Annexure – 17

PERIYAR UNIVERSITY

SALEM – 11

SYLLABUS

M.Sc., TELE- COMMUNICATION

(PRIDE – NON-SEMESTER)

(EFFECTIVE FROM 2007-2008 ONWARDS)

PERIYAR UNIVERSITY ,Salem - 11

M. Sc .,TELE COMMUNICATION

(NON –SEMESTER)

Regulations

{Effective from 2007 – 2008}

1. **CONDITION FOR ADMISSION :**

A candidate who has passed B.Sc., (Tele communication)/ B.Sc., Electronics and Communication B.Sc (Electronics) / B.Sc (Physics) / B.Sc (Instrumentation) / B.Sc (Industrial Electronics). / B.Sc (Biomedical Instrumentation) / B.Sc Computer Science / B.C.A. degree of this University or any of the above degree of any other university accepted by the syndicate as equivalent thereto, subject to such condition as may be prescribed therefore shall be permitted to appear and qualify for the M.Sc Tele - communication degree examination of this university after a course of study of two academic years.

2. DURATION OF THE COURSE:

The course for the degree of **Master of Tele - communication** shall consist of two academic years .

3. COURSE OF STUDY

The course of study shall comprises instruction in the following subjects according to the syllabus and books prescribed from time to time.

4. EXAMINATIONS

The examination shall be three hours duration to each paper at the end of each year. The candidate failing in any subject(s) will be permitted to appear for each failed subject(s) in the subsequent examination.

Practical examinations for PG course should be conducted at the end of the Year.

At the end of second year viva-voce will be conducted on the basis of the dissertation / project report submitted by the student. The Viva – voce will be conducted by one internal and one external examiner jointly.

5. SCHEME OF EXAMINATIONS

The scheme of examinations as follows,

I-YEAR				
S. No.	**Paper Code**	**Title of the paper**	**Duration**	**Marks**
1	06PTEL01	Analog , Digital Electronics	3	100
2	06PTEL02	Analog , Digital and Optical Communicati	3	100
3	06PTEL03	Telecommunication and Cellular Systems	3	100
4	06PTEL04	Advanced Microprocessors	3	100
5	06PTELP01	Practical – I : Communication Lab-I	3	100
II-YEAR				
6	06PTEL05	Wireless and mobile communication	3	100
7	06PTEL06	Microwave and radar communication	3	100
8	06PTEL07	C++ and Java programming	3	100
9	06PTELP02	Practical –II: communication lab –II	3	100
10	06PTETLPR01	Dissertation / Project work & Viva-Voce (Project report (75) + Viva – Voce (25))		100
Total				1000

6. QUESTION PAPER PATTERN :

Time: 3 Hours **Max. Marks – 100**

PART – A: 5 x 5 = 25

(Answer all questions)

(Two questions from each unit with internal choice)

PART – B : 5 x 15 = 75

(Answer all questions)

(Two questions from each unit with internal choice)

Practical

Time : 3 Hours. **Max. Marks - 100**

(One question either or type)

7. DISSERTATION (100 Marks)

a. Topic

The topic of the dissertation shall be assigned to the candidate before the end of first year and a copy of the same should be submitted to the University for approval.

b. Advisory committee

Each guide shall have a maximum of five students in science and maximum of seven for all Arts subjects.

There will be an advisory committee consisting of the guide as chairman and one member from the same department or allied departments of the college and a third member should be from other college preferably from Aided / Government colleges in the case of self financing college and vice – versa.

c. No. of Copies/ Distribution of Dissertation

The students should prepare three copies of dissertation and submit the same for the evaluation by examiners. After evaluation one copy is to be retained in the college library and one copy is to be submitted to the University (Registrar) and one copy can be held by the student.

d. Format to be followed

The formats / certificate for dissertation to be submitted by the students are given below:

Format for the preparation of project work

a. Title page
b. Bonafide certificate
c. Acknowledgement
d. Table of content

CONTENTS

Format of the title page

TITLE OF THE DISSERTATION

Dissertation submitted in part fulfillment of the requirement for the degree of Master of Science / Master of Arts in _____

to the Periyar University, Salem-636 011.

By

Students name :

Register Number :

College / University Department

Year :

Format of the certificate

CERTIFICATE

This to certify that the dissertation entitled……
…….. submitted in part fulfillment of the requirement of the degree of Master of Science / Master of Arts in ……. To the Periyar University, Salem is a record of bonafide research work carried out by …….. under my supervision and guidance and that no part of the dissertation has been submitted for the award of any degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part of full in any scientific or popular journals or magazines.

Date:

Place:

Chairman, Advisory Committee,

Approved by

Chairman:

Members:

1.

2.

External Examiner

Guidelines for approval of PG guides for guiding students in their research for submitting dissertation.

1. M.Sc. (Part fulfillment) Guide

i. The person seeking for recognition as guide should have.

ii. M.Phil / M.A/M.Sc degree with first class / second class

iii. Should have 3 years of active teaching / research experience.

2. They should have published atleast one research paper in a National journal authored solely or jointly. Procedure for submitting application for approval as guides

a. The University will on request give prescribed application form.

b. The filled in applications should be submitted before the close of said date by the University.

c. such applications should be routed through the Principal of their respective institutions with specific recommendations.

d. All relevant proofs should be submitted along with the applications.

3. Approval

The committee constituted for the purpose will scrutinize the applications and recommend for approval / rejection.

Orders will then be passed by the authority of the university and communicated to each member individually through the Principal.

8. Passing Minimum

The candidate shall be declared to have passed the examination if the candidate secure not less than 50 marks in the University examination in each paper.

For the practical paper, a minimum of 50marks out of 100 marks in the University examination and the record notebook taken together. There is no passing minimum for the record notebook. However submission of a record notebook is a must.

For the project work and viva voce a candidate should secure 50% of the marks for pass. The candidate should compulsory attend viva voce examination to secure pass in that paper.

Candidate who do not obtain the required minimum marks for a pass in a paper/ project report shall be required to appear and pass the same at a subsequent appearance.

9. Classification of successful candidates

Candidates who secure not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in **First Class.**

All other successful candidates' hall be declared to have passed in the **Second Class**.

Candidates who obtain 75% of the marks in the aggregate shall be deemed to have passed the examination in **First Class with Distinction**

provided they pass all the examinations prescribed for the course at the first appearance.

Candidates who pass all the examinations prescribed for the course in the first instance and within a period two academic years from the years of admission to the course only are eligible for **University Ranking.**

10. Maximum duration for the completion of the PG Programme

The maximum duration for completion of the PG programme shall not exceed five years.

11. Commencement of this regulation

These regulations shall take effect from the academic year 2007-08, i.e., for students who are to be admitted to the first year of the course during the academic year 2007-08 and thereafter.

12. Transitory provision

Candidates who are admitted to the PG course of study before 2007-2008 shall be permitted to appear for the examinations under those regulations for a period of three years i.e, up to and inclusive of the examination of April / May 2011. Thereafter, they will be permitted to appear for the examination only under the regulations then in force

13. Regulations of project work

a. Students should do their three months project work in company / institutions.
b. The candidate to the department should submit the format which includes the topic of the dissertation, and the same should be submitted to the University for approval.
c. Each internal guide shall have maximum of FIVE students.
d. Periodically the project should be reviewed minimum three times by the advisory committee consisting of the guide and one member from the same department and the third member (min:5 years experience) should be from other institutions / organization.

The students should use OHP/Power Point Presentation during their project Viva Voce examinations.

OBJECTIVES

1. The syllabus of M.Sc., Tele-Communication is enriched and necessary changes have been made in the course pattern and papers. This will enable the students to acquire through knowledge both in theory and practical.
2. An emphasis is given more to practicals in advanced experiments related to communication field.
3. Since, the course is paraprofessional enough practical training is necessary when the student goes to industries. Hence at the end of every semester the practical papers are included in the syllabus to meet out this demand or challenges.
4. After successful completion of this course a student can pursue higher engineering courses like ME / M.Tech in Electronics & Communication with good GATE score.
5. The thrust in given is the curriculum by considering various recent developments in Tele-Communication, Bio-medical Instruments and Networking. This exposure will make, the students to be eligible for service / Engineering in the field of Electronics industries / Communication Industries / Bio-medical Industries / Networking Companies and Software Industries.

SUGGESTIONS

1. Master Of science in Tele- Communication covers the basic topics of the field, however the regular updating of the syllabus is necessary according to the recent academic developments in this field.
2. To provide further improvement in the teaching, quality of, the teachers in this university areas should be given short term training programmes in the specialized fields.
3. The colleges offering this course under Periyar University have to equip the library and laboratory adequately to conduct this course.

M.Sc., DEGREE EXAMINATIONS., MAR/APR 2006

TELE-COMMUNICATION

ADVANCED MICROPROCESSORS CODE:

Time: 3 hrs Max. Marks: 100

PART – A (5x5 = 25)

Answer all the questions:

1a) Discuss About evolution of microprocessor.(or)

b) Write note on I/O Devices of microprocessor.

2.a)Explain register set of microprocessor.(or)

b)Discuss about the pin out of 8085.

3 a) What is address decoding , explain.(or)

b)Define the term RAM refreshing.

4a)Discuss about 8086 flag register.(or)

b)Explain about Motorola 68000 registers.

5a)Write note on Segmentation. (or)

b)discuss Pentium processor pipelining.

PART- B(5X15=75)

Answer all the questions

6 a)Explain the block diagram of 8085 processor.(or)

b)Explain about microcontroller architecture.

7.a)Discuss the various instructions of 8085 in detail.(or)

b)Explain the various addressing modes of microprocessor.

8 a)Explain 8259 architecture.(or)

b)Discuss about 8257.

9 a)Explain 8086 architecture .(or)

b)Explain the addressing modes of 8086 with examples.

10 a) Explain the architecture of Pentium processor (or)

b) Explain addressing modes of Pentium processor.

PAPER :1 Analog and Digital Electronics

Unit – I

Number Systems*:*

Binary signals – Binary Number System – Decimal Number conversion of binary, decimal, octal and hexadecimal numbers – BCD Numbers-Logic gates.

Boolean Algebra & Combinational Logic Circuits: Fundamental concepts of Boolean algebra – Basic laws of Boolean algebra – Demorgan's theorem – Sum of products – product of sum combination of gates – Karnaugh's map.

Unit – II

Digital Arithmetic Circuits

Binary addition and subtraction – signed and unsigned Binary number's – Addition in 1's and 2's Compliment – Addition in 9's and 10's compliment – Half adder and Full adder – Parallel adder – Half and Full subtractor – Multiplexer – Demultiplexer – Encoder Decoder.

Unit – III

Flip Flop and Sequential Logic Circuits

RS, JK, JK Master slave flip flop – D and T types – shift register – ring counter – UP/DOWN counter.

Binary Ladder D/A converter – Successive approximations A/D converter.

Unit -IV

Junction diode, construction, characteristics, – Zener diode – Construction –characteristics, application of seven segment LCD, LED, tunnel diode, PIN diode, varactor, varistor.

Unit – V

Introduction of transistor – Construction and operation of transistors – Configuration and characteristics of CE– JFET, Constructions and characteristics - MOSFET construction and characteristics, MOSFET as resistor- construction, operation, and V-I characteristics of UJT, SCR, TRIAC.

Reference books

1. Digital Technology principles and Practice – Virendra Kunmar – New Age International
1. Malvino and Leech Digital Principles and Application

2. Applied electronics – R. Sedha – S. Chand
3. Basic electronics – B.L. Theraja – S. Chand
4. Basic Electronics – V.K. Metha

PAPER 2 : ANALOG , DIGITAL AND OPTICAL COMMUNICATION

Unit – I Pulse Modulation System

The sampling theorem: low pass signals, band pass signals – PAM – channel bandwidth for a PAM signal – Natural sampling – Flat top sampling – PCM Electrical representation of binary digits – the PCM signal – Natural sampling – Flat top sampling – PCM electrical representation f binary digits – the PCM system – commanding – multiplexing PCM signal – Differential PCM.

Delta modulation – PCM transmission – calculation of quantization noise – the output signal power – the output signal to noise ratio in PCM – Delta pulse code modulation – comparison of PCM and DM – comparison of PCM and FM communication systems.

UNIT – II Digital Modulation Techniques

Phase shift keying – binary PSK differential PSK Differentially encoded PSK (DEPSK) – Quadrature PSK – M ary PSK – FSK Binary FSK similarity of BFSK and BPSK.

Unit – III

Fiber Optic Cables, Light Sources And Light Detectors

Fiber optic cables: Refraction – Numerical aperture – Graded index cable – single mode versus multimode Pulse dispersion, cable construction, cable loses, fiber materials – Type of optic fibers – Plastic fibers – Fiber bending – Fiber coating – Fiber packaging – Zero dispersion fibres.

Unit - IV

Light sources : LED-Plnar diffused surface LED – Planner hetero junction LED – Edge emitting LED – Injection laser diode – cleaved coupled cavity laser – coupling of LEDs with fiber – LED reliability and degradation.

Light Detectors: Photo sensitive transistor – Darlington photo transistors – Pin diode – Avalanche diodes.

Unit – V Fiber Optical Communication Components and Systems

Components : coupling components for optical fibers – Modulation Methods and modulators – Switches – Transmitters – Receivers – Repeaters – Optical amplifiers (semiconductor laser amplifier only) systems: Transmitter Design – Receiver design – Link – Design – Link codes for optical fiber links.

Reference Books

1. Taub and Schilling: Principles of Communication systems (2^{nd} edn) (New Delhi: Tata McGraw Hill Ltd,. 1998).
2. Taub and schilling: Electronic communications, (Bell & Howell company, 1992).
3. Agarwa;. D/C: Fiber optic communication, (2rd end), (Wheeler publishing, 1998).

PAPER 3: TELECOMMUNICATION AND CELLULAR SYSTEMS

UNIT-I

Instruments and signals

Introduction-the subscriber loop-standard telephone set-basic telephone call procedures-call progress tone and signals-cordless telephone – caller ID – electronic telephones-paging systems

UNIT -II

Telephone circuit

Introduction –the local subscriber loop – telephone message – channel noise and noise weighting- units of power measurements –transmission parameters and private line circuits –voice frequency circuit arrangements – cross talk.

The public telephone network

Introduction-telephone transmission system environment – the public telephone network-instruments – local loops trunk circuits and exchanges-automated central office switches and exchanges.

UNIT-III

Cellular telephone concept:

Introduction – mobile phone service –evolution of cellular phone –cellular phone frequency reuse-interference-cell splitting, sectoring, segmentations and dualization-cellular system topology – roaming and handoffs-cellular telephone network components –cellular telephone call processing .

Cellular telephone system:

Introduction-first generation analog phones-personal communication systems –second generation cellular phones-digital cellular phone – global system for mobile communication.

UNIT –IV

Microwave radio communications and system gain:

Introduction-advantages and disadvantages of microwave radio-analog versus digital microwave-FM microwave radio stations –microwave repeater radio stations –microwave radio system gain.

UNIT -V

Satellite communications

Introduction- history of satellites –keplers' law- satellite orbits – geosynchronous orbits –antenna look angles –satellite classifications ,spacing and frequency allocation- satellite antenna radiation pattern.Satellite multiple –accessing arrangements:

Introduction-FDM/FM satellite systems –multiple accessing –channel capacity-satellite radio navigation.

References books :

1. Advanced electronic communications systems –Tomasi-sixth edition-PHI.
2. Telecommunication switching systems and networks – thiyagarajan viswanath- PHI 2002- First edn.
3. Introduction to telecommunication –marion cole – pearson – 2 nd edn 2006.

PAPER :4 ADVANCED MICROPROCESSORS

UNIT-I

Evolution of Microprocessor – Typical Micro Computer Architecture – Memory –memory addressing - Timing diagram -Input/Output .

UNIT – II

Intel 8085: Introduction – Register Structure- block diagram – 8085 Addressing modes – Timing Methods- 8085 CPU pins and Associated Signals – instruction set- – Interrupt System – SID and SOD Lines – 8085 Based System Design.

UNIT – III

Interfacing Devices: Introduction – Types of Interfacing Devices – Addressing Decoding for I/O – Input/Output Ports – Programmable Interrupt Controller 8259 – Programmable DMA Controller: 8257 Programmable DMA Controller – Analog Input Devices – Analog Output Devices.

UNIT – IV

16-bit Microprocessor: Intel 8086:Introduction – Architecture – Addressing Modes – 8086 Input/Output. Motorola MC 68000:Introduction – Registers – Memory Addressing – Instruction Format – Addressing modes – Motorola 68000 I/O

UNIT - V

Introduction- register set- internal architecture- addressing modes of 80286 .

Pentium processor: Introduction- register set- block diagram -addressing modes- pipelining- integer pipelining- floating pipelining.

Reference books:

1 M.Rafiquzzaman, “Microprocessors Theory and Applications : Intel and Motorola”, Prentice Hall India, Revised Edition, 2004.

2. Aditya P. Mathur, “Introduction to Microprocessors”, Tata McGraw Hill, Third Edition, 1990.

3 R.S.Gaonkar, “Microprocessor Architecture, programming and Applications with the 8085”, 1995.

PAPER: 5 PRACTICAL –I

Communication Lab-I

(ANY 15)

Using 8085:

1. A/D conversion
2. Printer interface
3. D/A interface
4. A/D Interface
5. Hex key interface
6. Stepper interface
7. Traffic light systems

Electronic communication:

8. AM modulation
9. FM modulation and detection
10. Automatic gain control
11. Voltage gain control
12. Pulse amplitude modulation
13. Pulse width modulation
14. Pulse position modulation
15. Study of PLL characteristics
16. Digital phase detector
17. Pulse code modulation
18. Study of cable TV system
19. Microwave experiments – Klystron
20. Microwave experiments – Reflex Klystron

PAPER:6 WIRELESS AND MOBILE COMMUNICATION

Unit I

Principles of Wireless Networks

Introduction – Wireless network and cellular topologies – cell fundamentals – capacity expansion techniques – network planning to CDMA.

Unit II

Wireless Networks Operators

Introduction **-** Mobility management – location management hand off management – Mobile IP – Radio resources and power management – Power

Control – Power saving mechanisms – Energy efficient designs – Security in wireless networks.

Unit III

GSM and CDMA Techniques

Introduction of GSM – GSM Services –Mechanism to support a mobile environment – Registration – Call establishment – Hand over – Security.

Introduction of CDMA – CDMA forward and reverse channel – Packet and frame formats – Mobility and radio resource management.

Unit IV

Mobile data networks

Introduction - Data oriented CDPD network – Architecture – Mobility support – protocol layer.

GPRS : Introduction – Architecture - Mobility support – Protocol layers – SMS in GPRS – WAP

Unit V

Broad Band Networks

Introduction to wireless LAN – Evaluation of WLAN's – wireless home networking – IEEE 802. 11 WLAN'S – Reference architecture – Layers Overview – Overview of wireless ATM – Adhoc Networking : Blue tooth concepts - Architecture – Protocols – Frame format – Connection management – Wireless geo location systems.

Text Books

1. Principle of wireless networks – A United Approach – By Kaveh Pahlavan parashant Krishnamurthy – Low price Edition – Pearson Edu.

Reference

1. Wireless communication networks Willam stellys – Low price edition Pearson Edu.
2. Mobile communication – 2 nd edition –schiller – pearson.

PAPER 7: MICROWAVE AND RADAR COMMUNICATION

UNIT I

Radio Propagation : Loss in free space : Atmospheric effects on propagations and diffraction effects, Fading : Multi path fading , power fading. Fading due to earth bulge: K factor fading , surface duct fading, Blackout fading, Diversity to Mitigate Fading.

UNIT II

Line of Sight MW Radio links : Path Analysis : Un faded signal level, Thermal noise Threshold : Frequency deviation. Antenna gain, Noise on FM radio link : Source of noise FM improvement threshold, Noise power ratio.

UNIT III

Basic Principle of Satellite Communication : Satellite system, orbits elevation angle, Geo stationary orbit, Frequency bank, Flux density, Multiple access technique (FDMA, TDMA, and CDMA qualitative analysis). Intelsat communications, Earth Stations.

UNIT IV

Fundamentals of Radar Systems : Radar range equation, radar frequencies pulse considerations, Minimum detectable signal, Receiver noise, Integration of radar pulses, pulse repetition frequencies.

UNIT V

Various Radar Systems : Pulse radar, FM-CW radar, MTI radar, Pulse-Doppler radar, Monopulse-tracking Radar, Radar receivers.

Reference Books

1. Freeman, “radio System Design”, John Wiley 1997.
2. Skolnik, “Radar Systems” Mc-Graw Hill.
3. A.K.Sen, “Radar Systems and Radio Aids to Navigation” Khanna Publishers, 2000.
4. M. Kulkarni, “Microwave and Radar Engineering”, Umesh Publications, 1998.

PAPER :8 C++ & JAVA PROGRAMMING

UNIT I

Basic Concepts of OOP – Structure of C++ - Data types - Variables – Control Structures – Functions – Classes and Objects – Constructors and Destructors.

UNIT II

Overloading: Function, Operator – Inheritance – Pointers – Virtual Function – Polymorphism.

UNIT III

Streams in C++ - Stream Classes – Formatted and Unformatted data – Manipulators – User Defined Manipulators – File Streams – Opening and Closing a File – File Pointers Manipulation – Template Classes and Functions – Exception Handling: Try, Catch, Throw.

UNIT IV Introduction to Java – Features of Java – Methods and Classes – Array, Strings and Vector – Inheritance – Packages and Interfaces.

UNIT V

Exception Handling – Multithreading – Applets – Graphics Programming.

Rerence books:

1. E.Balagurusamy, “Object Oriented Programming with C++”, TMH, Second Edition, 2001.
2. Ravichandran, “Programming with C++”, TMH, 1996.
3. Bjarne Stroustrup, “The C++ Programming Language”, Addision Wesley, 2004.
4. Patrick Naughton and Hilbert Schildt, “The Complete Reference Java 2”, TMH, 2003.
5. E.Balagurusamy, “Programming with Java A Primer”, TMH, Second Edition, 1999.

PAPER :9 PRACTICAL – II

COMMUNICATION LAB –II

(ANY 15)

OPTICAL FIBER COMMUNICATION:

1.LED interface

2. LASER Interface

3 Photo detector

4.OFT power supply

5. Optical power meter

6. Optical power source

7. Study of optical fiber

8.Optical fiber transmission and reception

9. Optical fiber links

10.Characteristics of gunn diode oscillator

11. Study of directional coupler

12. Study of TEE

13. Study of MAGIC TEE

14.Study of HORN ANTENNA

15. TDM pulse amplitude modulation and demodulation

16. RF Transmitter

17. RF Receiver

18. Characteristics of optical fiber.

19. Satellite communication

20. Study of RADAR communications

PAPER : 10 PROJECT VIVA- VOCE