STUDY AND EVALUATION SCHEME FOR
FOUR YEAR B.TECH COURSE IN
COMPUTER SCIENCE & ENGG.

SEMESTER - VII

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional (Max/Min)	End Exam (Max/Min)	Total	Duration
THEORY SUBJECT										
1	BTOE-71	Quality Management	3	1	-	-	50	100	150	3
2	BTCS-71	Distributed System	3	3	-	-	50	100	150	3
3	BTCS-72	Artificial Intelligence	3	3	-	-	50	100	150	3
4	BTCS-73	Android Operating System	3	3	-	-	50	100	150	3
5	BTCS-74	Cryptography and Network Security	3	3	-	-	50	100	150	3
PRACTICAL/DRAWING SUBJECTS										
	BTCS-71P	Distributed System Lab	-	-		-	20	30	50	3
	BTCS-72P	Industrial Training	-	-		-	50		50	3
	BTCS-73P	Project	-	-		-	100		100	3
	BTGD-70	Games//Social and Cultural Activities + Discipline					50		50	3
Grand Total									1000	

NOTE:- (1) Each period will be 50 minutes duration.

(2) Each session will be of 16 weeks.

(3) Effective teaching will be at least 14 weeks.

(4) Remaining periods will be utilised for revision etc.

STUDY AND EVALUATION SCHEME FOR
FOUR YEAR B.TECH COURSE IN
COMPUTER SCIENCE & ENGG.

SEMESTER - VIII

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional (Max/Min)	End Exam (Max/Min)	Total	Duration
THEORY SUBJECT										
1	BTOE-81	Non -Conventional Energy Resources	4	1	-	-	50	100	150	3
2	BTCS-81	Digital Image Processing	4	1	-	-	50	100	150	3
3	BTCS-82	Real Time System	4	1	-	-	50	100	150	3
4	BTCS-83	Embedded System	4	1	-	-	50	100	150	3
PRACTICA/DRAWING SUBJECTS										
5	BTCS-81P	Seminar	-	-	2	-	50		50	
6	BTCS-82P	Project	-	-	2	-	100	200	300	
7	DAG-23P	Games//Social and Cultural Activities + Discipline					50		50	
								Grand Total	1000	

NOTE:- (1) Each period will be 50 minutes duration.

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(3) Effective teaching will be at least 14 weeks.

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SEMESTER- VII

QUALITY MANAGEMENT

UNIT-I

Quality Concepts: Evolution of Quality Control, concept change, TQM Modern concept, Quality concept in design, Review of design, Evolution of proto type. Control on Purchased Product
Procurement of various products, evaluation of supplies, capacity verification, Development of sources, procurement procedure. Manufacturing Quality Methods and techniques for manufacture

UNIT-II

Quality Management Organization structure and design, quality function, decentralization, designing and fitting, organization for different type products and company, economics of quality value and contribution, quality cost, optimizing quality cost, seduction program. Human Factor in quality Attitude of top management, cooperation of groups

UNIT-III

Control Charts Theory of control charts, measurement range, construction and analysis of R charts, process capability study, use of control charts. Attributes of Control Chart Defects, construction and analysis of charts, improvement by control chart, variable sample size, construction and analysis of C charts.

UNIT -IV

Defects diagnosis and prevention defect study, identification and analysis of defects, correcting measure, factors affecting reliability, MTTF, calculation of reliability, building reliability in the product, evaluation of reliability, interpretation of test results, reliability control, maintainability, zero defects, quality circle.

UNIT –V

ISO-9000 and its concept of Quality Management7, ISO 9000 series, Taguchi method, JIT in some details.

REFERENCE :

1. Lt. Gen. H. Lal, "Total Quality Management", Eastern Limited, 1990.
2. Greg Bounds, "Beyond Total Quality Management", McGraw Hill, 1994.
3. Menon, H.G, "TQM in New Product manufacturing", McGraw Hill 1992.

DISTRIBUTED SYSTEMS

Unit–I

Characterization of Distributed Systems: Introduction, Examples of distributed Systems, Resource sharing and the Web Challenges. Architectural models, Fundamental Models.
Theoretical Foundation for Distributed System: Limitation of Distributed system, absence of global clock, shared memory, Logical clocks , Lamport's& vectors logical clocks. Concepts in Message Passing Systems: causal order, total order, total causal order, Techniques for Message Ordering,

Unit-II

Distributed Mutual Exclusion: Classification of distributed mutual exclusion, requirement of mutual exclusion theorem, Token based and non token based algorithms, performance metric for distributed

mutual exclusion algorithms. Distributed Deadlock Detection: system model, resource Vs communication deadlocks, deadlock prevention, avoidance, detection & resolution, centralized dead lock detection, distributed dead lock detection

Unit–III

Agreement Protocols: Introduction, System models, classification of Agreement Problem, Byzantine agreement problem, Consensus problem, Interactive consistency Problem, Solution to Byzantine Agreement problem, Application of Agreement problem, Atomic Commit in Distributed Database System .Distributed Resource Management: Issues in distributed File Systems, Mechanism for building distributed file systems,

Unit–IV

Failure Recovery in Distributed Systems: Concepts in Backward and Forward recovery, Recovery in Concurrent systems, Obtaining consistent Checkpoints, Recovery in Distributed Database Systems. Fault Tolerance: Issues in Fault Tolerance, Commit Protocols, Voting protocols, Dynamic voting protocols.

Unit –V

Transactions and Concurrency Control: Transactions, Nested transactions, Locks, Optimistic Concurrency control, Timestamp ordering, Comparison of methods for concurrency control. Distributed Transactions: Flat and nested distributed transactions, Atomic Commit protocols, Concurrency control in distributed transactions, Distributed deadlocks, Transaction recovery. Replication: System model and group communication,

REFERENCES:

1.Singhal&Shivaratri, "Advanced Concept in Operating Systems", McGraw Hill
2.Ramakrishna,Gehrke," Database Management Systems", McGraw Hill
3.Vijay K.Garg Elements of Distributed Computing , Wiley

ARTIFICIAL INTELLIGENCE

Unit-I

Introduction : Introduction to Artificial Intelligence, Foundations and History of Artificial Intelligence, Applications of Artificial Intelligence, Intelligent Agents, Structure of Intelligent Agents. Computer vision, Natural Language Possessing.

Unit-II

Introduction to Search : Searching for solutions, Uniformed search strategies, Informed search strategies, Local search algorithms and optimistic problems, Adversarial Search, Search for games, Alpha -Beta pruning.

Unit-III

Knowledge Representation & Reasoning: Propositional logic, Theory of first order logic, Inference in First order logic, Forward & Backward chaining, Resolution, Probabilistic reasoning, Utility theory, Hidden Markov Models (HMM), Bayesian Networks.

Unit-IV

Machine Learning : Supervised and unsupervised learning, Decision trees, Statistical learning models, Learning with complete data

ANDROID OPERATING SYSTEM

UNIT I

Android OS Android Software Stack, Activities and Applications, Activity Life Cycles, Activity Stacks, Activity States, Resources, Android OS vs. IOS

UNIT II

User Interfaces Views, Layouts, Android Widgets, UI XML Specifications, Explicit Intents, Implicit Intents, Event Broadcasting with Intents, Event Reception with Broadcast Receivers, Adapters and Data Binding.

UNIT III

Multimedia ,Audio, Video, Camera, Playing Audio and Video, Recording Audio and Video, Using the Camera to Take and Process Pictures

UNIT IV

Networking Internet Access, HTML and XML Parsing, Wi-Fi

UNIT V

Touch screen Capturing Touch Events, Touch screen Gesture Recognition

REFERENCE:

1.Rito Meier. "Professional Android 2 Application Development." Wiley Publishing, Inc.
2.SayedHashimi, Satya Komatineni, Dave MacLean. "Pro Android 2." APRESS.
3.Mark Murphy. "Beginning Android 2." APRESS.
4.Carmen Delessio, Lauren Darcey ”Android Application Development” Pearson

CRYPTOGRAPHY & NETWORK SECURITY

Unit-I

Introduction to security attacks, services and mechanism, Classical encryption techniques-substitution ciphers and transposition ciphers, cryptanalysis, steganography, Stream and block ciphers. Modern Block Ciphers: Block ciphers principles, Shannon’s theory of confusion and diffusion, fiestal structure, Data encryption standard(DES), Strength of DES, Idea of differential cryptanalysis, block cipher modes of operations, Triple DES

Unit-II

Introduction to group, field, finite field of the form GF(p), modular arithmetic, prime and relative prime numbers, Advanced Encryption Standard (AES) encryption and decryption Fermat’s and Euler’s theorem, Primarily testing, Chinese Remainder theorem , Principals of public key crypto systems, RSA algorithm, security of RSA

Unit-III

Message Authentication Codes: Authentication requirements, authentication functions, message authentication code, hash functions, birthday attacks, security of hash functions, Secure hash algorithm (SHA)Digital Signatures: Digital Signatures, Elgamal Digital Signature Techniques, Digital signature standards (DSS), proof of digital signature algorithm,

UNIT IV

Key Management and distribution: Symmetric key distribution, Diffie-Hellman Key Exchange, Public key distribution, X.509 Certificates, Public key Infrastructure .Authentication Applications: Kerberos, Electronic mail security: pretty good privacy (PGP), S/MIME.

Unit-V

IP Security: Architecture, Authentication header, Encapsulating security payloads, combining security associations, key management .Introduction to Secure Socket Layer, Secure electronic, transaction (SET)System Security: Introductory idea of Intrusion, Intrusion detection, Viruses and related threats, firewalls

REFERENCES:

1.William Stallings, "Cryptography and Network Security: Principals and Practice", Pearson Education.
2.Behrouz A. Frouzan: Cryptography and Network Security, Tata McGraw Hill
3.C K Shyamala, N Harini, Dr. T.R.Padmnabhan Cryptography and Security ,Wiley
4.Bruce Schiener, "Applied Cryptography". John Wiley & Sons
5.Bernard Menezes," Network Security and Cryptography", Cengage Learning.
6.AtulKahate, "Cryptography and Network Security", Tata McGraw Hill

DISTRIBUTED SYSTEM LAB

The following programs maybe developed preferably on 'UNIX' platform:-A part from the above other problems may be given as per Course Instructor.

1. Simulate the functioning of Lamport's Logical Clock in 'C'.
2. Simulate the Distributed Mutual Exclusion in 'C'.
3. Implement a Distributed Chat Server using TCP Sockets in 'C'.
4. Implement RPC mechanism for a file transfer across a network in 'C'
5. Implement 'Java RMI' mechanism for accessing methods of remote systems.
6. Simulate Balanced Sliding Window Protocol in 'C'.
7. Implement CORBA mechanism by using 'C++' program at one end and 'Java program on the other.

SEMESTER- VIII

NON-CONVENTIONAL ENERGY RESOURCES

UNIT-I

Introduction Various non-conventional energy resources-Introduction, availability, classification, relative merits and demerits. 3Solar Cells: Theory of solar cells. solar cell materials, solar cell array, solar cell power plant, limitations.

UNIT-II

Solar Thermal Energy: Solar radiation, flat plate collectors and their materials, applications and performance, focusing of collectors and their materials, applications and performance; solar thermal power plants, thermal energy storage for solar heating and cooling, limitations.

UNIT-III

Geothermal Energy: Resources of geothermal energy, thermodynamics of geo-thermal energy conversion-electrical conversion, non-electrical conversion, environmental considerations.
4Magneto-hydrodynamics (MHD):Principle of working of MHD Power plant, performance and limitations.
Fuel Cells: Principle of working of various types of fuel cells and their working, performance and limitations

UNIT-IV

Thermo-electrical and thermionic Conversions: Principle of working, performance and limitations. Wind Energy: Wind power and its sources, site selection, criterion, momentum theory, classification of rotors, concentrations and augments, wind characteristics. performance and limitations of energy conversion systems.

UNIT-V

Bio-mass:Availability of bio-mass and its conversion theory. 2 Ocean Thermal Energy Conversion (OTEC):Availability, theory and working principle, performance and limitations.
Wave and Tidal Wave: Principle of working, performance and limitations. Waste Recycling Plants.

Text/References Books:

1. Raja etal, "Introduction to Non-Conventional Energy Resources" Scitech Publications.
2. John Twideu and Tony Weir, "Renewal Energy Resources" BSP Publications, 2006.
3. M.V.R. Koteswara Rao, " Energy Resources: Conventional & Non-Conventional " BSP Publications,2006.
4. D.S. Chauhan,"Non-conventional Energy Resources" New Age International.

Digital Image Processing

UNIT-I

Introduction and Fundamentals, Motivation and Perspective, Applications, Components of Image Processing System, Element of Visual Perception, A Simple Image Model, Sampling and Quantization.
Basis of Filtering in Frequency Domain, Filters – Low-pass, High-pass; Correspondence Between Filtering in Spatial and Frequency Domain; Smoothing Frequency Domain Filters – Gaussian Low pass Filters; Sharpening Frequency Domain Filters – Gaussian High pass Filters.

UNIT-II

Image Enhancement in Spatial Domain Introduction; Basic Gray Level Functions –
Piecewise-Linear Transformation Functions: Contrast Stretching; Histogram Specification; Histogram Equalization; Local Enhancement; Enhancement using Arithmetic/Logic Operations – Image Subtraction, Image Averaging; Basics of Spatial Filtering, Smoothing - Mean filter, Ordered Statistic Filter;

UNIT-III

Image Restoration: A Model of Restoration Process, Noise Models, Restoration in the presence of Noise only-Spatial Filtering – Mean Filters: Arithmetic Mean filter, Geometric Mean Filter, Order Statistic Filters – Median Filter, Max and Min filters; Periodic Noise Reduction by Frequency Domain Filtering – Band pass Filters; Minimum Mean-square Error Restoration.

UNIT-IV

Morphological Image Processing Introduction, Logic Operations involving Binary Images, Dilation and Erosion, Opening and Closing, Morphological Algorithms – Boundary Extraction, Region Filling, Extraction of Connected Components, Convex Hull, Thinning, Thickening

UNIT-V

Registration Introduction, Geometric Transformation – Plane to Plane transformation, Mapping, Stereo Imaging – Algorithms to Establish Correspondence, Algorithms to Recover Depth
Segmentation Introduction, Region Extraction, Pixel-Based Approach, Multi-level Thresholding, Local Thresholding, Region-based Approach, Edge and Line Detection: Edge Detection, Edge Operators, Pattern Fitting Approach

REFERENCES:

1.Digital Image Processing 2nd Edition, Rafael C. Gonzalvez and Richard E. Woods. Published by: Pearson Education.
2.Digital Image Processing and Computer Vision, R.J. Schalkoff. Published by: John Wiley and Sons, NY.
3.Fundamentals of Digital Image Processing, A.K. Jain. Published by Prentice Hall, Upper Saddle River, NJ.
4.Sonka,Digital Image Processing and Computer Vision, Cengage Learning
5.Gonzalez and Woods, Digital Image Processing, Addison Wesley

REAL TIME SYSTEM

UNIT-I

Introduction Definition, Typical Real Time Applications: Digital Control, High Level Controls, Signal Processing etc., Release Times, Deadlines, and Timing Constraints, Hard Real Time Systems and Soft Real Time Systems, Reference Models for Real Time Systems: Processors and Resources, Temporal Parameters of Real Time Workload, Periodic Task Model.

UNIT-II

Real Time Scheduling Common Approaches to Real Time Scheduling: Clock Driven Approach, Weighted Round Robin Approach, Priority Driven Approach, Dynamic Versus Static Systems, Optimality of Effective -Deadline-First (EDF) and Least-Slack-Time-First (LST) Algorithms, Rate Monotonic Algorithm, Offline Versus Online Scheduling Systems.

UNIT-III

Resources Sharing Effect of Resource Contention and Resource Access Control (RAC), Non -preemptive Critical Sections, Basic Priority-Inheritance and Priority-Ceiling Protocols, Stack Based Priority -Ceiling Protocol, Use of Priority-Ceiling Protocol in Dynamic Priority Systems, Preemption Ceiling Protocol, Access Control in Multiple-Unit Resources,

UNIT-IV

Real Time Communication Basic Concepts in Real time Communication, Soft and Hard RT Communication systems, Model of Real Time Communication, Priority-Based Service and Weighted Round-Robin Service Disciplines for Switched Networks, Medium Access Control Protocols for Broadcast Networks

UNIT-V

Real Time Operating Systems and Databases Features of RTOS, Time Services, UNIX as RTOS, POSIX Issues, Characteristic of Temporal data, Temporal Consistency, Concurrency Control, Overview of Commercial Real Time databases

REFERENCES:

1.Real Time Systems by Jane W. S. Liu, Pearson Education Publication.
2.Phillip A Laplanta, Seppo J. Ovaska Real time System Design and Analysis Tools for practitioner, Wiley
3.Mall Rajib, “Real Time Systems”, Pearson Education

EMBEDDED SYSTEMS

Unit-I

Introduction to embedded systems: Classification, Characteristics and requirements, Applications

Unit-II

Timing and clocks in Embedded systems, Task Modeling and management, Real time operating system issues.

Unit-III

Signals, frequency spectrum and sampling, digitization (ADC, DAC), Signal Conditioning Processing. Modeling and Characterization of Embedded Computation System.

Unit-IV

Embedded Control and Control Hierarchy, Communication strategies for embedded systems: Encoding and Flow control.

Unit-V

Fault-Tolerance, Formal Verification , Trends in Embedded Processor, OS, Development Language

References:

1.Prasad, Embedded /Real Time System, Concept, Design and Programming Black Book, Wiley India

2.R.Gupta, "Co-synthesis of Hardware and Software for Embedded Systems", Kluwer

3.Shibu K.V., "Introduction to Embedded Systems", TMH

4.Marwedel, "Embedded System Design", Springer