Final Year B. Tech Computer Science & Engineering (Revised syllabus)

ARTIFICIAL NEURAL NETWORKS

Period				Evaluation Scheme					Credit
				Sessional Exam					
L	T	P	Total	TA	CT	ESE	PR	Total	
4	--	2	6	25	25	80	50	180	5

E S E (End Semester Examination) duration: Three Hours

OBJECTIVES:

1. To study basics of biological Neural Network.
2. To study basics of artificial Neural Network
3. To study applications of ANN
4. To study different pattern recognition task using ANN.

A. THEORY:

Unit	Contents	Duration	Nature
1	**Introduction to ANN** Features , structure and working of Biological Neural Network . Trends in Computing Comparison of BNN and ANN	6 Hrs.	Theoretical/ Analytical
2	**Basics of Artificial Neural Networks -** History of neural network research, characteristics of neural networks terminology, models of neuron Mc Culloch – Pitts model, Perceptron, Adaline model, Basic learning laws, Topology of neural network architecture	8 Hrs	Theoretical/ Analytical
3	**Backpropagation networks** : (BPN) Architecture of feed forward network, single layer ANN, multilayer perceptron, back propagation learning, input - hidden and output layer computation, backpropagation algorithm, applications, selection of tuning parameters in BPN, Numbers of hidden nodes, learning.	8 Hrs.	Theoretical/ Analytical
4	**Activation & Synaptic Dynamics** : Introduction, Activation Dynamics models, synaptic Dynamics models, stability and convergence, recall in neural networks.	6 Hrs.	Theoretical/ Analytical
5	**Basic functional units of ANN for pattern recognition tasks**: Basic feedforward, Basic feed back and basic competitive learning neural network. Pattern association, pattern classification and pattern mapping tasks.	8 Hrs.	Theoretical/ Analytical
6	**a) Feedforward neural networks** – - Linear responsibility X-OR problem and solution. - Analysis of pattern mapping networks summary of basic gradient search methods. **b) Feed back neural networks** Pattern storage networks, stochastic networks and simulated annealing, Boltzmann machine and Boltzmann learning	8 Hrs	Theoretical/ Analytical

7	**Competitive learning neural networks :** Components of CL network pattern clustering and feature mapping network, ART networks, Features of ART models, character recognition using ART network**.**	8 Hrs.	Theoretical/ Analytical
8	**Applications of ANN :** Pattern classification – Recognition of Olympic games symbols, Recognition of printed Characters. Neocognitron – Recognition of handwritten characters. NET Talk: to convert English text to speech. Recognition of consonant vowel (CV) segments, texture classification and segmentation	8 Hrs.	Theoretical/ Analytical

SECTION A : Chap 1,2,3,4
SECTION B: Chap 5,6,7,8

TERM WORK:
Termwork shall consist of minimum of 10 programs / assignments to be developed based on the above syllabus .The assessment on the termwork shall be done on the following criteria:

1. Continuous assessment.
2. Performing the Experiment in the Lab.
3. Oral examination on the syllabus and the term work, mentioned above.

B. PRACTICAL EXAMINATION:
The practical examination shall consist of performing an experiment based on the practical work done during the course, the record of the experiments submitted by the candidate and viva-voce based on the syllabus.

C. SUGGESTED TEXT BOOKS AND REFERENCES

Sr. No.	Title	Author	Publication	Edition
1	Artificial neural Networks	B. Yegnanarayana	PHI	--
2	Neural networks, Fuzzy logic and Genetic Algorithms	S. Raj sekaran , Vijayalakshmi Pari	PHI	--
3	Neural Networks	Satish Kumar	--	--

D. DIGITAL REFERENCES

Sr. No.	Website / Links / e-journals
1	**www.learnartificialneuralnetworks.com**
2	**www.softcomputing.net**
3	**www.neural-forecasting.com**

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year (BTech) Computer Science and Engg. (Revised Course) Examination

November / December, May/June 20_

Artificial Neural Networks

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

DATA MINING AND DATA WAREHOUSING

Period				Evaluation Scheme					Credit
				Sessional Exam					
L	T	P	Total	TA	CT	ESE	PR	Total	
4	--	2	6	25	25	80	50	180	5
E S E (End Semester Examination) duration: Three Hours.									

OBJECTIVE:

1. To know the concepts of data mining methods in database mgmt skills
2. To familiarize with the fundamental concepts of Data warehousing and OLAP
3. To be able to efficiently design and manage data storages using data warehousing, OLAP, and data mining techniques,
4. To use the concepts in Text mining and web mining.

A. THEORY:

Unit	Contents	Duration	Nature
1	**Introduction to Data Mining** : Definition of data mining ,Data Mining functionalities, Classification of data mining systems , Data Mining Applications, Architectures of data mining systems, Data mining class comparison.	8 Hrs.	Theoretical
2	**Data Mining Algorithms**: Concept Description: Definition, Data Generalization and Summarization -Based Characterization, Mining Descriptive Statistical Measures in Large Databases. Mining Association Rules: Association Rule Mining, Market Basket Analysis, Association Rule classification, The Apriori Algorithm, Mining Multilevel Association Rules, Constraint-Based Association Mining, Sequential mining.	12 Hrs.	Theoretical / Analytical
3	**Classification and Prediction:** What is Classification and Prediction? Data Classification Process, Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification Based on Association Rule Mining, Other Classification Methods Cluster Analysis: What is Cluster Analysis? Types of Data in Cluster Analysis, Categorization of Clustering Methods, Partitioning methods.	10 Hrs.	Theoretical /Analytical
4	**Introduction to Data Warehousing:** Introduction to Decision Support System: DSS Definition, History of DSS, Ingredients of DSS, Data and Model Management, DSS Knowledge base, User Interfaces, The DSS Users, Categories and Classes of DSS's Need for data warehousing, Operational & informational data, Data Warehouse definition and characteristics, Operational Data Stores.	10 Hrs.	Theoretical / Analytical
5	**Data warehouse Components:** Architectural components, Data Preprocessing: Why	10 Hrs.	Theoretical / Analytical

	Preprocess Data? Data Cleaning Techniques, Data Integration and Transformation, Data Reduction Techniques, Discretization and Concept Hierarchy, Generation for numeric and categorical data, Significant role of metadata, Building a Data warehouse, Benefits of Data Warehousing.		
6	**OLAP in the Data Warehouse:** A Multidimensional Data Model, Schemas for Multidimensional Databases: Stars, Snowflakes, Star join and Fact Constellations Measures, Concept Hierarchies, OLAP Operations in the Multidimensional Data Model, Need for OLAP, OLAP tools , Mining Multimedia Databases, Mining Text Databases, Mining the World Wide Web.	10 Hrs**.**	Theoretical /Analytical

SECTION :A Chap 1,2,3
SECTION: B Chap 4, 5, 6.

TERM WORK:
Termwork shall consist of minimum of 10 programs/Assignments to be developed based on the above syllabus .The assessment on the termwork shall be done on the following criteria:
1. Continuous assessment.
2. Performing the Experiment in the Lab.
3. Oral examination on the syllabus and the term work, mentioned above.

B. PRACTICAL EXAMINATION:
The practical examination shall consist of performing an experiment based on the practical work done during the course, the record of the experiments submitted by the candidate and viva-voce based on the syllabus.

C. SUGGESTED TEXT BOOKS AND REFERENCES:

Sr. No.	Title	Author	Publication	Edition
1	Data Mining: Concepts and Techniques	Jiawei Han, Micheline Kamber,	Morgan Kaufmann, ISBN 1558609016, 2006	2nd edition
2	Data Warehousing Fundamentals	Paul Punnian	John Wiley Pub	--
3	Data Warehousing, Data Mining and OLAP	Alex Berson, S.J. Smith	Tata McGraw Hill	--
4	Data Mining: Concepts and Techniques	Margaret Dunham	Morgan Kaufmann Pub.	--
5	The Data Warehouse Lifecycle toolkit	Ralph Kimball	John Wiley	--

D. DIGITAL REFERENCES:

Sr. No.	Website / Links / e-journals
1	http//www.w3school.com
2	http//www.wikipedia.com

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year (B Tech) Computer Science and Engg (Revised Course) Examination

November / December, May/June 200_

Data Mining and Data Warehousing

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type. 2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type. 2. There should be intermixing in the questions.

DIGITAL IMAGE PROCESSING

Period				Evaluation Scheme					Credit
				Sessional Exam					
L	T	P	Total	TA	CT	ESE	PR	Total	
4	--	2	6	25	25	80	50	180	5

E S E (End Semester Examination) duration: Three Hours

OBJECTIVES:

1. To train the students for Image processing fundamentals.
2. To train the students for processing using related software
3. To train the students for color image processing

A. THEORY:

Unit	Contents	Duration	Nature
1	**Fundamentals of Image Processing**: Image Acquisition, Image Model, Sampling, Quantization, and Relationship between pixels and distance measurement, connectivity, Image Geometry, Photographic film. Histogram: Definition, Decision of Contrast biasing on histogram, Operations basing on histograms like image stretching, Image classification. Definition and Algorithm of Histogram equalization Image Transforms: A brief discussion on following transforms: Fourier Transform, DFT, FFT, DCT.	12 Hrs.	Theoretical/ Analytical
2	**Enhancement (by Spatial Domain Methods**): Arithmetic and Analytical operations, pixel or point operations, size operations) Smoothing filters – Mean, Median, Mode filters. Low pass filters, high pass filters, sharpening filters. Image Enhancement: (by Frequency Domain Method) : Design of Low Pass, High Pass, Edge enhancement, Sharpening filters in frequency domain. Buffer Worth Filter, Homomorphic filters in frequency domain and spatial domain.	12 Hrs.	Theoretical/ Analytical
3	**Compression:** Fundamentals: Coding redundancy, interpixel redundancy, psychovisual redundancy, Fidelity criterion: MSE, PSNR, Compression ratio, Lossless compression: Variable length coding, LZW coding, Lossy compression: transform coding, wavelet coding, Image Compression standards, File formats: bmp format, Graphics Interchange format, Tagged Image File Format.	12 Hrs.	Theoretical/ Analytical
4	**Image Segmentation:** Definition, Characteristics of segmentation, Detection of Discontinuities, Thresholding , Pixel based segmentation method, Region based segmentation methods – segmentation by pixel aggregation, segmentation by sub region aggregation, and histogram based segmentation, split and merge technique, Watershed segmentation, Use of motion in segmentation (spatial domain	12 Hrs.	Theoretical/ Analytical

	technique only).		
5	**MorphoAnalytical Image Processing:** Dilation and erosion, Opening and closing, The Hit or Miss transformation, Basic MorphoAnalytical algorithms: Boundary extraction, region filling, Applications of Gray-scale morphology. **Color Image Processing:** Color fundamentals, color models (RGB, CMY, HIS), Color transformations: formulation, color complements, color slicing, tone and color corrections.	12 Hrs.	Theoretical/ Analytical

SECTION :A Unit 1,2,3
SECTION: B Unit 3,4, 5.

TERM WORK:
Termwork shall consist of minimum of 10 programs/Assignments to be developed based on the above syllabus .The assessment on the termwork shall be done on the following criteria:
1. Continuous assessment.
2. Performing the Experiment in the Lab.
3. Oral examination on the syllabus and the term work, mentioned above.

B. PRACTICAL EXAMINATION:
The practical examination shall consist of performing an experiment based on the practical work done during the course, the record of the experiments submitted by the candidate and viva-voce based on the syllabus.

C. SUGGESTED TEXT BOOKS AND REFERENCES:

Sr. No.	Title	Author	Publication	Edition
1	Digital Image Processing	Rafael C Gonzalez, Richard E Woods	Pearson Education	--
2	Digital Image Processing using MATLAB	Rafael C Gonzalez, Richard E Woods, Eddins,	Pearson Education	--
3	Fundamentals of Digital Image Processing	Anil K Jain	PHI	--
4	Digital Image Processing and Analysis	B Chanda & D Dutta Majumder,	PHI	--

D. DIGITAL REFERENCES:

Sr. No.	Website / Links / e-journals
1	www.embedded.com
2	www.edcomp.com
3	www.lynuxworks.com

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year (B Tech) Computer Science and Engg (Revised Course) Examination

November / December, May/June 200_

Digital Image Processing

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.

2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1.The questions will be memory based, application based and understanding type.

2. There should be intermixing in the questions.

SOFTWARE TESTING AND QUALITY ASSURANCE

Period				Evaluation Scheme					Credit
				Sessional Exam					
L	T	P	Total	TA	CT	ESE	PR	Total	
4	--	2	6	25	25	80	50	180	5

E S E (End Semester Examination) duration: Three Hours

OBJECTIVES:

1. To understand the impact of software bugs and importance of software testing.
2. To develop the skills necessary to find bugs in any types of software.
3. To discover how to improve your testing efficiency by automated tools.

A. THEORY:

Unit	Contents	Duration	Nature
1	**Software Testing Background :** Infamous software error case studies: Disney's Lion king, Intel bug, The Y2K Bug. What is a bug?, Software bug, Why do bugs occur?, The cost of bugs, What exactly does a software tester do?, What makes a good software tester?	8 Hrs.	Theoretical
2	**The Software Development Process:** Product components, software project staff, and software development lifecycle models: Big bang model, Code and fix model, Waterfall model, spiral model.	8 Hrs.	Theoretical / Analytical
3	**The Realities Of Software Testing:** Testing Axioms: Risk based exercise, The Pesticide paradox, Product specifications are never fail, Software Testing Terms and definitions: Precision and accuracy, Verification and validation, Quality and reliability, Testing and quality assurance.	8 Hrs.	Theoretical
4	**Testing Tactics:** Software testing fundamentals, Black box and white box testing, Basis path testing: Flow graph notation, Independent program paths, Deriving test cases, Graph matrices, Control structure testing: Condition, Data flow, Loop testing. Black box testing: Graph based testing methods, Equivalence Partitioning, Boundary value analysis.	12 Hrs.	Theoretical Analytical
5	**Automated Testing And Test Tools:** The benefits of automation and tools, Test tools: Viewers and monitors, Drivers, Stubs, Stress and load tools, Analysis tools. Software test automation: Macro recording and playback, Programmed macros, Fully programmable automated testing tools. Random Testing: Dumb Monkeys, Semi-smart monkeys, smart monkeys, Realities of using test tools and automation.	12 Hrs.	Theoretical / Analytical
6	**Software Quality Assurance and Quality**	12 Hrs.	Theoretical

	management: Quality is free, Quality concepts, Testing and quality assurance in the workplace, Software testing, Software reviews, Formal technical reviews, Software quality assurance, SQA activities, Test management and organizational structures, Capability Maturity model(CMM), ISO 9000 quality standards, The SQA plan		

SECTION A - Chap 1,2,3,4
SECTION B - Chap 4, 5,6

TERM WORK:
Termwork shall consist of minimum of 10 programs/Assignments to be developed based on the above syllabus .The assessment on the termwork shall be done on the following criteria:
1. Continuous assessment.
2. Performing the Experiment in the Lab.
3. Oral examination on the syllabus and the term work, mentioned above.

B. PRACTICAL EXAMINATION:
The practical examination shall consist of performing an experiment based on the practical work done during the course, the record of the experiments submitted by the candidate and viva-voce based on the syllabus.

C. SUGGESTED TEXT BOOKS AND REFERENCES:

Sr. No.	Title	Author	Publication	Edition
1	Software Testing	Ron Patton	SAMS	--
2	Software Engineering	Roger Pressman	Mc-Graw Hill	--

D. DIGITAL REFERENCES:

Sr. No.	Website / Links / e-journals
1	http//www.w3school.com
2	http//www.wikipedia.com
3	http//www.autoitv3.com
4	http//www.selenium.com

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year (B Tech) Computer Science and Engg. (Revised Course) Examination

November / December, May/June 200_

Software Testing and Quality Assurance

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understandin g type.

2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.

2. There should be intermixing in the questions.

Final Year B. Tech Computer Science & Engineering (Revised syllabus)
ELECTIVE-III (DISTRIBUTED COMPUTING)

Periods				Evaluation Scheme					credit
				Sessional Exam					
L	T	P	Total	TA	CT	ESE	PR	Total	
4	--	2	6	25	25	80	--	130	5
E S E (End Semester Examination) duration: Three Hours									

OBJECTIVES:

1. To introduce the principles of distributed computing.
2. To concentrate on the upper-layers of net-centric computing, focusing on computing abstractions and paradigms
3. To illustrate the actualization of concepts using Java programming.

A. THEORY:

Unit	Contents	Duration	Nature
1	**Introduction:** What is distributed computing? Basic network concepts, Basic operating system concepts, The Internet, Network resources and their identification , Security, Fault Tolerance.	6 Hrs.	Theoretical
2	**Interprocess Communication:** Basic model, Primitives (operations): connect, send, receive, disconnect. Connection oriented /Connectionless , Data marshalling , data flattening, data representation, serialization, Event synchronization, Event diagram, sequence diagram.	6 Hrs.	Theoretical / Analytical
3	**Distributed Computing Paradigms:** Evolution and overview of paradigms.	3 Hrs.	Theoretical
4	**The Socket API :** The basic model ,Stream-mode (connection-oriented) socket, Datagram socket (connectionless) socket , Java socket API , Using socket to implement a client ,Using socket to implement a server, A simple middleware using sockets, Secure sockets and the Java secure socket extension API.	8 Hrs.	Theoretical / Analytical
5	**The Client-server Paradigm:** The daytime protocol and a sample client-server suite, The echo protocol and a sample client-server suite, Connection-oriented client server, Connectionless client-server, Iterative server and concurrent server, Stateful server and stateless server.	6 Hrs.	Theoretical / Analytical
6	**Group Communications:** Unicast versus multicast, Basic model of group communications, The Java multicast API, Sample multicast sender program, Sample multicast listener program, Multicast and message ordering, Reliable multicast / broadcast.	5 Hrs.	Theoretical / Analytical
7	**Distributed objects:** Message passing versus distributed objects, The basic model, Remote procedure call , Remote method invocation: basic architecture, object registry, remote interface, interface implementation, server implementation, client implementation, algorithm for developing client-side and server-side software.	8 Hrs.	Theoretical / Analytical

8	**Advanced Remote Method Invocations** (RMI): RMI stub downloading, □security policy, □Callback.	2 Hrs.	Theoretical
9	**Internet applications:**□□ Basic components and protocols: HTTP, HTML, MIME, web server, browser, web forms. Web document types: static, dynamic, executable, active , CGI: background , interaction and passing of data among browser, web server, and scripts(s) , □□HTTP Session state information: hidden tags, cookies, session objects , Client-side programming: Applets, Java Script , Server-side programming: common gateway Interface (CGI), servlets , server pages.	6 Hrs.	Theoretical / Analytical
10	**The Common Object Request Broker Architecture**: (CORBA): Basic architecture, Object Servers and Object Clients, Object References, Naming services, Object services, Object adapters, Java IDL.	6 Hrs.	Theoretical / Analytical
11	**Advanced Distributed Computing Paradigms:** Message queue system, Mobile agents, Network services, Object spaces.	4 Hrs.	Theoretical

SECTION :A Unit 1,2,3,4,5
SECTION :B Unit 6,7,8,9,10,11

TERM WORK:
Termwork shall consist of minimum of 10 programs/Assignments to be developed based on the above syllabus .The assessment on the termwork shall be done on the following criteria:
1. Continuous assessment.
2. Performing the Experiment in the Lab.
3. Oral examination on the syllabus and the term work, mentioned above.

C. SUGGESTED TEXT BOOKS AND REFERENCES:

Sr. No.	Title	Author	Publication	Edition
1	Distributed Computing – Concepts and Applications	M. L. Liu	Addison Wesley	--
2	Distributed Systems – Principles and Paradigms	Andrew S Tanenbaum , Maarten van Steen	Pearson Education	2002
3	Distributed Systems	Sape Mullender	Addison Wesley	2nd ,1993
4	Distributed Systems Concepts and Design	George Coulouris, Jean Dollimore and Tim Kindberg	Pearson Education	3rd Edition, 2002.
5	Advanced Concepts in Operating Systems	Mugesh Singhal, Niran Jain G Shivaratri	Tata McGraw Hill	Edition 2001

D. DIGITAL REFERENCES

Sr. No.	Website / Links / e-journals
1	http://www.csc.calpoly.edu/~mliu/book
2	http://www.cs.vu.nl/~ast/books/ds1

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year (B Tech) Computer Science and Engg (Revised Course) Examination

November / December, May/June 200_

Elective-III (Distributed Computing)

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.

2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.

2. There should be intermixing in the questions.

Final Year B. Tech Computer Science & Engineering (Revised syllabus)

ELECTIVE-III (CYBER SECURITY)

Period				Evaluation Scheme					Credit
				Sessional Exam					
L	T	P	Total	TA	CT	ESE	PR	Total	
4	--	2	6	25	25	80	--	130	5

E S E (End Semester Examination) duration: Three Hours

OBJECTIVES:

1. To know the concepts of Cyber security and create awareness about this field in the society.

2. To familiarize with the fundamental concepts Cyber security and Hacking

3. To understand the concept of Forensic science, Ethical Hacking, Mobile hacking and Cryptography.

A. THEORY:

Unit	Contents	Duration	Nature
1	**Introduction to Cyber Security:** Concept of cyber security, Application of cyber security, Introduction to cyber laws, Difference between Hacker and Cracker, Cryptography, Cryptology, Cryptanalysis, Application of Cryptography, tools for Cryptography.	10 Hrs	Theoretical / Analytical
2	**Cryptography Services:** User Authentication, Data authentication, data integrity, Data origin authentication, Data confidentiality, types of cipher.	10 Hrs	Theoretical/ Analytical
3	**Public key cryptography:** Introduction to public key cryptography, Technical details of public key cryptography, Principles of Encryption, public key techniques, message security, types of encryption.	10 Hrs	Theoretical/ Analytical
4	**History of Forensic Science in computer:** Definition of Forensic science , various areas of Forensics , Recognition and examples of major event and individuals that contributed to the development of forensics , the role and responsibilities of a forensic scientist, characteristics of a good forensic scientist , basic types of law.	10 Hrs	Theoretical/ Analytical
5	**Types of Evidence:** Types of Evidence, Indirect and Direct evidence, Physical evidence, individual evidence, class evidence.	10 Hrs	Theoretical/ Analytical
6	**Ethical Hacking:** Introduction to Ethical Hacking, Codes of ethics - solving ethical conflicts, moral reasoning and ethical theories – responsibilities and rights. Computer ethics: ethics and the internet – hacking – netiquette – privacy, Types of Hacking: 1) Email Hacking 2) O. S. Hacking 3) Mobile Hacking.	10 Hrs	Theoretical/ Analytical

SECTION :A Chap 1,2,3

SECTION: B Chap 4, 5,6

TERM WORK:

Termwork shall consist of minimum of 10 programs/Assignments to be developed based on the above syllabus .The assessment on the termwork shall be done on the following criteria:

1. Continuous assessment.
2. Performing the Experiment in the Lab.
3. Oral examination on the syllabus and the term work, mentioned above.

C. SUGGESTED TEXT BOOKS AND REFERENCES:

Sr. No.	Title	Author	Publication	Edition
1	Computer Ethics	Deborah G Johnson	Pearson Education Pub., ISBN: 81-7758-593-2.	--
2	Cyber security Operations Handbook	Earnest A. Kallman, J.P Grillo	Elsevier Pub	--
3	Cryptology	Albrecht Beutelspacher	Mathematical Association of America	--
4	Criminalistics , an Introduction to Forensic Science	Saferstein	Pearson/ Prentice Hall	--

D. DIGITAL REFERENCES:

Sr. No.	Website / Links / e-journals
1	http://www.us-cert.gov/cas/tips/
2	http://rahulhackingarticles.wetpaint.com/
3	http://library.thinkquest.org/04oct/00206/lo_sites.htm
4	http://www.hackingalert.com/hacking-articles/cellphone-hacking.php
5	http://williamstallings.com/Crypto3e.html

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year (B Tech) Computer Science and Engg (Revised Course) Examination

November / December, May/June 200_

Elective-III (Cyber Security)

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.

2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.

2. There should be intermixing in the questions.

Final Year B. Tech Computer Science & Engineering (Revised syllabus)

ELECTIVE-III (INTRODUCTION TO MAINFRAME SYSTEMS)

Periods				Evaluation Scheme					credit
				Sessional Exam					
L	**T**	**P**	**Total**	**TA**	**CT**	**ESE**	**PR**	**Total**	
4	--	2	6	25	25	80	--	130	5
E S E (End Semester Examination) duration: Three Hours.									

OBJECTIVE:

1) To know basics of Mainframe Systems.
2) To learn various applications of COBOL and DB2.

A THEORY:

Unit	Contents	Duration	Nature
1	**Evolution of Mainframe hardware** Overview of Computer Architecture -Classification of Computers - micro, mini, mainframes and super computer - Mainframe computer - key features - benefits - Evolution of Mainframes - Different hardware systems	6 Hrs.	Theoretical
2	**Unit II: Mainframes OS and Terminology** Operating systems on mainframes, Batch processing vs. online processing - mainframe operating system. - evolution - concepts of Address space, Buffer management - Virtual storage - paging - swapping - Dataset management in mainframes	8 Hrs.	Theoretical
3	**z/OS and its features** Z-operating system (Z/OS) - Virtual storage - Paging process - storage Managers - Program execution modes - Address space - Multiple virtual system(MVS) , MVS address space, Z/OS address space - Dataset - sequential and partial dataset - Direct access storage device(DASD) -Access methods - Record formats - Introduction to virtual storage access methods(VSAM) - Catalog - VTOC	8 Hrs.	Theoretical/ Analytical
4	**Overview of JCL** Introduction to Job Control language - Job processing - structure of JCL statements - Various statements in JCL - JOB statement - EXEC statement - DD statement - JCL procedures and IBM utility programs.	10 Hrs.	Theoretical
5	**Overview of DB2** Introduction to DB2 – System Service component, Database Service component, Locking Service component, Distributed Data Facility Services component, Stored Procedure component, catalogs and optimizer DB2 Objects and Data Types - DB2 Objects Hierarchy, Storage groups, Database, Table space, Table, Index, Clustered index, Synonyms and aliases, Views, Data Types. DB2 SQL programming – Types of SQL statements, DCL,	8 Hrs.	Theoretical/ Analytical

	DDL, DML, SPUFI utility. Embedded SQL programming – Host variable, DECLGEN utility, SQLCA, single/multiple row manipulation, cursors, scrollable cursors.		
6	**COBOL Programming 1** Introduction – History, evolution and Features, COBOL program Structure, steps in executing COBOL Language Fundamentals – Divisions, sections, paragraphs, sections, sentences and statements, character set, literals, words, figurative constants, rules for forming user defined words, COBOL coding sheet. Data division – Data names, level numbers, PIC and VALUE clause, REDEIFNES, RENAMES and USAGE clause . Procedure Division – Input / Output verbs, INITIALIZE verb, data movement verbs, arithmetic verbs, sequence control verbs.	7 Hrs	Theoretical/ Analytical
7	**COBOL Programming 2** File processing – Field, physical / logical records, file, file organization (sequential, indexed and relative) and access mode, FILE-CONTROL paragraph, FILE SECTION, file operations. File handling verbs – OPEN, READ, WRITE, REWRITE, CLOSE. Table processing – Definition, declaration, accessing elements, subscript and index, SET statement, SEARCH verb, SEARCH ALL verb, comparison. Miscellaneous verbs – COPY, CALL, SORT, MERGE, STRING, UNSTRING verbs.	7 Hrs.	Theoretical/ Analytical
8	**Mainframe Application Development guidelines** COBOL coding standards, relation between a COBOL file handling program and JCL, Different types of ABEND codes, COBOL-DB2 program pre-compilation, DBRM (Database Request Module), Application plan/packages, program execution methods (EDIT JCL, foreground and background modes).	6 Hrs.	Theoretical/ Analytical

SECTION A : Unit 1,2,3,4
SECTION B : Unit 5,6,7,8

TERM WORK:
Termwork shall consist of minimum of 10 programs/assignments to be developed based on the above syllabus .The assessment on the termwork shall be done on the following criteria:
1. Continuous assessment.
2. Performing the Experiment in the Lab.
3. Oral examination (conducted internally) on the syllabus and the term work, mentioned above.

PRACTICAL LIST:
Following areas of Programming using COBOL should be covered in Term work section of this course. The Practical Exam will be based on the Scope and Coverage mentioned below.

1. Demonstration of basic skills of Cobol Programming.
2. Structured Program development using COBOL for handling iterations and formatting.
3. Arithmetic Operations, Dates handling and String operations using COBOL
4.Structured COBOL Programming for table handling, including ,
5.Single and Multilevel tables
6. Indexed tables
7. COBOL program development using COPY and sub-programming.
8 .Basic File Handling using COBOL for.
9 . Sequential Files
10 Indexed files
11.Relative Files
12.Sorting and merging files using COBOL.
13 .Report Generation using Files.

C. SUGGESTED TEXT BOOKS AND REFERENCES:

Sr. No.	Title	Author	Publication	Edition
1	Gary DeWard Brown, JCL Programming Bible (with z/OS)	MVS JCL, Doug Lowe, Mike Murach and Associates	Wiley India Dream Tech, 2002.	fifth edition
2	COBOL - Language Reference	--	IBM Redbook	Release 2,Ver 3
3	COBOL - Programming Guide	--	IBM Redbook	Ver 3, Release 2
4	"Structured Cobol Programming"	Nancy Stern & Robert A Stern	John Wiley & Sons, New York, 1973.	--
5	"Cobol Programming"	M.K. Roy and D. Ghosh Dastidar	Tata McGraw Hill, New York, 1973.	--
6	Newcomer and Lawrence, Programming with Structured COBOL	--	McGraw Hill Books, New York, 1973	--
7	IBM Manual: DB2 Application Programming and SQL guide.	--	--	--

D. DIGITAL REFERENCES:

Sr. No.	Website / Links / e-journals
1	http://www-1.ibm.com/support/docview.wss?uid=pub1sa22759706
2	http://publibz.boulder.ibm.com/cgibin/bookmgr_OS390/BOOKS/iea2b600/CCONTENTS
3	http://publib.boulder.ibm.com/infocenter/db2v7luw/index.jsp

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year (B Tech) Computer Science and Engg (Revised Course) Examination

November / December, May/June 200_

Elective-III (Introduction to Mainframe Systems)

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.

2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

Final Year B. Tech Computer Science & Engineering (Revised syllabus)

PROJECT

Periods				Evaluation Scheme					Credit
				Sessional Exam		ESE		Total	
L	T	P	Total	TA	CT	TH	PR		2
-----	-----	04	04	50	-----	-----	100	150	

OBJECTIVE:

The practical implementation of theoretical knowledge gained during your study to till date is important for Engineering Education. The student should be able implement their ideas/real time industrial problem/ current application of their engineering branch which they have studied in curriculum. This will definitely help in building the confidence in the student what he has learnt theoretically. The dependent study of the state of the art topics in a broad area of his/her specialization.

GUIDELINES FOR STUDENTS AND FACULTY:

1. Students have to finalize their project title based on Industrial Assignments.
2. The projects selected should be such so as to ensure the satisfaction of the urgent need to establish a direct link between education, national development and productivity and thus reduce the gap between the world of work and the world of study. The term work will consist of a report prepared by the student on the project allotted to them.
3. Project topics may be chosen by the student or group of students (maximum 3 students) with advice from the faculty members.
4. To design a project at adequate scale level for the following applications- It may be based (i) Entirely on study and analysis of a typical Instrumentation and Control System, (ii) Experimental verification, or (iii) Design, fabrication, testing and calibration of an Instrumentation system. The software based project can be considered based on its application for instrumentation and control purpose. The students are required to submit the report based on project work done.
5. Use appropriate tools for the preparation of the report.
6. Each student/group is required to-
   a. Submit a one page synopsis before the project talk for display on the notice board in the first week of their academic semester.
   b. Give a 10 minutes presentation through OHP, PC, and Slide projector followed by a 10 minute discussion in the second week of their academic semester.
   c. Submit a report on the project topic with a list of required hardware, software or other equipment for executing the project in the third week of their academic semester.
   d. Start working on the project and submit initial development and CPM/PERT planning drawing in the fourth week of their academic semester.
   e. Preparation of PCB layout, wiring diagram, purchase of components, software demo, flowchart, algorithm, program/code, assembling, testing, etc. should be submitted by

student/s within next five/Six weeks and minimum one page report should be there for each major activity.

f. Overall assembling, wiring, code writing, testing, commissioning, should completed within next two weeks.
g. At the last but one week of end of academic semester the internal assessment of project will be done by panel of internal faculties and they will decide marks out 25 marks for term work (TA).
h. In the last week, student/group will submit final project report to guide and thereafter guide will finalize marks out of the remaining 25 marks for term work (TA).

7. Projects are to be scheduled in the weekly scheduled time-table during the semester and any change in schedule should be discouraged.
8. Every assigned faculty/s should maintain separate file for evaluating progress of each student or group.
9. Award 50 TA, Sessional marks based on the assessment done by internal guide and panel during semester and the involvement of student/group in the work assigned related to the topic and its application.

10. The format and other guidelines for the purpose of the Project Submission in hard bound copies should be as follows,

REPORT STRUCTURE

Index/Contents/Intent
List of Abbreviations
List of Figures
List of Graphs
List of Tables
and List of if any other inclusion
1. Introduction
2. Literature survey
3. System development
4. Performance analysis
5. Conclusions
References
Appendices
Acknowledgement

1. INTRODUCTION
1.1 Introduction
1.2 Necessity
1.3 Objectives
1.4 Theme
1.5 Organization
2. LITERATURE SURVEY
Literature Survey
Related information available in standard Books, Journals, Transactions, Internet Websites *etc.* till date (More emphasis on last three to five years)
3. SYSTEM DEVELOPMENT
Model Development

- Analytical
- Computational
- Experimental
- Mathematical
- Statistical

(out of above methods at least one method is to be used for the model development) Some mathematical treatment or related information is required to be embodied

4. PERFORMANCE ANALYSIS

- Analysis of system developed either by at least two methods depending upon depth of standard
- These methods normally used are Analytical /Computational/Statistical/Experimental/ or Mathematical
- Results at various stages may be compared with various inputs
- Output at various stages with same waveforms or signals or related information/parameters
- Comparison of above results by at least two methods and justification for the differences or error in with theory or earlier published results

5. CONCLUSIONS

5.1 Conclusions

5.2 Future Scope

5.3 Applications

Contributions (if any,)

The innovative work/invention/new ideas generated from the analysis of the work which can be taken from the conclusions

REFERENCES

- Author, "Title", Name of Journal/Transactions/ Book, Edition/Volume, Publisher, Year of Publication, page to page (pp.__).

These references must be reflected in text at appropriate places in square bracket

In case of web pages complete web page address with assessing date has to be enlisted

List of references should be as per use in the text of the report

APPENDICES

Related data or specifications or referred charts, details computer code/program, *etc*.

(1 Page)

Expression of gratitude and thankfulness for helping in completion of the said task with name

Signed by the candidate

- General Guidelines

  Text should be printed on front and correct side of the watermark on quality bond paper

  Paper size- A4, 75 to 85 gsm paper

  Left Margin-1.5"

  Right Margin-3/4"

  Top Margin-1"

  Bottom Margin-1"

- First page of first chapter need not be printed anywhere ,second page onwards at right hand corner at ½ inch from right and top side from second chapter onwards starting page number of chapter should be printed at bottom center place report total pages –around.
  All Greek words must be italic

  Report Heading -All Capital—16 Font
  Chapter heading -All Capital—14 Font
  Subchapter –title case-12 Font
  Sub-Subchapter –First Alphabet Capital case-12 Font
  Page numbers for Index/Contents/Intent should be in roman
  Title of the Report should not be more than two lines
  Text pages should be in times new roman
  The page of the Index/Contents/Intent heading should be below the words for appropriate sub chapter or sub-sub chapter as shown in sample copy
  Cover page should have (Mission statement of Institute) in inverted commas, Symbol of Institute, Name of Department, and Institute

  Suitable flap with name of the candidate, Department and Institute name and symbol can be used with nylon strip.

  For more information and sample of hard copy please contact the respective Head of the Department

Final Year B. Tech Computer Science & Engineering (Revised syllabus)

Semester VIII

INPLANT TRAINING

(a)	**Rationale:** The techniques and processes of production of goods and services do not demand only technical skills, but also a cluster or conglomerate of skills. A significant part of which is related to the total humanistic growth of the man. Such conglomerate skills technical and humanistic can not obviously be acquired through pure academic learning of concepts in formalized and institutional courses and in isolation of the actual work situation. It, therefore, naturally follows that no technical education will be complete till it has two components, one learning of concepts vis-a vis acquiring conceptual skill and other application of the concepts in real work situation vis-a vis acquiring manipulative or practicing skills. Technical education needs to have a complement of learning of the techniques of applying the concepts within the industry and business.
(b)	**Objective:** 1) The students of B.Tech course shall get an opportunity to work on live problems of the industry. 2) He/She shall apply his leaving concepts in the real work situation. 3) He/She shall get an exposure to the industrial environment and thereby enable himself/herself to appreciate the other related aspects of industry vis, human, economic, commercial and regulatory. 4) He/She shall identify career paths taking into account their individual strengths and aptitude. 5) He/She shall contribute for the achievement of economic goals and aspirations of the industry and our country as a whole.
	The curriculum for B.Tech students of final Year Course of Part-II shall consist of; 1) In plant training for a period of one full term, and the period of the term shall be as prescribed by the university from time to time. 2) A project on live problems of the industry shall be undertaken by the student/group of students undergoing atraining in the same establishment. 3) The term work shall consist of the in plant training record-daily diary, work diary, progress report, a record containing the literature survey in the field of appropriate branch of Engineering, a preliminary report related to project work etc. 4) Seminars will be arranged after successful completion of period specified in the scheme of semester VIII of B.Tech. The date and times will be decided according to the convenience of guide and student.
	General Provisions, Rules And Regulation Of In-Plant Training **1. Definition** • In-plant training means a course of training in any industry or establishment undergone in pursuance of memorandum of understanding between industry and institute and under the prescribed terms and conditions of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. • Institution means an academic Institution of higher learning associated and admitted under the privileges of university, I.e. Maharashtra Institute of Technology, affiliated to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. • Industry means any industry or business in which any trade, occupation or subject

	field in engineering or technology may be specified as a designated trade. • Establishment includes any place where any industry is carried on. • University means any of the universities mentioned in the schedule of Maharashtra University Act, 1994 i.e. Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. • Collaboration means collaborative academic activity of the Institute with industry. • Student means a B Tech Course student.
	2. Memorandum of understanding: Maharashtra Institute of Technology, Aurangabad will enter into an agreement with the industry through 'Memorandum of Understanding' for creating facilities of in-plant training in the appropriate branch of Engineering according to the Course Curriculum and keep this agreement for a period of 10 years to foster a healthy industry- institute interaction for mutual benefits of both.
	3. Admission to in-plant training: No student will be deputed for in-plant training unless he produces testimonial of having kept one term for the subject under B Tech Semester –VIII of final year course satisfactorily in Maharashtra Institute of Technology after passing the TY B Tech Examination (in the appropriate branch).
	4. Period of in-plant training: The period of in-plant training will be the period of one term for the subject under B Tech course semester-VIII, which will be notified by Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
	5. Contract of In-plant Training : • The student of Maharashtra Institute of Technology shall enter into a contract of in-plant training with the employing industry. • The in-plant training shall be deemed to have commenced on the date, on which the contract of in-plant training has been entered into. • Every contract of in-plant training will contain the Terms and Conditions to be agreed by both the parties. • Every contract of in-plant training shall be registered with the Maharashtra Institute of Technology within 15 days from entering into the contract.
	6. Violation of contract: Where an employer, with whom a contract for in-plant training has been entered into, is for any reason, unable to fulfill his obligation under the contract, the contract end with the consent of Maharashtra Institute of Technology. It is agreed between the employer, the student and any other employer that the student shall be engaged as an "in-plant trainee" under the other employer till the expiry period of the in-plant training. The agreement on registration with Maharashtra Institute of Technology shall be deemed to be the contract of in-plant training between the student and other employer, and from the date of such registration, the contract of in-plant training with the first employer shall terminate and no

	obligation under that contract shall be enforceable at the instance of any party to contract against the other party thereto.
	7. Termination of Contract: The contract of in-plant training shall terminate on the expiry of the period of in-plant training. Either party to the contract of in-plant training make an application to Maharashtra Institute of Technology, Aurangabad for the termination of the contract. After considering the content of the application, and objection, Maharashtra Institute of Technology by order in writing, will terminate the contract, if it is satisfied that the parties to the contract have/has failed to carry out the Terms and Conditions of the contract. Provided that where a contract is terminated- • For the failure on the part of the Employer, Maharashtra Institute of Technology will depute students to another Employer for providing facilities of in-plant training to the remaining period of training. • For the failure on the part of the student, the student will not be allowed to continue his/her in-plant training in that term. The student shall be deputed for in-plant training in the next coming term.
	8. Expectation from the Employer/Industry: The following expectations are derived for effective in-plant training. • To provide legitimate facilities for the training and learning of all the processes. • To guide the student for understanding a project of immense importance to industry and to help him/her for his/her career advancement.
	9. Obligation of Students: • To learn his/her subject field in Engineering or Technology conscientiously and diligently at his place of training. • To carry out all orders of his Employer and the Superior in the establishment. • To abide by the Rules and Regulations of the Industry/Establishment in all matters of conduct and discipline. • To carry out the obligation under the contract of in-plant training. • The student shall maintain a report of his work during the period of his in-plant training in a proforma Annexure. • Except in case of extreme urgency, the B.Tech student shall submit an application for all other leaves except the medical leave to the Manager/Gen. Manager (Personnel) of the concerned industry, where he is undergoing an in-plant training and obtain sanction before the leave is taken. In case of Medical Leave, he shall submit an application to Maharashtra Institute of Technology, Aurangabad. The shortage in attendance will be subjected to extending the period of in-plant training in which case, the student may not be allowed to appear for the test, project seminar and assessment of term work etc. which will be held immediately after successful completion of the in-plant training.

	10. Maintenance of Record: Every student of B.Tech course shall maintain a daily record of the work done by him/her relating to the in-plant training in the proforma (Annexure).
	11. Industry Sponsored Student Projects: The scheme envisages working out suitable programme for B.Tech students. They are required to complete their in-plant training in a given period. During this period, they shall be familiar with the understanding of the shop process and activities. The students can be asked to solve the mini-shop problem, which will make them think and try out short experiments as an improvement in the process, tools and equipment. The student here is not expected to acquire the skills in operating machines values. He should appreciate the application of theory learnt. The students in a group alone can undertake a project of immense importance for the benefit of the industry and also useful for the students for their advancementof career. Industry staff and Maharashtra Institute of Technology facultycan plan in advance to effectively complete the practical training with the project for preliminary studies on the floor. The projects should aim mainly- • Cost reduction • Reducing cycle time • Enhancing productivity • Energy conservation measures • Process Improvement technique • Inventory control • Quality control Technique • Improvement in Material handling system • Bottlenecks in material flow system and so on.
	12. What will form a good project? Through the project, it is hoped to provide the students an exciting experience in solving line problems under practical constraints. Hence it is desired that the project should be a well defined problem, which can be completed and implemented within the project period. It may be a problem, evolving analysis, design, fabrication and/or testing.
	13. Time Schedule for the Project: The following time schedule should be planned by each student or groups of students, who undertake the project. • Proposal to be received before specifies date. • Project acceptance before. • Commencement of the project. • Completion of the project.

	14. Commitment on the part of the Institute: • Providing a faculty member to supervise the project. • Providing the Institute facilities to complete the project. • Coordinator from industry will be invited to participate in the stage wise assessment of the students performance.
	15. Assistance for completion of the Project: All the projects undertaken by the students are time bound. Although, every attempt results may not be achieved within the period available for the student. In such cases, the services of the associated faculty members can be sought for the completion of the same on mutually agreed terms.
	16. Monitoring of In-Plant Training: The B.Tech students are expected to follow all the rules and discipline of the industry. However, because of other academic requirements and the nature of the project, the student may have to work in other places outside the industry. The faculty and Industry supervisor will work out a suitable arrangement to review the progress of the work from time to time. Maharashtra Institute of Technology, Aurangabad will monitor the progress of in-plant training in association with industry authority.
	17. Conduct and Discipline: In all matters of the conduct and discipline, B.Tech student shall be governed by the rules and regulations (applicable to employees of the corresponding category) in the Establishment, where he/she is undergoing a training.
	18. B.Tech Students are Trainees and not Workers: • Every B.Tech student undergoing an in-plant training in the respective branch of Engineering & Technology in any Establishment shall be treated as a trainee and not a worker and- • The provision of any law with respect to labour will not apply to such a trainee.
	19. Settlement of Disputes: Any disagreement or dispute between an industry and a B.Tech student trainee arising out of the contract of in-plant training shall be resolved both by Maharashtra Institute of Technology and the industry with mutual cooperation. The decision of both Maharashtra Institute of Technology and the industry shall be final.
	20. Holding of Test and Grant of Certificate: The progress in in-plant training of every student shall be assessed by the industry and Maharashtra Institute of Technology faculty from time to time. Every B.Tech student undergoing an in-plant training shall be issued a certificate of Proficiency on completion of his training to the satisfaction of the industry.

	21. Offer of Stipend / Other Welfare Activities and Employment: It shall not be obligatory on the part of the Employer / Industry to offer any stipend and other welfare amenities available, if any, to the students of B.Tech courses undergoing an in-plant training. However, if the industry desirous to do so, at will be a privilege for the students and also for Maharashtra Institute of Technology in view of the bonding of better understanding and cooperation forever.
	PRACTICAL EXAMINATION The Practical examination will be conducted after successful completion of the in-plant training for which guide will be internal examiner and external examiner will be appointed by the university. The date of practical examination will be same for the students of a branch and will be notified by the university. The assessment of the practical examination shall consist of 1. Seminar Performance 2. An oral on the project work done. 3. Assessment of the term work. **Note:** A 'Guide Note' on In-Plant training approved by the University is prepared and made available in each faculty of B.Tech course.

Revised Syllabus Structure for Final Year B.Tech (Computer Science & Engineering)

Part - I

Sr. No.	Subjects	Periods			Evaluation Scheme					Credits
		L	T	P	TA	CT	ESE	PR	Grand Total	
1	Artificial neural Network	4	--	2	25	25	80	50	180	5
2	Data Mining and Data Warehousing	4	--	2	25	25	80	50	180	5
3	Digital Image Processing	4	--	2	25	25	80	50	180	5
4	Software Testing and Quality Assurance	4	--	2	25	25	80	50	180	5
5	EL-II	4	--	2	25	25	80	--	130	5
6	Project	--	--	4	50	--	--	100	150	2
	Total of Part - I	**20**	**--**	**14**	**175**	**125**	**400**	**300**	**1000**	**27**

Part- II

Sr. No.		Evaluation Scheme					Credits
		TA	--	--	PR	Grand Total	
1	Inplant Training and Project Seminar (After complition of training of 8 weeks)	75	--	--	75	150	--
2	Inplant Training and Project Seminar (After complition of training	75	--	--	75	150	--
3	Inplant Training and Project Seminar (After complition of training	100	--	--	200	300	--
	Total of Part - II	**250**	**--**	**--**	**350**	**600**	**--**
	Grand Total of Part -I& II	**425**	**125**	**400**	**650**	**1600**	**27**

Periods
L : Lecture Hours per week
T : Tutorial Hours per week
P : Practical Hours per week

Evaluation Scheme
TA : Teachers Assessment
CT : Class Test
PR: Practical Exam
ESE : End Semester Examination

Class Test Duration : I Hour

Elective-III
1. Distributed Computing
2. Cyber Security
3.Introduction to Mainframe Systems