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INTERACTIVE COMPUTER GRAPHICS : : ~~AM-1635~~

MSC-206

A-1576

~~AX-3665~~

~~AL-6669~~

Max Mark:100

Min Mark:20

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Introduction-The origin of computer graphics, how the interactive graphics Device works, new display devices, general purpose graphics software, The Display of solid objects.

Point plotting techniques-Coordinate system, incremental methods, and line-drawing Algorithms, Circle generators. Line drawing displays-Display devices & computer, display devices, CRT, inherent Memory devices, the storage tube display, the referesh ^{drawing} line display.

Two dimensional transformation-Transformation principles concatenation, Matrix .Representations, use of homologous coordinate space system.

Clipping and windowing-A line algorithm, bit point subdivision, ^{clipping} other Graphics entities, polygon clipping viewing transformation, The windowing Transformation.

Simple graphics package-ground rules for graphics software design function domain Graphics primitive, windowing function miscellaneous function, implementation Of the functions, transformations processors.

Segment Display Files- Segments, functions for segmenting the display file, posting and unposting segments, segment naming schemes, default error conditions, appending to segments.

Geometric Models- A simple modeling example, geometric modeling, symbols and instances, implementation of instance transformation.

Picture Structure-Defining Symbols by procedures, display procedures, boxing.

Graphical Input devices-Keybaord, mouse, scanners, touch screens, digitizers, etc.

Graphical Input Techniques-Introduction, positioning techniques, pointing and selection, inking and painting, on-line character recognition.

Raster Graphics fundamental-Introduction, generating a raster image, the frame buffer display, representing a raster image, scan converting line drawings, displaying characters, speed of scan conversion, natural image,

Solid Area Scan Conversion-Geometric representation of areas, Scan -Converting polygons, priority, the Y-X algorithm, properties of scan conversion algorithms.

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Realism in three dimensional graphics- Techniques for achieving realism, modeling three dimensional schemes, modeling three dimensional scene, modeling and realism.

Curves and surfaces- Shape description, requirements, parametric functions, Bezier methods, B-spline methods.

Three dimensional transformation and perspective-Transformations, ^{transformation} in viewing-The prospective transformation, Three-dimensional graphics packages, Rotation about an arbitrary axis as an example of transformation.

Perspective Depth- The screen coordinate system, properties of Screen Coordinate System, Homogeneous coordinate representation of projective transformation, Hidden surface And Hidden Line Removal- Classification of algorithms, back face removal, depth buffer methods, scanline method, depth sorting method, depth, area subdivision method, octree method, comparison of hidden surface methods, hiddenline elimination, curved surfaces.

Shading - A shading model applying the shading models
Special effects.

REFERENCES:

- 1) Principle of interactive Computer Graphics-W.Newman, Robert F. Sproull (McGraw-Hill international Editions)
- 2) Interactive Computer Graphics-W.K.Giloi P.H.I New Delhi.

JAVA PROGRAMMING LANGUAGE:

MSC-207

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Max Mark:100

~~AI-6670~~

Min Mark:20

~~AM-1136~~

1. INTRODUCTION:

Genesis of java, Importance to the Internet, Overview of features.

2. OOP.

OOP features, Data Type, Control structure arrays, String and Vectors, methods and class, Nested & inner classes.

3. INHERITANCE:

Basics, method overriding, using abstract class, using finals.

4. PACKAGE AND INTERFACES:

Defined CLASSPATH, importing packages, implementing interface.

5. EXCEPTION HANDLING:

Fundamental: exception types, using try and catch, throwing exceptions defined exceptions.

6. MULTITHREADED PROGRAMMING:

Java Thread model, creating threads, thread priorities, synchronization suspending, resuming and stopping threads.

7. APPLETS:

Fundamentals, life cycle overriding update, HTML APPLET tag, passing parameters, developing single applets.

8. EVENT HANDLING:

Delegation event model, handling mouse and keyboard events. Introduction to AWT: Window fundamentals, creating a windowed program, working with graphics.

9. NETWORKING:

Networking Basics. TCP/IP client & server sockets, URL connection.

10. SOFTWARE DEVELOPMENT USING JAVA:

Introduction to java beans & servlets, servlets life cycle, RMI.

BOOKS RECOMMENDED:

1. Java Complete reference -TMH

-Patrick Naughton & Herbert Schildt.

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