SCHEME OF EXAMINATION FOR M.TECH. (COMPUTER SCIENCE & ENGINEERING) w.e.f. Academic Session 2014-15

Paper Code	Nomenclature of Paper	Exam Time (hrs.)	External Marks		Internal Marks		Total Marks
			Max	Pass	Max	Pass	
FIRST SEMESTER							
MT-CSE-14-11	ADVANCES IN ALGORITHMS	3	100	40	50	20	150
MT-CSE-14-12	ADVANCED WEB TECHNOLOGIES	3	100	40	50	20	150
MT-CSE-14-13	DATA WAREHOUSING & DATA MINING	3	100	40	50	20	150
MT-CSE-14-14	ADVANCED COMPUTER ARCHITECTURE	3	100	40	50	20	150
MT-CSE-14-15	S/W LAB – I BASED ON MT-CSE-14-11	3	100	40			100
MT-CSE-14-16	S/W LAB – II BASED ON MT-CSE-14-12	3	100	40			100
MT-CSE-14-17	SEMINAR				50	20	50
	TOTAL		**600**		**250**		**850**
SECOND SEMESTER							
MT-CSE-14-21	OBJECT ORIENTED ANALYSIS & DESIGN USING UML	3	100	40	50	20	150
MT-CSE-14-22	DIGITAL IMAGE PROCESSING	3	100	40	50	20	150
MT-CSE-14-23	ELECTIVE - I	3	100	40	50	20	150
MT-CSE-14-24	ELECTIVE - II	3	100	40	50	20	150
MT-CSE-14-25	S/W LAB – III BASED ON MT-CSE-14-21	3	100	40			100
MT-CSE-14-26	S/W LAB – IV BASED ON MT-CSE-14-22	3	100	40			100
MT-CSE-14-27	SEMINAR				50	20	50
	TOTAL		**600**		**250**		**850**

ELECTIVE PAPERS

MT-CSE-14- 23(i) SOFTWARE QUALITY MODELS & TESTING	MT-CSE-14-24(i) DISTRIBUTED SYSTEMS
MT-CSE-14-23(ii) HIGH PERFORMANCE NETWORKS	MT-CSE-14-24(ii) BIOMETRICS SYSTEM SECURITY
MT-CSE-14-23(iii) ADVANCES IN DATABASES	MT-CSE-14-24(iii) SECURITY IN COMPUTING

Paper Code	Nomenclature of Paper	Exam Time (hrs.)	External Marks		Internal Marks		Total Marks
THIRD SEMESTER							
MT-CSE-14-31	RESEARCH METHODOLOGY & TOOLS	3	100	40	50	20	150
MT-CSE-14-32	ADVANCED OPERATING SYSTEMS	3	100	40	50	20	150
MT-CSE-14-33	ELECTIVE – I	3	100	40	50	20	150
MT-CSE-14-34	ELECTIVE - II	3	100	40	50	20	150
MT-CSE-14-35	S/W LAB – V BASED ON MT-CSE-14-31	3	100	40			100
MT-CSE-14-36	S/W LAB – VI BASED ON MT-CSE-14-32	3	100	40			100
MT-CSE-14-37	SEMINAR				50	20	50
	TOTAL		**600**		**250**		**850**

ELECTIVE PAPERS

MT-CSE-14-33(i) DATA ANALYTICS	MT-CSE-14-34(i) CLOUD COMPUTING
MT-CSE-14-33(ii) SOFT COMPUTING	MT-CSE-14-34(ii) WIRELESS NETWORKS AND MOBILE COMPUTING
MT-CSE-14-33(iii) GENETIC ALGORITHMS	MT-CSE-14-34(iii) SEMANTIC WEB AND SOCIAL NETWORKING

Paper Code	Nomenclature of Paper		External Marks		Internal Marks		Total Marks
FOURTH SEMESTER							
MT-CSE-14-41	DISSERTATION	EVALUATION	200	80	100	40	300
		VIVA-VOCE	150	60			150
		TOTAL	**350**		**100**		**450**
		GRAND TOTAL	**2150**		**850**		**3000**

<center>MT-CSE-14-31   RESEARCH METHODOLOGY AND TOOLS</center>

Maximum marks: 150 (**External:** 100, **Internal:** 50)   **Time:** 3 hours
Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

<center>**UNIT – I**</center>

Foundations of Research: Meaning, Objectives, Motivation, Utility. Concept of theory, empiricism, deductive and inductive theory. Characteristics of scientific method – Understanding the language of research – Concept, Construct, Definition, Variable. Research Process.
Problem Identification & Formulation: Research Question, Investigation Question, Measurement Issues, Hypothesis, Qualities of a good Hypothesis, Null Hypothesis & Alternative, Research Design: Concept and Importance in Research – Features of a good research design – Exploratory Research Design: Concept, types and uses, Descriptive Research Designs: concept, types and uses. Experimental Design: Concept of Independent & Dependent variables. Qualitative and Quantitative Research: Qualitative research, Quantitative research, Concept of measurement, causality, generalization, replication. Merging the two approaches.

<center>**UNIT – II**</center>

Measurement: Concept of measurement, Problems in measurement in research – Validity and Reliability. Levels of measurement – Nominal, Ordinal, Interval, Ratio.
Layout of a Research Paper, Journals in Computer Science, Impact factor of Journals, Ethical issues related to publishing, Plagiarism and Self-Plagiarism.
Thesis Writing: Writing - introduction, review of literature, results, abstract, summary, synopsis, Reference citing and listing.

<center>**UNIT – III**</center>

Introduction to R: Functions and packages in R; working with dataset in R; use of R for doing statistical analysis and graphics; R commands, Working with objects.
Packages in R – "caronline" for getting familiar with Database, Data Structures and visualization in R, "CORElearn" for introduction to correlation, regression and feature evaluation. BOOTFS: feature selection for classification, CARET – classification and regression training, "klaR" for classification and visualization, Plot diagrams and charts using R packages, Mining algorithms: "rminer", Text mining: "tm".

<center>**UNIT – IV**</center>

Introduction to MATLAB/SCILAB/OCTAVE: Environment, Variables, Classes of variables, Statements, Operators, Expressions, Vectors and Matrices, Control and Loop constructs, Scripts and Functions, Input and Output statements, Using File Input and File output, User defined Functions, Program organization, String variable, Cell array and structures array, MAT-files and Input/Output, Function handles, Plot function, Animation, 2-D and 3-D plotting (line, pie, bar, Histogram, Polar, Contour, volumes, polygons), Customizing plots, Customizing plots, Creating applications with Graphical User Interface (GUI), Initialize and Designing GUI interfaces, Code and FIG files, Callback functions: Push buttons, toggle buttons, radio button, Check box, Slider, Pop-up menu , Adding components to GUIDE layout area, panels and Button groups, Axes, tables, ActiveX Component, Menus for GUI.

Reference Books:
1.   Donald Cooper & Pamela Schindler, Business Research Methods, McGraw Hill.
2.   Alan Bryman & Emma Bell, Business Research Methods, Oxford University Press.
3.   Kothari C.K. (2004), Research Methodology‑ Methods and Techniques (New Age International, New Delhi) 2nd Ed.
4.   N. Gurumani, Scientific Thesis Writing and Paper Presentation, MJP Publishers.
5.   Montgomery, Douglas C., Design and Analysis of Experiments, Wiley India Pvt. Ltd.
6.   Gardener M., "BEGINNING R: THE STATISTICAL PROGRAMMING LANGUAGE", Wiley India Pvt. Ltd.
7.   Bansal R.K., Goel A., Sharma M.K., "MATLAB and its Applications in Engineering", Pearson Education.
8.   Gilat A., "MATLAB: An Introduction with applications", Wiley India Pvt. Ltd.

MT-CSE-14-32 ADVANCED OPERATING SYSTEMS

Maximum marks: 150 (External: 100, Internal: 50) **Time:** 3 hours

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

DISTRIBUTED OPERATING SYSTEMS: Introduction, Issues, Communication Primitives, Inherent Limitations, Lamport's Logical Clock; Vector Clock; Causal Ordering; Global State; Cuts; Termination Detection. Distributed Mutual Exclusion, Non Token Based Algorithms, Lamport's Algorithm, Token Based Algorithms.

Suzuki Kasami's Broadcast Algorithm, Distributed Deadlock Detection Issues, Centralized Deadlock Detection Algorithms, Distributed Deadlock Detection Algorithms, Agreement Protocols Classification, Solutions, Applications.

UNIT – II

DISTRIBUTED RESOURCE MANAGEMENT : Distributed File Systems, Design Issues, Distributed Shared Memory, Algorithms for Implementing Distributed Shared memory, Issues in Load Distributing, Scheduling Algorithms, Synchronous and Asynchronous Check Pointing and Recovery.

UNIT – III

REAL TIME AND MOBILE OPERATING SYSTEMS : Basic Model of Real Time Systems, Characteristics, Applications of Real Time Systems, Real Time Task Scheduling, Handling Resource Sharing, Mobile Operating Systems, Micro Kernel Design, Client Server Resource Access, Processes and Threads, Memory Management.

UNIT – IV

INTRODUCTION TO ANDROID: Android Application package (APK), Working with Eclipse and Android, Application Design, Controls and User Interface, Basic Graphics ad View class, Using Google Maps in applications, Applications with multiple screens, Adding Menus and popup menus in applications, Working with images, working with text files, tables and XML, Building client server applications, Publishing your application.

Reference Books:
1. Mukesh Singhal and Niranjan G. Shivaratri, "Advanced Concepts in Operating Systems -   Distributed, Database, and Multiprocessor Operating Systems", Tata McGraw Hill.
2. Abraham Silberschatz; Peter Baer Galvin; Greg Gagne, "Operating System Concepts", Wiley India Pvt. Ltd.
3. Rajib Mall, "Real Time Systems: Theory and Practice", Pearson Education India.
4. James C.S. "Android Application development", CENGAGE Learning.
5. Gargenta M., Nakamura M., "Learning Android", OREILLY Publishers.

MT-CSE-14-33(i)   DATA ANALYTICS

Maximum marks: 150 (External: 100, Internal: 50)   **Time:** 3 hours

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Introduction: Need of Big Data, Big Data vs. conventional data, Big Data Platform, Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

Introduction to Data Science & Analytics, Business value of Analytics and Data Science, Typical problems solved with data science, Analytics Modeling, Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools.

UNIT – II

DATA ANALYSIS : Regression Modeling - Multivariate Analysis - Bayesian Modeling - Inference and Bayesian Networks - Support Vector and Kernel Methods - Analysis of Time Series: Linear Systems Analysis - Nonlinear Dynamics - Rule Induction, Confidence Interval and Tests of Significance, Inferential statistics and predictive analytics, Chi square, Test of independence, ANOVA

UNIT – III

FRAMEWORKS AND VISUALIZATION : MapReduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases - Casandra - Hadoop Distributed File Systems – Visualizations - Visual Data Analysis Techniques - Interaction Techniques; Systems and Analytics Applications - Analytics using Statistical packages-Approaches to modeling in Analytics – correlation, regression, decision trees, classification, association- Intelligence from unstructured information-Text analytics.

UNIT – IV

NoSQL Database concepts, Schema, Two Phase Commit, Sharding & Share Nothing Architecture, Feature Based, Key Based, Lookup Table Based, Cassandra Definition & Features, Distributed & Decentralized, Elastic Scalability, High Availability & Fault Tolerance, Tuneable Consistency, Strict & Casual Consistency, Column Orientation, Schema Free, High Performance.

Creating Keyspace and Column Family, Writing and Reading Data, Cluster, Wide Rows, Skinny Rows, Referential Integrity, Secondary Indexes, Sorting, DeNormalisation, Design Patterns, Materialized Views. CQL-Data Definition language(DDL) Statements, Data Manipulation Language (DML), Create and modify Users, User permission, Capture CQL output to a file, Import and export data, CQL scripts from within CQL, CQL Scripts from the command prompt.

REFERENCE BOOKS:
1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2. Anand Rajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, 2012.
3. Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", Wiley India Pvt. Ltd.
4. Glenn J. Myatt, "Making Sense of Data", Wiley India Pvt. Ltd.
5. Akerker, "Big Data Computing", CRC Press.
6. Jiawei Han, MichelineKamber "Data Mining Concepts and Techniques", Second Edition, Elsevier India, Reprinted 2008.
7. Big Data for Dummies by Judith Hurwitz, Alan Nugent, Dr. Fern Halper, Elsevier India.
8. Python for Data Analysis by Wes McKinney
9. Statistics by S. C. Gupta.

MT-CSE-14-33(ii)   SOFT COMPUTING

Maximum marks: 150 (External: 100, Internal: 50)   **Time:** 3 hours
Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Basic concepts of neuro-computing: Artificial Neural Network (ANN) and their biological roots and motivations, Mathematical Models of Neurons, ANN architecture, Learning rules, Learning Paradigms-Supervised, Unsupervised and reinforcement Learning, ANN training Algorithms-perceptions, Training rules, Delta, Back Propagation Algorithm, Multilayer Perceptron Model, Applications of Artificial Neural Networks, Competitive learning networks, Kohonen self organizing networks, Hebbian learning; Hopfield Networks, Associative Memories, The boltzman machine; Applications.

UNIT – II

Introduction to Fuzzy Logic: Classical and Fuzzy Sets: Overview of Classical Sets, Membership Function, Fuzzy rule generation. Operations on Fuzzy Sets: Compliment, Intersections, Unions, Combinations of Operations, Aggregation Operations. Fuzzy Arithmetic: Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals & Numbers, Lattice of Fuzzy Numbers, Fuzzy Equations. Fuzzy Logic: Classical Logic.

UNIT – III

Genetic Algorithm (GA): Evolutionary computing, conditions for evolution, Simple Genetic Algorithm (SGA), different types of operators: Selection, Crossover, mutation and replacement, optimization problems and traditional optimization methods, differences between GA & traditional methods, Holland's schemata theorem, encoding schemes.

UNIT – IV

Random Optimization, Simulated Annealing, Tabu Search, Ant Colony Optimization, Particle Swarm Optimization, Memetic Algorithms.

Text Books:
1. S. N. Sivanandam & S. N. Deepa, Principles of Soft Computing, Wiley India Pvt. Ltd..
2. Goldberg D. E., Genetic Algorithms in Search, Optimization, and Machine Learning, Pearson Education.

Reference Books:
1. Jang, Sun, Mizutani, Neuro-Fuzzy and Soft computing, Pearson Education.
2. Haykin, Neural networks: a comprehensive foundation, Pearson Education.
3. Mitchell M., An Introduction to Genetic Algorithms, Prentice-Hall.
4. Klir G.J. & Yuan B., Fuzzy Sets & Fuzzy Logic, PHI.

MT-CSE-14-33(iii)   GENETIC ALGORITHMS

Maximum marks: 150 (External: 100, Internal: 50)   **Time:** 3 hours

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Introduction: Goal of optimization, local and global optima, Multi-objective optimization, Problems in global optimization like premature convergence to a local optimum, overfitting etc, A brief history of evolutionary computation, The appeal of evolution, Biological terminology, Search spaces and fitness landscapes, Conventional Optimization and Search Techniques - Gradient-Based Local Optimization Method, Random Search, Stochastic Hill Climbing, Simulated Annealing etc.

UNIT – II

Genetic algorithms(GA), Evolution strategies, Difference between Genetic Algorithm and traditional methods, Selection – elitism, rank selection, tournament selection, Boltzmann selection, steady state selection etc.; Crossover, mutation; Schema theorem – schemata and masks, Wildcards, Holland's schema theorem and criticism; convergence.
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UNIT – III

Computer Implementation of Genetic Algorithm: Data Structures, Reproduction, Crossover, and mutation, Mapping objective functions to fitness form, Fitness scaling, Different types of encodings - Binary Encoding, Octal Encoding, Hexadecimal Encoding, Permutation Encoding, Value Encoding, Tree Encoding etc.

UNIT – IV

Advanced operators and techniques in Genetic Search: Dominance, Diploidy, and Abeyance, Inversion and other reordering operators like partially matched crossover, order crossover and cycle crossover, Niche and speciations, Micro-operators, Knowledge based techniques, Genetic algorithm and parallel processors.
Classification of Genetic Algorithm: Simple Genetic Algorithm(SGA), Parallel and Distributed Genetic Algorithm (PGA and DGA), Hybrid Genetic Algorithm (HGA), Adaptive Genetic Algorithm(AGA), Fast Messy Genetic Algorithm (FmGA), Independent Sampling Genetic Algorithm(ISGA).

Text Books:
1. Goldberg D. E., Genetic Algorithms in Search, Optimization, and Machine Learning, Pearson Education.
2. Sivanandam S. N. & Deepa S. N., Introduction to Genetic Algorithms, Springer.

Reference Books:
1. Mitchell M., An Introduction to Genetic Algorithms, Prentice-Hall.
2. Weise Thomas, Global Optimization Algorithms – Theory and Application, http://www.it-weise.de/ projects/book.pdf.

MT-CSE-14-34(i)   CLOUD COMPUTING

Maximum marks: 150 (External: 100, Internal: 50)   **Time:** 3 hours
Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Cloud Computing: Definition, roots of clouds, characteristics, Cloud Architecture – public, private, hybrid, community, advantages & disadvantages of Cloud Computing.
Migrating into a Cloud: broad approaches, seven-step model to migrate
Virtualization: benefits & drawbacks of virtualization, virtualization types – operating system virtualization, platform virtualization, storage virtualization, network virtualization, application virtualization, virtualization technologies.

UNIT – II

Cloud Services & Platforms: Compute services, Storage services Database services, Application Services, Queuing services, E-mail services, Notification services, Media services, Content delivery services, Analytics services, Deployment & management services, Identity & access management services. Case studies of these services.
Federated & Multimedia Cloud Computing: architecture, features of federation types, federation scenarios, layers enhancement of federation; Multimedia Cloud.

UNIT – III

SLA Management in Cloud Computing: traditional approaches to SLA management, types of SLA, life cycle of SLA, SLA management in cloud, automated policy-based management.
Cloud Security: challenges, CSA cloud security architecture, authentication, authorization, identity & access management, data security, auditing.
Legal Issues in Cloud Computing: data privacy and security issues, cloud contracting models.

UNIT – IV

Developing for Cloud: Design considerations for cloud applications, reference architectures for cloud applications, cloud application design methodologies, data storage approaches
Python for Cloud: Python characteristics, data types & data structures, control flows, functions, modules, packages, file handling, date/time operations, classes, Python web application framework – Django.

Text Books
1. Arshdeep Bahga, Vijay Madisetti, Cloud Computing – A Hands-on Approach, University Press, 2014
2. Saurabh Kumar, Cloud Computing, 2nd Edition, Wiley India Pvt Ltd.
3. Rajkumar Buyya, James Broberg, Andrzej Goscinski, Cloud Computing – Principles and Paradigms, Wiley India Pvt. Ltd.

Reference Books
1. Barrie Sosinsky, Cloud Computing Bible, Wiley India Pvt. Ltd.
2. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing.
3. Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pvt Limited, July 2008.

MT-CSE-14-34(ii)   WIRELESS NETWORKS AND MOBILE COMPUTING

Maximum marks: 150 (External: 100, Internal: 50)   **Time:** 3 hours
Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I
Evolution and Challenges of Wireless Networks; The Electromagnetic Spectrum; Modulation Techniques and Multiple Access for Wireless Systems; Spread Spectrum; Overview of Mobile Computing and its applications; Cellular Networks: Concept; Call Set-up; Frequency Reuse; Channel Assignment; Handoff; Mobility Management; GSM and IS-95 architecture, channels, and Call Establishment; Wireless Data Service; 3G and 4G Cellular Systems.

UNIT – II
Introduction to Ad Hoc Wireless Networks; Issues in Ad Hoc Wireless Networks; MAC Protocols for Ad Hoc Wireless Networks: Introduction, Issues, Classification, Contention-Based Protocols; Contention-Based Protocols with Reservation Mechanisms; Contention-Based Protocols with Scheduling Mechanisms;
Routing Protocols for Ad Hoc Networks: Introduction, Issues; Classification; Table-Driven Routing Protocols; On-Demand Routing Protocols; Hybrid Routing Protocols; Routing Protocols with Efficient Flooding Mechanisms; Hierarchical Routing Protocols.

UNIT – III
Multicast Routing in Ad Hoc Networks: Introduction; Issues; Operation of Multicast Routing Protocols; Classification; Tree-Based Multicast Routing Protocols; Mesh-Based Multicast Routing Protocols; Energy Efficient Multicasting;
Transport Layer For Ad Hoc Wireless Networks: Introduction and Design Issues; TCP over Ad Hoc Wireless Networks;
Network Security Requirements and Attacks; Key Management; Secure Routing in Ad Hoc Wireless Networks; WEP protocol.

UNIT - IV
Energy Management in Ad Hoc Wireless Networks: Need; Classification of Energy Management Schemes; Transmission Power Management Schemes; System Power Management Schemes;
Wireless Sensor Networks: Introduction; Sensor Network Architecture; Data Dissemination; Data Gathering; MAC protocols for Sensor Networks; Location Discovery; Quality of a Sensor Network; Energy Efficiency, Synchronization, Real-Time Communication and Security.

Text Books:
1. C. Siva Ram Murthy and B.S. Manoj, "Ad Hoc Wireless Networks – Architectures   and   Protocols", Pearson Education
2. P. Nicopolitidis, M.S. Obaidat, G.I. Papadimitriou, A.S. Pomportsis, "Wireless Networks", Wiley India Pvt. Ltd.
Reference Books:
1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson Education.
2. Sipra DasBit, Biplab K. Sikdar, "Mobile Computing", PHI.
3. William C.Y.Lee, "Mobile Cellular Telecommunications", Second Edition, McGraw-Hill.
4. Theodore S. Rapparort, "Wireless Communications- Principles and Practice", Pearson Education.
5. Stomenovic and Cacute, "Handbook of Wireless Networks and Mobile Computing", Wiley India Pvt. Ltd.
6. W. Stallings, "Wireless Communications and Networks", Pearson Education.
7. Hansmann U., Merk L., Martin S. Nicklons, Stober T., "Principles of Mobile Computing", Springer.
8. Hazysztof Wesolowshi, "Mobile Communication Systems", Wiley India Pvt. Ltd.
9. Raj   Kamal,   "Mobile   Computing",   Oxford   Higher   Education.

MT-CSE-14-34(iii)   SEMANTIC WEB AND SOCIAL NETWORKING

Maximum marks: 150 (External: 100, Internal: 50)   **Time:** 3 hours
Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Web Intelligence Thinking and Intelligent Web Applications, The Information Age ,The World Wide Web, Limitations of Today's Web, The Next Generation Web, Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, Software Agents, Berners Lee www, Semantic Road Map, Logic on the semantic Web.
Knowledge Representation for the Semantic Web Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web

UNIT – II

Resource Description Framework (RDF) / RDF Schema, Ontology Web Language (OWL), UML, XML/XML Schema.
Ontology Engineering: Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping, Logic, Rule and Inference Engines.

UNIT – III

Semantic Web Applications, Services and Technology Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base ,XML Based Web Services, Creating an OWLS Ontology for Web Services,
Semantic Search Technology, Web Search Agents and Semantic Methods.

UNIT - IV

Social Network Analysis and semantic web: What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network Analysis
Electronic Discussion networks, Blogs and Online Communities, Web Based Networks. Building Semantic Web Applications with social network features.

Text Books:
1. Berners Lee, Godel and Turing, Thinking on the Web Wiley India Pvt. Ltd.
2. Peter Mika, Social Networks and the Semantic Web, Springer, 2007.

Reference Books:
1. J.Davies, R.Studer, P. Warren, Semantic Web Technologies, Trends and Research in Ontology Based Systems, Wiley India Pvt. Ltd.
2. Liyang Lu, Semantic Web and Semantic Web Services, Chapman and Hall/CRC Publishers, (Taylor & Francis Group)
3. Frank Van Harmelen, Information Sharing on the semantic Web Heiner Stuckenschmidt; Springer Publications.
4. T.Segaran, C.Evans, J.Taylor, Programming the Semantic Web, O'Reilly, SPD.