Final year B.Tech Electronics and Telecommunication Engineering (Revised Syllabus)

ADVANCED PROCESSORS

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

End Semester Examination (ESE)duration :3 Hrs

OBJECTIVE:

To get knowledge of advanced processor based on Basic Processors.

A : THEORY

Unit	Contents	Duration	Nature
1	80286 – 80287 A Microprocessor with Memory management & Protection: Introduction, Features, Architecture, Memory Management, Privilege, Protection, Pin Configuration, Basic bus operation, Minimum mode Operation, Addressing Mode, Data Types, Instruction Set, Numeric Data Coprocessor – 80287 Pin Configuration, Architecture, Status and Control Word, Data Formats, Interfacing with 80286.	10 Hrs	Descriptive
2	80386 – 80387 32 Bit Microprocessor : Introduction, Features of 80386DX, Architecture, Register Organization, Interrupt, Memory System, Special 80386 Register, Real address Mode, Protected Mode, Segmentation, Paging, Virtual 8086 Mode, Pin Configuration, Addressing Mode, Data types, Enhanced Instruction Set, Coprocessor 80387- Pin Configuration, Architecture, Register Set, Interfacing with 80386	10 Hrs	Descriptive
3	80486 - 32 Bit Microprocessor: Introduction, Features, Architecture, Register Organization, Modes of Operation, Pin Configuration, Addressing Mode, Data types, Memory Systems	10 Hrs	Descriptive
4	Pentium and Pentium Pro Processor: Introduction, Special Pentium Registers, Memory management, Pentium Instructions, Introduction to Pentium Pro Processor, Special Pentium Pro Features	12 Hrs	Descriptive
5	Pentium II, Pentium III, Pentium IV : Introduction to Pentium II Software changes, Pentium III, Pentium IV	06 Hrs	Descriptive
6	Introduction to Programmable DSPs: Multiplier and Multiplier accumulator(MAC), Bus structures, Memory access Schemes, Multiple access memory, Multi Ported Memory, VLIW Architecture, Pipelining, Special addressing modes, On Chip Peripherals	12 Hrs	Descriptive

SECTION :A Chap 1,2,3

SECTION :B Chap 4,5,6

B : Practical / Drawings / Design / Workshop

10 Practical/ Assignments based on above syllabus

C. Suggested Text Books and References

Sr. No.	Tiltle	Author	Publication	Edition
1	The Intel Microprocessors	Barry B. Brey	PHI Publication	7th Edition
2	Digital Signal Processors	B Venkatramani M Bhaskar	TMH	
3	Advanced Microprocessors and Peripherals	Ray & Bhurchandi	TMH	2nd Edition
4	Microprocessor and Microcomputer based System Design	Mohammed Raffiquazaman	Universal Book Stall, New Delhi	
5	The 8086/8088 Family-Design Programming and Interfacing	Uffenbeck	PHI	

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year B.Tech Electronics & Telecommunication Engg (Revised Course) Examination

November / December, May/June 200_

Advanced Processor

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

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

N.B:-

i. All the questions are compulsory
ii. Use separate answer book for each section
iii. ……
iv. ……

Section A

Question No. 1	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.

This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.2 **OR** Question No.2	12 Marks
Question No.3 **OR** Question No.3	12 Marks

Note:

1. The topic may be intermingled in the questions
2. The questions will be memory based, application based and understanding type

Section B

Question No. 4	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.

This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.5 **OR** Question No.5	12 Marks
Question No.6 **OR** Question No.6	12 Marks

Note:

3. The topic may be intermingled in the questions
4. The questions will be memory based, application based and understanding type

Final year B.Tech Electronics and Telecommunication Engineering (Revised Syllabus)

Advanced Digital Signal Processing and Image Processing

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

End Semester Examination (ESE)duration :3 Hrs

Objective: To enhance the knowledge of digital signal and image processing which is broad area of research and development.

A: THEORY

Unit	Contents	Duration	Nature
1	**Multirate Signal processing:** Introduction, Decimation by a factor D, Interpolation by a factor I, Sampling rate conversion by rational factor I/D, Analysis and synthesis of orthogonal and orthonormal filter banks.	6 Hrs	Theoretical and Analytical
2	**Linear prediction and optimum filter Design:** Least square methods for system modeling and filter design, Adaptive filters.	8 Hrs	Theoretical and Analytical
3	**Power spectrum estimation:** Use of DFT in power spectrum density, parametric methods for power spectrum estimation: MA model, ARMA model	6 Hrs	Theoretical and Analytical
4	**Digital Image Fundamentals:** Digital Image represents elements of DIP, Image Processors, Storage devices, display and recording devices, Visual perception, structure of human etc, brightness, discrimination & image model, Sampling and quantization, basic relationship between pixels of neighbors on a pixel, connectivity, Distance measures, arithmetic\logic, operations, perspective transformation, camera model, Stereo imaging, film structure & exposure characteristics, diaphragm and shutter setting	5 Hrs	Theoretical and Analytical
5	**Image Transforms:** Discrete Fourier transforms, properties of 2D DFT, separability, translation, periodicals & conjugate symmetry, distributives & scaling average value, Fast Fourier transforms, FFT algorithms, inverse FFT, Walsh transforms, numerical on walsh transforms, Hadmard transforms, discrete cosine transforms , wavelet transform.	6 Hrs	Theoretical and Analytical
6	**Digital Image Enhancement:** Spatial domain filling, frequency domain filling image enhancement histogram modification techniques equation & direct specification, Logic enhancement image smoothing, neighborhood averaging of multiple image, image shaping by differentiation high pass filtering, enhancement based on a image model generation of spatial masks from	6 Hrs	Theoretical and Analytical

	freq. domain specifications, Density slicing, image processing, color fundamentals transform filtering approach		
7	**Image Restoration:** Degradation model same definitions, Degradation model for continues functions discrete formulation diagonolization of circulate & block circulate matrices, Effect of diagonolization on the degradation model algebraic approach to restoration unconstraint restoration constant restoration inverse filtering removal of blur, Least mean square filter constrained least squarer restoration ,restoration in special domain geometric transformation gray level interpolation special transforms	6 Hrs	Theoretical and Analytical
8	**Image Compression**: Need and scope for image data compression. Image quality and entropy considerations. Spatial domain technique: DPCM and linear predictive coding. Source and destination interpolation techniques. Transform domain technique: Transform coding. Zonal and threshold coding/adaptive transform coding.	6 Hrs	Theoretical and Analytical
9	**Image Segmentation :**Detection of discontinues plant detection line detection combined detection edge linking & boundary detection local analysis global analysis via through the transforms, global analysis via graph theoretic techniques the role of illumination optimal threshold threshold selection based on boundary characteristics threshold based on several variables , Region oriented segmentation region growing by pixel affixation region splitting & merging the use of mutation in segmentation special techniques frequency domain	6 Hrs	Theoretical and Analytical
10	**Representation & Description :**Representation schemes chain code polygonal approximation signatures boundary segments skeleton of the region boundary descriptors Fourier descriptor moments regional descriptions, Topological descriptions texture moments descriptors of similarly distance measures correlation boundary matching relational descriptors string grammars.	5 Hrs	Theoretical and Analytical
SECTION :A Chapter 1,2,3,4,5			
SECTION :B Chapter 6,7,8,9,10			

B : Practical / Drawings / Design / Workshop: any ten practical

1. MATLAB/C based program to understand upsampling of a discrete time signal
2. MATLAB/C based program to understand downsampling of a discrete time signal
3. MATLAB/C based program to understand decimation process
4. MATLAB/C based program to understand interpolation process
5. MATLAB/C based program to compute power spectrum density
6. Study of MATLAB image processing toolbox
7. MATLAB/C based program to read and display the image
8. MATLAB/C based program to compute DFT of an image

9. MATLAB/C based program to compute DCT of an image
10. MATLAB/C based program for arithmetic and logical operations on an image
11.MATLAB/C based program for histogram equalization
12.MATLAB/C based program for digital image filtering

C. Suggested Text Books and References

Sr. No.	Tiltle	Author	Publication	Edition
1	Digital image processing	Gonzalez and woods	Pearson	
2	Digital image processing	William K.	Mc Graw Hill 1997	
3	Digital image processing	A. Rosenfield and A. C	Kak-Academic Press 1976	
4	Computer vision	Ballard and Brown	Prentice Hall 1982	
5	Digital image processing	Rafael C. C. and Paul Wintez	Addition Wesley Publishing Co. 1977	
6	Digital image processing	A.K.Jain	Prentice Hall	

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year B.Tech Electronics & Telecommunication Engg (Revised Course) Examination

November / December, May/June 200_

Advanced Digital Signal Processing and Image Processing

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

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

N.B:-

i All the questions are compulsory

Ii Use separate answer book for each section

iii……

iv……

Section A

Question No. 1	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.

This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.2 **OR** Question No.2	12 Marks
Question No.3 **OR** Question No.3	12 Marks

Note:

1.The topic may be intermingled in the questions

2.The questions will be memory based, application based and understanding type

Section B

Question No. 4	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.

This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.5 **OR** Question No.5	12 Marks
Question No.6 **OR** Question No.6	12 Marks

Note:

3.The topic may be intermingled in the questions

4.The questions will be memory based, application based and understanding type

Final year B.Tech Electronics and Telecommunication Engineering (Revised Syllabus)

Analog and Digital VLSI

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

End Semester Examination (ESE)duration :3 Hrs

OBJECTIVE:

To teach students fundamental concepts in classical and modern digital circuits (PLD, CPLD and FPGA) using the design tools such as VHDL (Verilog Hardware Description Language)

A : THEORY

Unit	Contents	Duration	Nature
1	**Introduction:** Introduction to Computer-aided design tools for digital systems. Hardware description languages, Introduction to VHDL, Data objects, Classes and data types, Operators, Overloading, Logical operators. Types of delays, Entity and Architecture declaration. Introduction to behavioural, dataflow and structural models.	14 Hrs	Theoretical and Analytical
2	**VHDL Statements:** Assignment statements, sequential Statements and process, Conditional statements, Case statements, Array and loops, Resolution functions, Packages & Libraries, Concurrent statements.	08 Hrs	Theoretical
3	**Combinational Circuit Design:** VHDL models and simulation of combinational circuits such as Multiplexers, Encoders, Decoders, Code converters, Comparators, Implementation of Boolean functions	08 Hrs	Theoretical and Analytical
4	**Sequential Circuit Design:** VHDL Models and simulation of sequential circuits, flip flops, Shift registers, Counters.	08 Hrs	Theoretical and Analytical
5	**Synchronous & asynchronous sequential circuits:** State Diagram, Moore and Mealy state model, state minimization, design, algorithmic state machine, formal model for sequential synchronous and asynchronous circuits	10 Hrs	Theoretical and Analytical
6	**Design with CPLDs and FPGAs:** Programmable logic devices : ROM, PLAs, GAL, PEEL, CPLDs and FPGA. Design and implementation using CPLDs and FPGAs	12 Hrs	Theoretical and Analytical
SECTION :A Chap: 1,2,3			
SECTION :B Chap: 4,5,6			

B : Practical / Drawings / Design / Workshop

Combinational Design Exercises

1. Design of basic and universal Gates
2. Design of XOR gate using other basic gates
3. Design of 2:1 Mux using other basic gates
4. Design of 2 to 4 Decoder
5. Design of Half-Adder, Full Adder, Half Substractor, Full Substractor
6. Design of 3:8 Decoder
7. Design of 8:3 Priority Encoder
8. Design of 4 Bit Binary to Grey code Converter
9. Design of 4 Bit Binary to BCD Converter using sequential statement
10. Design an 8 Bit parity generator (with for loop and Generic statements)
11. Design of 2,s Complementary for 8-bit Binary number using Generate statements

Sequential Design Exercises

12. Design of all type of Flip-Flops using (if-then-else) Sequential Constructs
13. Design of 8-Bit Shift Register with shift Right, shift Left, Load and Synchronous reset.
14. Design of Synchronous 8-bit Johnson Counter.
15. Design of Synchronous 8-Bit universal shift register (parallel-in, parallel-out) with 3-state output (IC 74299)
16. Design of 4 Bit Binary to BCD Converter using sequential statement.
17. Design Mod 3,5,7,8,16 Counter & 4 Bit Johnson counter
18. Design a decimal up/down counter that counts up from 00 to 99 or down from 99 to 00.
19. Design 3-line to 8-line decoder with address latch

C. SUGGESTED TEXT BOOKS AND REFERENCES

Sr. No.	Tiltle	Author	Publication	Edition
1	IEEE Standard VHDL Language reference Manual(1993)			
2	Digital Design & Modelling with VHDL & Synthesis	KC Chang	IEEE Computer Society Press.	
3	“A VHDL Primmer”	J. Bhasker	Prentice Hall	
4	“Digital System Design using VHDL”:	Charles. H. Roth;	PWS(1998)	
5	“VDHL-Analysis & Modelling of Digital Systems”:	Navabi Z;	McGraw Hill	
6	VHDL-IV Edition:	Perry;	TMH(2002)	
7	“Introduction to Digital Systems”	Ercegovac. Lang & Moreno	John wiley(1999)	
8	Fundamentals of Digital Logic with VHDL Design	Brown and Vranesic	TMH(2000)	
9	Basic VLSI Design	Douglas A. Pucknell, Kamran Eshraghian	PHI	3rd Edition
9	Modern Digital Electronics-	R.P Jain	TMH(2003)	III Edition

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year B.Tech Electronics & Telecommunication Engg (Revised Course) Examination

November / December, May/June 200_

Analog and Digital VLSI

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

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

N.B:-

i All the questions are compulsory

ii Use separate answer book for each section

Iii ……

iv……

Section A

Question No. 1	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.

This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.2 **OR** Question No.2	12 Marks
Question No.3 **OR** Question No.3	12 Marks

Note:

1.The topic may be intermingled in the questions

2.The questions will be memory based, application based and understanding type

Section B

Question No. 4	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.

This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.5 **OR** Question No.5	12 Marks
Question No.6 **OR** Question No.6	12 Marks

Note:

3.The topic may be intermingled in the questions

4.The questions will be memory based, application based and understanding type

Final year B.Tech Electronics and Telecommunication Engineering (Revised Syllabus)

COMMUNICATION NETWORK & SECURITY

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

End Semester Examination (ESE)duration :3 Hrs

OBJECTIVE:

To obtain the detailed knowledge of Computer and Communication Networks along with the security issues associated with them.

A : THEORY

Unit	Contents	Duration	Nature
1	**Introduction to Computer Networks :** Objective components of Communication Networks, topologies, centralized and distributed networks, LAN, MAN, WAN, Broadcast vs Point to Point networks, Overview of network model: ISO - OSI and TCP/IP. Network design issues, layered architecture, interfaces and services, service primitives and relationships of services to protocols.	06	Descriptive
2	**Physical Layer & Data Link Layer :** Communication Media: Twisted pair, coaxial cables, fiber optic cables, Wireless Communication. Design issues, framing, error detection and correction, CRC, Elementary protocols – stop and wait, Sliding window, Slip, bridges, circuit switching, message switching, packet switching network.	07	Descriptive
3	**Networks and Transport Layer :** Virtual circuits, and datagram networks, circuit switching, and packet switching. Routing algorithms, routers and routing protocols. Congestion control. Transport layer services and principles. Connectionless v/s connection oriented services like UDP and TCP, QOS (Quality of Services).	07	Descriptive
4	**Application Layer :** DNS (Domain name System), Electronic mail, World wide Web, Writing a web page in HTML.	02	Descriptive
5	**TCP/IP Protocol Suite :** Layered Architecture, Protocol Stack., IP Addressing: Classes, static, dynamic (DHCP). Ipv4 v/s Ipv6, Sub-netting: masking and subnet masking. Protocols: Ping, FTP, telnet, http(www), SMTP, SNMP, Trace route, TFTP, BOOTP, DNS, NFS, RPC, ICMP, IGMP, ARP, RARP, etc.	08	Descriptive
6	**Digital Networks:** Advantages, Signal conversion, digital carrier systems, ISDN, SIDN Channels, ISDN Layers, SBS, Integrated Networks, IEEE LAN Standards, IEEE 802 standards, IEEE	08	Descriptive

	802.11 standards for wireless networks.		
7.	**Overview of Network Security:** Fundamentals, Types, Standards, Foundations of Cryptography and Security, Approaches and techniques used, Encryption schemes, Mathematical tools for Cryptography.	07	Descriptive
8.	**Designing:** Design issues, Cost justification and consideration, Design principle of Block Ciphers and Block Cipher Algorithms, Authenticating architectural design issues.	07	Descriptive
9.	Digital signatures, Certificates and standards, setting and definitional issues, Length-restricted signature scheme, Constructions of signature schemes, planning techniques.	08	Descriptive
SECTION :A Chap 1,2,3,4 & 5			
SECTION :B Chap 6,7,8 & 9			

B : Practical / Drawings / Design / Workshop

1. Study of TCP/IP & Internet
2. Study of LAN transmission Medias, topologies, interconnection devices & LAN standards.
3. Study of LAN.
4. Study of errors & error correction Techniques.
5. Write a program for encryption & description using monoalphabetic substitution or polyalphabetic substitution.
6. Study of web page design using HTML.
7. Study of sliding window protocol.
8. Study of FTP & SMTP.
9. Installation of Operating Systems.

Study of Digital Signatures

C. Suggested Text Books and References

Sr. No.	Tiltle	Author	Publication	Edition
1	Computer Networks	A.S. Tannenbaum	Prentice Hall	3rd & 4th
2	Data Communications and Networking	Behrouz A. Forouzan	McGraw Hill	4th
3	Data and Computer Communications	William Stallings	Prentice Hall	7th
4	Cryptography and Network Security : Principles and Practice	William Stallings	Prentice Hall	
5	Guide to Wireless Network Security	Vacca		
6.	Handbook of Applied Cryptography	Menezes, Vanstone		

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year B.Tech Electronics & Telecommunication Engg (Revised Course) Examination

November / December, May/June 200_

Communication Network & Security

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

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

N.B:-

i All the questions are compulsory

Iii Use separate answer book for each section

Iii ……

iv……

Section A

Question No. 1	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.

This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.2 **OR** Question No.2	12 Marks
Question No.3 **OR** Question No.3	12 Marks

Note:

3. The topic may be intermingled in the questions
4. The questions will be memory based, application based and understanding type

Section B

Question No. 4	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.

This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.5 **OR** Question No.5	12 Marks
Question No.6 **OR** Question No.6	12 Marks

Note:

5. The topic may be intermingled in the questions
6. The questions will be memory based, application based and understanding type

Final year B.Tech Electronics and Telecommunication Engineering (Revised Syllabus)

Elective-III

TELEMATICS

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

End Semester Examination (ESE)duration :3 Hrs

OBJECTIVE:

Telematics (telecommunications using informatics) a word coined for Technology, which represents the sending, networking and receiving of a variety of information in digital form. The curriculum is framed so as to integrate traditional communications with computer networking and the emphasis is on Computer networking, ISDN, Cellular, ATM.

A : THEORY

Unit	Contents	Duration	Nature
1	**Introduction to Switching and telecom networks** Introduction and examples of telematics, Analog versus digital switching, Functional structure of digital exchange, Types of networks, Network design issues , Digital private branch exchange, Rural exchange, Design tools, Switching technologies.	10	Descriptive
2	**Broadband telecom networks** Basic elements of ISDN, Construction of ISDN, Modeling, Fundamental of ISDN architecture, ISDN services, Transmission structure, Protocols architecture, Narrow band & Broadband ISDN	10	Descriptive
3	**QOS and Reliability Issues of telecom networks:** Delay, Jitter, Throughput/ Bandwidth, Crosstalk/Interference Issues, Network reliability and survivability Issues, Network protection mechanisms DSL, ADSL, Cable modems, Optical wireless, leased lines	10	Descriptive
4	**Frame Relay & ATM** Frame Relay introduction, Protocol, architecture frame, mode call control, frame Relay congestion control. ATM, ATM Protocols, Public ATM networks, ATM cells their details and transmission, Traffic congestion and control	10	Descriptive
5	**Signal compression techniques** Multimedia Audio, Video, Data compression, video on demand, M-bone multicast backbone, MPEG, JPEG, compression algorithms etc	5	Descriptive

6	**Telecom network management** Telecom network operation and maintenance, Traffic management, Management of Transport Networks, Configuration management, Fault management,Security,Network planning support, Network management using SNMP	10	Descriptive
7	**Telematics Instruments** Digital telegraph transmission, Dumb and intelligent teleprinter, FAX,EPABX	5	Descriptive
SECTION :A Chap 1,2,3			
SECTION :B Chap 4,5,6,7			

B : Practical / Drawings / Design / Workshop

1. Testing and installation of fixed telephone
2. Testing and installation of cordless telephone
3. Visit to Telephone exchange and prepare report.
4. Draw the layout of given EPABX system.
5. Installation and testing of EPABX system.
6. Preparation and installation of wiring layout using MDF, CT boxed box.
7. Installation of FAX machine.
8. Installation of MODEM.

C. Suggested Text Books and References

Sr. No.	Tiltle	Author	Publication	Edition
1	"Telecommunication Networks Design Algorithms	Aaron kershenbaumj	MGH.	
2	IP Telephony :Packet-based multimedia Communication systems	Olivier Heesent,David Gurle& Jean-Pierre Petit	Pearson Ed.Asia	IInd Indian Reprint 2001
3	ISDN and Broadband ISDN with frame relay and ATM –	William stalling	Pearson Ed.Asia	Fourth 2000
4	Computer Networks	Andrew Tanenbaum	PH	THIRD
5	Telecommunications Switching, Traffic and Networks	J.E.Flood	Pearson Ed.Asia	First Indian Reprint 2001
6	Telecommunication switching systems and networks	T. Vishwanathan	Prentice Hall of India	
7	Communication Electronics	Louis E. Frenzel	Tata McGraw-Hill	
8	Data Communication Working	Behrouz A. Forouzan	Tata McGraw-Hill	
9	"Telecommunication Networks protocols modeling and analysis"	Mischa schwatriz	Pearson Education	
10	Management of Telecommunication	H. Carr and C. Snyder	Tata McGraw-Hill	

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year B.Tech Electronics & Telecommunication Engg (Revised Course) Examination

November / December, May/June 200_

Elective-III
Telematics

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

'Please check whether you have got the right question paper'
N.B:-

i All the questions are compulsory
ii Use separate answer book for each section
iii……
iv……

Section A

Question No. 1	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.
This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.2 **OR** Question No.2	12 Marks
Question No.3 **OR** Question No.3	12 Marks

Note:

1.The topic may be intermingled in the questions
2.The questions will be memory based, application based and understanding type

Section B

Question No. 4	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.
This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.5 **OR** Question No.5	12 Marks
Question No.6 **OR** Question No.6	12 Marks

Note:

3.The topic may be intermingled in the questions
4.The questions will be memory based, application based and understanding type

Elective-III (PATTERN RECOGNITION)

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

End Semester Examination (ESE)duration :3 Hrs

OBJECTIVE:

To use the theoretical and analytical analysis in pattern recognition for different applications of signal and image processing

A : THEORY

Unit	Contents	Duration	Nature
1	1. Basics of pattern recognition	2	Theoretical and Analytical
2	Bayesian decision theory: Classifiers, Discriminant functions, Decision surfaces, Normal density and discriminant functions, Discrete features	8	Theoretical and Analytical
3	Parameter estimation methods: Maximum-Likelihood estimation, Gaussian mixture models, Expectation-maximization method, Bayesian estimation	12	Theoretical and Analytical
4	Hidden Markov models for sequential pattern classification: Discrete hidden Markov models, Continous density hidden Markov models, Dimension reduction methods, Fisher discriminant analysis, Principal component analysis.	12	Theoretical and Analytical
5	Non-parametric techniques for density estimation Parzen-window method , K-Nearest Neighbour method	8	Theoretical and Analytical
6	Linear discriminant function based classifiers : Perceptron, Support vector machines, Non-metric methods for pattern classification , Non-numeric data or nominal data , Decision trees	10	Theoretical and Analytical
7	Unsupervised learning and clustering: Criterion functions for clustering, Algorithms for clustering: K-means, Hierarchical and other methods, Cluster validation	8	Theoretical and Analytical

SECTION :A Chap :1,2,3,4

SECTION :B Chap :5,6,7

B : Practical / Drawings / Design / Workshop:

Assignments and MATLAB/C language practicals based on above syllabus

C. SUGGESTED TEXT BOOKS AND REFERENCES

Sr. No.	Tiltle	Author	Publication	Edition
1	Pattern Classification	R.O.Duda, P.E.Hart and D.G.Stork	John Wiley, 2001	
2	Pattern Recognition	S.Theodoridis and K.Koutroumbas	Academic press	Fourth edition, 2009
3	Pattern Recognition and machine learning	C.M.Bishop	Springer 2006	

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year B.Tech Electronics & Telecommunication Engg (Revised Course) Examination

November / December, May/June 200_

Elective-III
Pattern Recognition

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

'Please check whether you have got the right question paper'
N.B:-

I All the questions are compulsory
ii Use separate answer book for each section
iii ……
iv ……

Section A

Question No. 1	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.
This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.2 **OR** Question No.2	12 Marks
Question No.3 **OR** Question No.3	12 Marks

Note:

1.The topic may be intermingled in the questions
2.The questions will be memory based, application based and understanding type

Section B

Question No. 4	16 Marks

This Question will consist of questions from the entire chapter under section A mentioned in the syllabus.
This will contain objective type, multiple choice type, short questions or concept oriented problems.

Question No.5 **OR** Question No.5	12 Marks
Question No.6 **OR** Question No.6	12 Marks

Note:

3..The topic may be intermingled in the questions
4.The questions will be memory based, application based and understanding type

Final year B.Tech Electronics and Telecommunication Engineering (Revised Syllabus)

Elective-III

Robotics and Automation

Periods				Evaluation Scheme				Credit
				Sessional Exam		ESE		Total
L	T	P	Total	TA	CT	TH	PR	
04	-----	02	06	25	25	80	-	130	5

End Semester Examination (ESE)duration :3 Hrs

OBJECTIVE:

In a world of competitive industrial innovation, there is an ongoing need for engineering personnel who have specialized knowledge of the component technologies of Automation systems and increasingly the application of these to Robotics. Advanced robotics is an emerging field of automation that, while based on the existing and well-developed technology of industrial robotics and computer integrated manufacturing, incorporates attributes of advanced systems technology to produce mission-oriented systems capable of operating autonomously in unstructured environments. The aim of the course is therefore to provide graduate engineers with a generic technology and principles associated with robotics and automation systems. The contents aim to develop the knowledge of the student in the field of robotics. They will understand in general about the kinematics and dynamics aspect of robotic system. The introduction to control strategy of simple robotic system will be covered in the course. Emphasis is placed on design methodologies and the study and application of computer based control to integrated automation systems.

A.THEORY:

Unit	Contents	Duration	Nature
01	**Introduction:** Robot definitions, Anatomy of robot, history, robot technology, and terms related to robot, Asimov's laws of robotics, robot specifications, detail classification, applications.	08 hrs	Discriptive
02	**Robot drivers, sensors and vision:** Drives for robots: Electrical, hydraulic and pneumatic. Sensors: Proximity and range, tactile, force and torque. End effectors, Position and velocity measurement. Robot vision: Introduction to techniques, image acquisition and processing.	12 hrs	Discriptive
03	**Robot kinematics:** Rotation matrix, Homogenous transformation matrix, Denavit- Hartenberg convention, Euler angles, RPY representation, Direct and inverse Kinematics for industrial robots for position and orientation Redundancy, Manipulator, Jacobian Joint, End effector, velocity -direct and inverse velocity analysis. Control: Individual joint computed torque.	10 hrs	Analytical
04	**Robot dynamics:** Lagrangian formulation, link Inertia tensor and manipulator Inertia tensor, Newton -Euler formulation for RR & RP	10 hrs	Analytical

	Manipulators, Trajectory planning, interpolation, cubic polynomial linear segments with parabolic blending, static force and moment transformation, Solvability, Stiffness, Singularities		
05	**Control of Robot Manipulators:** Control of the Puma Robot Arm, Computed Torque technique, Near-Minimum-Time Control, Nonlinear Decoupled Feedback Control, Resolved Motion Control, Adaptive Control	**10 hrs**	**Analytical**
06	**Applications of robots:** In industry -material handling, loading & unloading processing, welding & painting applications, assembly and inspection, Robot specification requirements. Introduction to robot programming languages like AL and AML.	**10 hrs**	**Discriptive**

SECTION:A :- Chapter 1,2,3

SECTION:B:- Chapter 4,5,6

B:- Practical/ Drawings/ Design/ Workshop:

01	To study different drivers for robotic system
02	To simulate simple robotic system using Matlab/Msc Adams Software.
03	To study image processing system for robotic system.
04	Matlab program for direct and inverse kinematics of simple robot configuration
05	To simulate joint torque control of manipulator.
06	To model the robot dynamics using Euler-Lagrangian Method and to simulate the same.
07	To study feedback control of robot manipulator.
08	To study adaptive control of robot manipulator.
09	Case study of one of the industrial robot.
10	To study robotic programming languages like AL and AML.

The assessment of term work shall be on the following criteria:

1. Continuous Assessment
2. Performing the experiments in the laboratory
3. Regular submission of practical report
4. Oral examination conducted internally on the practical work and assigned syllabus

C:- SUGGESTED TEXT BOOKS AND REFERENCES

Sr. No	Title	Author	Publication
01	Robotics, Control Sensing Vision and Intelligence	Fu.K.S. Gon Zalez RoC., Lee CoS.G	McGraw Hill, into Ed., 1987
02	Introduction to Robotics	Saeed B. Niku	EEE
03	Introduction to Robotics	John J. Craig	Pearson

			Education
04	Robotic Engineering An Integrated Approach	Richard D. Klafter, Michael Negin	Prentice-hall Of India
05	Robot Dynamics and Control	Spong and Vidyasagar	John Wiley and Sons, 1990
06	Robotics and Control	R.K. Mittal, I.J. Nagrath	Tata McGraw-Hill 2003
07	Industrial Robotics	Groover	McGraw-Hill
08	Robot Analysis and Intelligence	Asada and Slotine	Wiley Interscience, 1986
09	Design of Thermal Systems	W. F. Stoecker	McGraw-Hill

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final Year B.Tech Electronics & Telecommunication Engg (Revised Course) Examination

November / December, May/June 200_

Elective-III
Robotics and Automation

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

'Please check whether you have got the right question paper'
N.B:-

i. All the questions are compulsory
ii. Use separate answer book for each section
iii. ……
iv. ……

Section A

Question No. 1	16 Marks

This question will consist of questions from the all chapters under **Section A** mentioned in the syllabus.

Question No.2 **OR** Question No.2	12 Marks
Question No.3 **OR** Question No.3	12 Marks

Note:

1. The topic may be intermingled in the questions
2. The questions will be memory based, application based and understanding oriented

Section B

Question No. 4	16 Marks

This Question will consist of questions from the entire chapter under **Section B** mentioned in the syllabus.

Question No.5 **OR** Question No.5	12 Marks
Question No.6 **OR** Question No.6	12 Marks

Note:

1. The topic may be intermingled in the questions
2. The questions will be memory based, application based and understanding oriented

Final year B.Tech Electronics and Telecommunication Engineering (Revised Syllabus)

PROJECT

Periods				Evaluation Scheme					Credit
				Sessional Exam		ESE		Total	
L	T	P	Total	TA	CT	TH	PR		4
-----	-----	04	04	50	-----	-----	50	100	

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 70-100.
  Follow American English
  Example
  - Fulfilment
  - Traveling
  - Meter

  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

Semester VIII

IN PLANT 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 for Final Year Electronics and Telecommunication Engineering

Part-I

Sr. No.	Course Code	Subjects	Periods, hrs			Evaluation Schemes					Credits
			L	T	P	TA	CT	ESE	PR	Grand Total	
1		Advanced Processors	4	_	2	25	25	80	50	180	5
2		Advanced Digital signal Processing and Image	4	_	2	25	25	80	50	180	5
3		Analog and Digital VLSI	4	_	2	25	25	80	50	180	5
4		Communication Network and	4	_	2	25	25	80	50	180	5
5		Elective -III	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

1	Inplant Training and Project Seminar(after completion of training @8weeks)	75	_	_	75	_	_
2	Inplant Training and Project Seminar(after completion of training @14 weeks)	75	_	_	75	_	_
3	Inplant Training and Project Seminar(after completion of training @20 weeks)	100	_	_	200	_	_
	Total of part-II	**250**	**_**	**_**	**350**	**600**	_
	Grand Total of 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
- ESE End Semester Examination

Class Test Duration: 1 hour

Choises for Elective -III

1. Pattern Recognition
2. Telematics
3. Robotics and Automation