Lokmanya Tilak Jankalyan Shikshan Sanstha's

PRIYADARSHINI COLLEGE OF ENGINEERING

(Recognised by A.I.C.T.E., New Delhi & Govt. of Maharashtra, Affiliated to R.T.M.Nagpur University)

Near CRPF Campus, Hingna Road, Nagpur-440 019, Maharashtra (India)
Phone : 07104 – 236381, 237307, Fax : 07104 – 237681,
email : principal.pce.ngp@gmail.com, www.pcenagpur.edu.in

1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during last five years

B.E – ELECTRONICS AND TELECOMMUNICATION ENGINEERING
(2017-18)

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Electronic Devices and Circuits	BEETE302T/P	Analog & Digital Circuits
2	Analog Circuits & Design	BEETE503T/P	
3	Electronics Workshop Practice	BEETE606P	
4	Electromagnetic Fields	BEETE401T	
5	Digital Circuits and Fundamental of Microprocessor	BEETE404T/P	
6	Microprocessor & Microcontroller	BEETE502T/P	
7	Electronics Measurement and Instrumentation	BEETE303T/P	
8	Network Analysis And Synthesis	BEETE406T	Signal Processing
9	Software Workshop	BEETE407P	
10	Control System Engineering	BEETE603T	
11	Signals & Systems	BEETE403T	
12	DSP Processor & Architecture	BEETE701T/P	
13	Digital Signal Processing	BEETE602T/P	
14	Elective 2- Digital Image Processing	BEETE804T	
15	Advanced Digital System Design	BEETE701T/P	VLSI/Embedded System
16	Elective 2- Embedded System	BEETE804T	
17	Elective 1 - VLSI Signal Processing	BEETE705T	
18	Elective 3- Robotics and Automation	BEETE805T	
19	Elective 3- CMOS VLSI Design	BEETE805T	
20	Antenna & Wave Propagation	BEETE501T	Communication
21	Communication Electronics	BEETE504T	
22	Telecommunication Switching Systems	BEETE601T	
23	Digital Communication	BEETE604T/P	
24	Elective-1 Data Compression & Encryption	BEETE705T	
25	Optical Communication	BEETE703T/	
26	Television And Video Engineerin	BEETE702T/P	
27	Wireless & Mobile Communication	BEETE803T	
28	Computer Communication Network	BEETE802T/P	
29	Microwave & Radar Engineering	BEETE801T/P	
30	Elective-2 Artificial Intelligence	BEETE804T	

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31	Elective 3- Satellite Communication	BEETE805T	
32	Object Oriented Programming & Data Structure	BEENE304T/P	
33	Applied Mathematics- III	BEETE301T	
34	Applied Mathematics- IV	BEETE401T	**Others**
35	Environmental Studies	BEETE406T	
36	Industrial Economics & Entrepreneurship Development	BEENE505T	
37	Industrial Visit	BEETE607P	

B. E. Fifth Semester

(Electronics / Electronics & Communication/ Electronics & Telecommunication Engg)

MICROPROCESSOR AND MICROCONTROLLERS

Duration: 3 Hrs. College Assessment: 20 Marks University Assessment: 80 Marks

Subject Code: BEENE502T/ BEECE502T/ BEETE502T   **[4 – 0 – 1 – 5]**

Objectives:

The course objectives are:

1.   To study fundamentals of microprocessor and microcontroller systems.

2.   To study architecture of microprocessor & to understand the concept of memory organization, stack memory, Assembly language programming.

3. To study different interrupt techniques.

4.   To study interfacing of microprocessor & microcontroller with different peripheral devices.

Outcome:

After completing this course students shall be able to:

1.   Describe internal organization of 8086/8088 microprocessors & 8051microcontrollers.
2.   Describe the concept of addressing modes and timing diagram of Microprocessor.
3.   Interface 8086 & 8051 with Keyboard/ Display, ADC/DAC, Stepper motor etc.
4.   Demonstrate the concept of interrupts and its use.
5.   Demonstrate the concept of Serial & parallel data communication
6.   Describe Handshaking concept and interfacing with peripheral devices.
7.   Describe the concept of DMA & Pentium.
8.   Describe 8087 Numeric coprocessor & its use in practical application.
9.   Interface various hardware with microprocessor.

Unit I: Intel 8086/8088 microprocessor & Programming: (09)

8086/8088 microprocessor, Pin diagram, Architecture, features and operating modes, Clock generator 8284, memory organization & interfacing, Addressing modes, complete instruction set.

Unit II: 8086 & Peripheral Interfacing I: (11)

Assembly language programming of 8086,Interrupt structure, I/O interfacing, Interfacing of peripherals like 8255 PPI, multiplexed 7-seg display & matrix keyboard interface using 8255. Programmable Keyboard/Display controller 8279, Organization, Working modes, command words & interfacing.

Unit III: 8086 & Peripheral Interfacing II: (10)

Programmable interval timer/counter 8254;   Architecture, working modes, interfacing 8259 PIC,

Organization, control words, interfacing, cascading of 8259's. Serial communication, Classification & transmission formats. USART 8251, Pins & block diagram, interfacing with 8086 & programming.

Unit – IV: Numeric Co-processor & DMA Controller: **(10)**

8086 maximum mode pin diagram, Closely coupled & loosely coupled multiprocessor system, 8087 Numeric coprocessor, architecture, interfacing with 8086, instruction set.DMAC 8237, Architecture, interfacing & programming, Introduction to Pentium.

Unit – V: 8051 microcontroller & programming: **(10)**

Introduction to 8051 microcontroller; Pin diagram, architecture, features & operation, Ports, memory organization, SFR's, Flags, Counters/Timers, Serial ports. Interfacing of external RAM & ROM with 8051. 8051 Interrupt structure, Interrupt vector table with priorities, enabling & disabling of interrupts

Unit – VI: 8051 microcontroller interfacing: **(10)**

Instruction set of 8051; data transfer, logical, arithmetic & branching instructions, Addressing modes, Assembly language programming examples, counter/timer programming in various modes. Serial communication, Operating modes, serial port control register, Baud rates. I/O expansion using 8255, Interfacing keyboard, LED display, ADC & DAC interface, stepper motor interface

Books:

Text Books:

1. Programming & Interfacing of 8086/8088, D.V. Hall, TMH.

2. Microprocessor 8086/8088 Family Programme Interfacing: Liu & Gibson

3. M.A. Mazidi & J.G. Mazidi, the 8051 Microcontroller and Embedded system, 3rd Indian reprint, Pearson Eduction

4. The Intel Microprocessor 8086 & 80486 Pentium and Pentium Pro. Architecture Programming and Interfacing – Brey.

Reference Books:

1. Intel Reference Manuals, Microprocessors & Microcontrollers: Intel

2. Microcontrollers – Peatman, Mc Graw Hill.

3. Microprocessors & Microcomputers based system design by Md. Rafiquzzaman.

4. 8086/8088 Microprocessors, Walter Triebel & Avtar Singh

5.Introduction to Microprocessors for Engineers and Scientists, P. K. Ghosh, P. R. Sridhar, PHI Publication. 6. The 8051 Microcontroller & Embeded Systems, Kenneth J. Ayala, Dhanvijay V. Gadre, CENGAGE Learning.

PROJECT REPORT

ON

"SMART WATER- AN AUTOMATION OF EXISTING WASTE WATER FILTRATION AND RECYCLING SYSTEM"

Submitted in partial fulfillment of requirement for the degree of

Bachelor of Engineering in

Electronics and Telecommunication Engineering

Submitted By

SUSHANT TUPPARWAR   DISHA BHATT

SUDARSHAN RAO   SHRIYAS DEOGHARE

Under the guidance of

MS. V. G. NASRE

PRIYADARSHINI COLLEGE OF ENGINEERING

Department of Electronics and Telecommunication Engineering

Priyadarshini College of Engineering,

Nagpur – 440019

2017-18

1

CERTIFICATE

This is to certify that the project entitled "**Smart Water - an Automation of Existing Waste Water Filtration and Recycling System**"has been carried out by

SUSHANT TUPPARWAR   **DISHA BHATT**

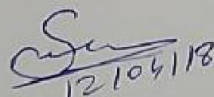**SUDARSHAN RAO**   **SHRIYASH DEOGHARE**

Under my guidance and submitted the partial fulfillment for the degree of Bachelor of Engineering (B.E.) In Electronics and Telecommunication Engineering, during the academic year 2017-18 is a bonafide work
Preparedby them.

This work fulfills the requirements relating the standard of work for theaward of Bachelor of Engineering in Electronics and Telecommunication to beawarded by Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur.

Place: Nagpur
Date

Ms. V. G. NASRE
Guide

Dr. (Mrs.) S.W. Varade
Head of Department
H.O.D.
Deptt. of E&T
Priyadarshini College of
Engineering, Nagpur-19

Dr. M. P. Singh
Principal

4

ABSTRACT

Clean drinking water is a basic human need. Automation plays a vital role in the safe and reliable operation in providing household usable water. This system focuses on an innovative, intelligent control & Monitoring system for water treatment by using "IOT" And "microcontroller". This system is an attempt to develop a cost effective water filtration & recycling system. In this system the bathroom & kitchen basin water is reused for gardening and toilet flushing. The basin water is passed through the "purifier system" Which consist of different purification techniques such as sedimentation, charcoal purifier, silica beads treatment is used so the water get purified close to neutral pH value. Water recycled is neither acidic nor alkali. The system also removes the unwanted color & odor of the water. For this "microcontroller system" is used to control flow of water and check turbidity of water. It is an automated device that can provide a safe, affordable and readily available for household usage. "IOT System" is connected to incoming water supply and check's the real time billing system and water usage. It also detects the "leakage of water". This system has "Hydro-power generator" which generates power by flow of water & stores the energy in a Lithium-Ion battery, so in case of power failure it can provide power to the recycling system for uninterruptable service.

PROJECT REPORT

ON

"DESIGN APPROACH TO MEASURE BMI OF HUMAN"

Submitted in partial fulfillment of requirement for the degree of
Bachelor of Engineering in

Electronics and Telecommunication Engineering

Submitted By

TUSHAR HATWAR   SAURABH JAGSHETTIWAR

KETAN NAVGHARE   ADHIRAJ JOSHI

Under the guidance of
Prof. V.V.PANCHBHAI

Department of Electronics and Telecommunication Engineering
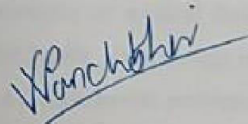Priyadarshini College of Engineering,
Nagpur – 440019
2017-18

CERTIFICATE

This is to certify that the project entitled **"DESIGN APPROACH TO MEASURE BMI OF HUMAN"** has been carried out by **TUSHAR HATWAR, SAURABH JAGSHETTIWAR, KETAN NAVGHARE** and **ADHIRAJ JOSHI** Under my guidance and submitted in the partial fulfillment for the degree of Bachelor of Engineering (B.E.) in Electronics and Telecommunication, during the academic year 2017-18 is a bonafide work prepared by them.

This work fulfills the requirements relating the standard of work for the award of Bachelor of Engineering in Electronics and Telecommunication to be awarded by Rastrasant Tukdoji Maharaj Nagpur University, Nagpur.
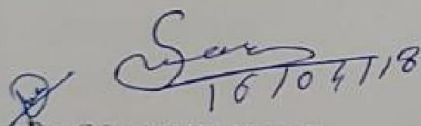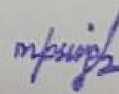
Place: Nagpur

Date:

Prof. V.V.Panchbhai

Guide

Dr. (Mrs.) S.W. Varade

Head of Department

Dr. M.P. Singh

Principal

CHAPTER - 1

1.1 <u>INTRODUCTION</u>

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board – you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.

The Uno is one of the more popular boards in the Arduino family and a great choice for beginners. We'll talk about what's on it and what it can do later in the tutorial.

Believe it or not, those 10 lines of code are all you need to blink the on-board LED on your Arduino. The code might not make perfect sense right now, but, after reading this tutorial and the many more Arduino tutorials waiting for you on our site, we'll get you up to speed in no time!

You Will Learn

In this tutorial, we'll go over the following:

- What projects can be accomplished using an Arduino
- What is on the typical Arduino board and why
- The different varieties of Arduino boards
- Some useful widgets to use with your Arduino

B. E. Seventh Semester

(Electronics & Communication/ Electronics & Telecommunication Engg)

TELEVISION AND VIDEO ENGINEERING

Duration: 3 Hrs.
College Assessment: 20 Marks
University Assessment: 80 Marks

Subject Code: BEECE702T/ BEETE702T   [4 – 0 – 1 – 5]

Objectives:
1.   To make students understand /explain the analysis and synthesis of T.V. system
2.   To study various colour TV system with greater emphasis on PAL T.V.system.
3.   To study Advance Technology of TV Engineering –Digital T.V., HDTV.
4.   To study various video recording system, display system and its application.

Outcome: **By the end of the course, the students shall be able to**
1.   analyze and understand colour T.V. System
2.   understand fundamental techniques of Different T.V. standards.
3.   understand Advanced T.V. Technology.
4.   understand different video recording, display and its consumer application.

Unit 1: Fundamentals of Television and Display   (10)
Television basics: Elements of TV system, low level TV transmission, TV receiver block diagram , Production of luminance & colour difference signal , Composite video signal, and channel bandwidth etc.., Color TV systems, colour fundamentals, mixing of colors , color perception, chromaticity diagram.

Unit 2: TV Standards   (08)
NTSC, PAL, SECAM systems, colour TV transmitter, colour TV receivers, remote control, antennas for transmission and TV pattern generation.

Unit 3: Digital TV   (10)
Introduction to Digital TV, Principle of Digital TV, Digital TV signals and parameters, Digital TV Transmitters, MAC signals, advanced MAC signal transmission, Digital TV receivers, Basic principles of Digital Video compression techniques, MPEG1, MPEG2, MPEG4.

Unit 4: HDTV   (10)
HDTV standards and systems, HDTV transmitter and receiver/encoder, Digital TV satellite Systems, CCTV, CATV, direct to home TV, set top box with recording facility, 3D TV systems.

Unit 5: Video Recorders (10)

IP Audio and Video, IPTV systems, Mobile TV, Video transmission in 3G mobile System, Digital Video Recorders, Video Projectors, HD Video projectors, Video Intercom systems.

Unit 6: Consumer Applications (07)

Colour TV Digital cameras, Camcorders, Handycams, and Digicams, Display devices: LED, LCD, CD/ DVD player, Blue Ray DVD Player, Dish TV.

Text Books

1.   Television and video Engineering, A. M. Dhake, Tata McGraw Hill Publication.
2.   Video Demisified, Kelth jack, Penram International Publication.
3.   Audio Video Systems, R.G. Gupta, Technical Education.

Reference Books

1.   S. P. Bali, "Color TV Theory and Practice", McGraw Hill Publications.
2.   Bernard Grob, Charles E, "Basic TV and Video Systems" McGraw Hill Publications.
3.   Gulathi, "Monochrome & Color TV", New Age International Publications .

4.   R.G. Gupta, "Television Engineering & Video Systems", McGraw Hill Publications

PROJECT REPORT
ON

"IOT BASED HOME AUTOMATION AND SURVEILLANCE SYSTEM"

Submitted in partial fulfillment of requirement for the degree of

Bachelor of Engineering in

Electronics and Telecommunication Engineering

Submitted By

SHWETA T. MESHRAM

SHITAL D. LOHAMBARE

BHAGYASHRI M. KATWE

SHWETA S. RANGARI

Under the guidance of

Prof. VISHAL V. PANCHBHAI

Department of Electronics and Telecommunication Engineering
Priyadarshini College of Engineering
Nagpur – 440019
2017-18

CERTIFICATE

This is to certify that the project entitled "**IOT BASED HOME AUTOMATION AND SURVEILLANCE SYSTEM**" has been carried out by

SHWETA T. MESHRAM
SHITAL D. LOHAMBARE

BHAGYASHRI M. KATWE
SHWETA S. RANGARI

Under my guidance and submitted in the partial fulfillment for the degree of Bachelor of Engineering (B.E) in Electronics and Telecommunication, during the academic year 2017-18 is a bonafide work prepared by them.
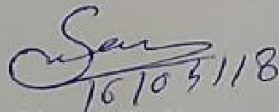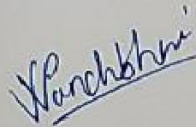
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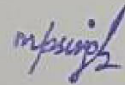
Place: Nagpur

Date:

Prof. Vishal V. Panchbhai
Project Guide

Dr. (Mrs.) S.W. Varade
Head of Department

Dr. M.P.Singh
Principal

ii

Introduction

As we know that, one can monitor the home which we are away from the home with the help of internet of thing. IoT is short for Internet of Things. The Internet of Things refers to the ever-growing network of physical objects that feature an IP address for internet connectivity, and the communication that occurs between these objects and other Internet-enabled devices and systems. Surveillance cameras are video cameras used for the purpose of observing an area Automation is the transformation of work process, a procedure or equipment to automatic rather than any human interference. To save energy, monitor activity of homes and for safety of home automation is needed. CCTV provides the best security and surveillance. Home automation application varies from a simple control of lightning to complex microcontroller based network. Raspberry pi is qualified for house controller, consuming power, size and cost. The home automation aim to control and operate electrical appliances. It offers a lot of flexibility over the wired system. It comes with various advantages like ease-of installation, ease-of-use and avoid the complexity. With combining the technology with home, we build an awesome home.

1.2 Necessity

Home automation is a modern technology that modifies our home to perform different sets of tasks automatically. Today, automation technology is gaining more recognition among people not just for home modification but in industrial and business sectors too. Home automation technology is constantly improving its flexibility by incorporating modernized features to satisfy the increasing demands of people.

When it comes to home automation, there are a few steps that must be followed in order to implement the home automation technology effectively. First, the automation needs should be planned. For example, if the overall objective is to improve your security system, then a checklist all its requirements is required before starting the automation process accordingly. If - lighting units are suspected to consume a large amount of energy then they could be automated to avoid unnecessary waste of electricity. Such a step would provide comfort, security and save power. Home automation technology is growing drastically and its demand is increasing in a wide range of sectors. In this project, home automation has been considered. For convenience, a single room encompassing the main appliances has been used.

B. E. Fifth Semester

(Electronics / Electronics & Communication / Electronics & Telecommunication Engg)

COMMUNICATION ELECTRONICS

Duration: 3 Hrs. College Assessment: 20 Marks University Assessment: 80 Marks

Subject Code: BEENE504T/ BEECE504T/BEETE504T   **[4 – 0 – 1 – 5]**

Objectives:

The course objectives are:

1. To study the basic concept of communication and different modulation system based on basic parameters.
2. To study the concept of noise, properties & its effects.

3. To study the AM, FM, PM process & compute modulation Index.
4.   To study the fundamentals of AM and FM Receivers.
5.   To develop knowledge about fundamentals of Broadband Communication Systems.

Outcome:

At the end of the course the students shall be able to:

1.   Demonstrate a basic understanding of the term bandwidth and its application in communications.

2   Describe quantizing and PCM signals, bandwidth and bit rate calculations, study amplitude and angle modulation and demodulation of analog signals etc.
3. Solve the problems involving bandwidth calculation, representation & Generation of an AM sine wave

4.   Compare different modulation techniques of Generation of FM (Direct & Indirect Method)
5.   Identify, formulate & solve communication engineering problems.

Unit I: Amplitude (Linear) Modulation   **(08)**

      Base band & Carrier communication, Introduction of amplitude modulation, Equation of AM, Generation of AM (DSBFC) and its spectrum, Modulation Index , Power relations applied to sinusoidal signals, DSBSC – multiplier modulator, Non linear generation, switching modulator, Ring modulator & its spectrum, SSBSC, ISB & VSB, their generation methods & Comparison, AM Broadcast technical standards.

Unit II: Angle Modulation   **(12)**

      Concept of Angle modulation, Types of Angle Modulation, frequency spectrum, Narrow band & wide band FM, Modulation index, Bandwidth, Phase Modulation, Bessel's Function and its mathematical analysis, Generation of FM (Direct & Indirect Method), Comparison of FM and PM.

Unit III: Pulse Modulation   (10)

Band limited & time limited signals, Narrowband signals and systems, Sampling theorem in time domain, Nyquist criteria, Types of sampling- ideal, natural, flat top, Aliasing & Aperture effect. Pulse Analog modulation: PAM PWM & PPM.

PCM – Generation & reconstruction, Bandwidth requirement of PCM.Differential PCM, Delta Modulation & Adaptive DM. (Only Block diagram treatment).

Unit IV: Noise   (10)

Sources of Noise, Types of Noise, White Noise, Thermal noise, shot noise, partition noise, Low frequency or flicker noise, burst noise, avalanche noise, Signal to Noise Ratio, SNR of tandem Connection, Noise Figure, Noise Temperature, Friss formula for Noise Figure, Noise Bandwidth.

Unit V: AM and FM Receivers   (10)
Communication Receiver, Block Diagram & special Features

Block diagram of AM and FM Receivers, Super heterodyne Receiver, Performance characteristics: Sensitivity, Selectivity, Fidelity, Image Frequency Rejection, Pre-emphasis, De-emphasis

AM Detection: Rectifier detection, Envelope detection, Demodulation of DSBSC: Synchronous detection, Demodulation of SSBSC.

FM Detection: Foster Seelay FM Detector & FM detection using PLL

Unit VI: Broadband Communication Links & Multiplexing: (10)

Multiplexing: Frequency Division Multiplexing, Time Division Multiplexing, Code Division Multiplexing.

Short and Medium Haul Systems: Coaxial Cables, Fiber optic links, Microwave Links, Tropospheric scatter Links. **Long Haul Systems**: Submarine cables.

Books:

Text Books:
1.   Kennedy & Devis : Electronic Communication Systems , Tata McGraw Hills Publication(Fourth Edition)

2. Dennis Roddy & Coolen - Electronic Communication, PHI (Fourth Edition)

3. B. P. Lathi: Modern Digital and Analog. Communication Systems: Oxford Press Publication (Third Edition)

Reference Books:
1. Simon Haykin: Communication Systems, John Wiley & Sons (Fourth Edition)
2.   Taub & Schilling: Principles of Communication Systems, Tata McGraw-Hill

3.   Leon W.Couch, II: Digital and Analog Communication Systems, Pearson Education (Seventh Edition) 4. Electronic Communication Systems, Roy Blake, CENGAGE Learning.

PROJECT REPORT

On

"SLOW SPEED ZONE"

CERTIFICATE

ABSTRACT

Traffic management is becoming one of the most important issues in rapidly growing cities. Due to bad traffic management, a lot of man-hours are being wasted. Increasing congestion on highways and problems associated with existing detectors has generated an interest in vehicle detection technologies.

This project aims at lowering the speed of the vehicles in the slow speed zones likewise schools, hospitals, vicinity of important buildings of significance. In this we are control the power of the motor to slow down the speed of the vehicle by PWM technique.

ectronics / Electronics & Communication/ Electronics

& Telecommunication Engg) DIGITAL SIGNAL

PROCESSING

**Duration: 2
Hrs. College Assessment: 25
Marks University Assessment:
25 Marks**

Subject Code: BEENE602P/ BEECE602P/ BEETE602P   **[0 – 2 – 0 – 2]**

Objectives:

1.   To understand principle & working of digital signal processing for various applications.

2.   To understand Z transforms and discrete time Fourier transforms for the analysis of digital signals and systems.

3.   To design and implement FIR & IIR filter and analysis of their frequency response.

Outcome:

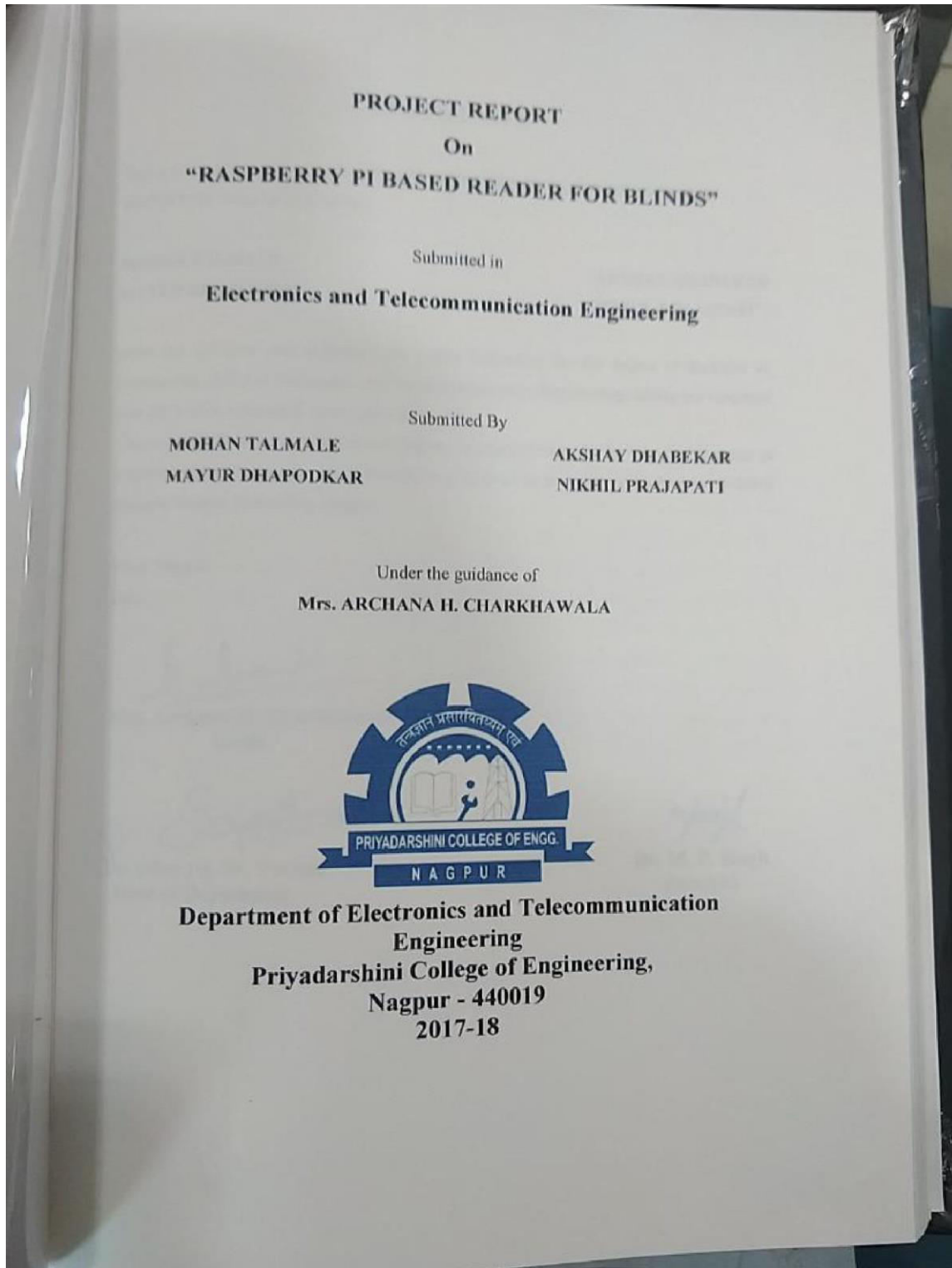At the end of the course the students shall be able to:

1. Analyze and process the signals in the discrete domain.

2. Design the filters to suit requirements of specific applications.

3.   Apply the techniques, skills, and modern engineering tools like MATLAB and digital processors.

– –

Any TEN practicals are to be conducted

LIST OF EXPERIMENTS

1.   To plot and represent following basic discrete time signals using MATLAB

functions. : Unit impulse, unit step, ramp, real and complex exponential and its

representations

2.   To plot linear convolution of discrete signals using MATLAB functions.

3.   Write a program to compute cross-correlation and auto-correlation of the given sequences with corresponding plot.

4.   Write a program to test stability of given discrete- time system.

5.   To find Z transform of discrete time signal and its ROC with corresponding plot.

6.   To find inverse Z transform of given discrete time signal.

7.   Write a program to find frequency response of given system.

8.   To compute DFT and IDFT of discrete time signals.

PROJECT REPORT

On

"RASPBERRY PI BASED READER FOR BLINDS"

Submitted in

Electronics and Telecommunication Engineering

Submitted By

MOHAN TALMALE   AKSHAY DHABEKAR

MAYUR DHAPODKAR   NIKHIL PRAJAPATI

Under the guidance of

Mrs. ARCHANA H. CHARKHAWALA

PRIYADARSHINI COLLEGE OF ENGG.

NAGPUR

Department of Electronics and Telecommunication Engineering

Priyadarshini College of Engineering, Nagpur - 440019

2017-18

ABSTRACT

According to the World Health organization (WHO), 285 million people are estimated to be visually impaired worldwide among which 90% live in developing countries. and forty five million blind individuals world-wide. Though there are many existing solutions to the problem of assisting individuals who are blind to read, however none of them provide a reading experience that in any way parallels that of the sighted population. In particular, there is a need for a portable text reader that is affordable and readily available to the blind community. Inclusion of the specially enabled in the IT revolution is both a social obligation as well as a computational challenge in the rapidly advancing digital world today. This work proposes a smart reader for visually challenged people using raspberry pi. This paper addresses the integration of a complete Text Read-out system designed for the visually challenged. The system consists of a webcam interfaced with raspberry pi which accepts a page of printed text. The OCR (Optical Character Recognition) package installed in raspberry pi scans it into a digital document which is then subjected to skew correction, segmentation, before feature extraction to perform classification. Once classified, the text is readout by a text to speech conversion unit (TTS engine) installed in raspberry pi. The output is fed to an audio amplifier before it is read out. The simulation for the proposed project can be done in MATLAB. The simulation is just an initiation of image processing ie, the image to text conversion and text to speech conversion done by the OCR software installed in raspberry pi. The system finds interesting applications in libraries, auditoriums, offices where instructions and notices are to be read and also in assisted filling of application forms. Results along with analysis are presented.