



Anand Nagar, Krishnankoil - 626126, Srivilliputtur (via), Virudhunagar District, Tamilnadu.

APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES

Date of Application:10-05-2025

Department	ELECTRONICS AND COMMUNICATION ENGINEERING	Application No.	2025010344
Area of Research	WIRELESS COMMUNICATION	Research Mode	PART TIME

Name :SUBHA BHARATHI S
Date of Birth / Age :08-04-1987 / 38 Years
Gender :FEMALE
Category :BC
e-Mail ID :subha.sekar87@gmail.com
Mobile :+96871119921



S. Subha

Father's/Husband's Name	SENTHIL KUMAR	Father's/Husband's Occupation	LECTURER
Family Income	1800000	Residential Type	RURAL
Birth Place	SHENCOTTAH	Mother Tongue	TAMIL
Religion	HINDU	Martial Status	MARRIED
Aadhaar No.	278871165339	PAN No.	CDJPS0630N
Physically Challenged	NO	Type of Disability	-
Address for Communication: OLD NO 18 A NEW NO 69 SECOND STREET MUTHUKRISHNAPURAM KADAYANALLUR TENKASI DISTRICT TAMILNADU INDIA Pin-627751		Permenant Address: OLD NO 18 A NEW NO 69 SECOND STREET MUTHUKRISHNAPURAM KADAYANALLUR TENKASI DISTRICT TAMILNADU INDIA Pin-627751	

Qualification						
Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
ME	APPIED ELECTRONICS	ANNA UNIVERSITY OF TECHNOLOGY TIRUNELVELI	2011	8.4	FIRST CLASS	REGULAR
BE	ELECTRONICS AND COMMUNICATION	ANNA UNIVERSITY CHENNAI	2008	79	FIRST CLASS	REGULAR

Experience					
Organization	Designation	Experience From	Experience TO	Work Nature	
UNIVERSITY OF TECHNOLOGY AND APPLIED SCIENCES OMAN	LECTURER	2018-09-20	2025-05-10	LECTURER	
VIT UNIVERSITY	ASSISTANT PROFESSOR	2012-05-23	2018-08-31	LECTURER	

Payment Details				
Transaction ID	Reference	Date of transaction	Amount	Status
2025010344_250510143137	BHD5J330KGZF8I	10-05-2025	600	SUCCESS

RESEARCH PROPOSAL FOR PHD APPLICATION

Title A Study on 5G and Next Generation Technologies

Research Area Wireless Communication

Executive Summary

The evolution of 5G right from 1G leads to glorious development in the current wireless communication. The fast development and requirement of mobile data network and in parallel, the evolution of Internet of things have diversified the strategy for implementing the 5G and beyond it. It is not just the high data rate and efficiency of spectrum usage satisfies the need for 5G as previous generations. To implement the 5G network communication IMT-2020 has standardized the key performance indicators (KPI's) and suitable technologies for different scenarios. This proposal presents such different scenarios applicable for today's requirement and the suitable technologies individually or jointly improve the overall performance of the 5G and beyond networks. Methods like Massive MIMO, millimeter wave communication (mm-Wave), Non-orthogonal Multiple Access (NOMA), Intelligent Reflecting surfaces (IRS), Internet of Things (IOT) are key research topics for implementing next generation wireless communication. These technologies will enable us to have a more efficient network that can handle large number of connections, low latency, improving the capacity, Traffic density, spectral efficiency, energy efficiency. In conclusion, this article also examines the potential difficulties and pitfalls of 5G technology.

Applicants

Applicant

Mrs. Subha Bharathi

Lecturer – UTAS Oman

+968 71119921

Introduction

Wireless Communication has travelled along a long way and continues still. Started from 1G to 5G, wireless communication has seen a tremendous growth that leads to the invention of numerous technologies that uplifted the human life in many ways. Started from voice calls to internet gaming and finally IOT devices communication, the new wireless technologies are getting introduced in every aspect and everywhere in the world. 5G exiting as a global standard and many countries are already had a detailed study on projects like IMT-2020 China and 5G forum of Korea [1]. The wireless era has a continuous improvement in which each generation provides us with fast data connection and enormous data transfer. The 1G technology introduced in 1980s and was limited to voice calls only. Digital data transmission and text messages were started in 2G period. 3G brought us mobile broadband, allowing faster internet access on our phones. 4G further improved high-speed experience that allows us to stream videos and download bulk files with ease. Nowadays, 5G provides us with ultra-speed, more reliable and ultra-low latency network that can serve more coverage and denser networks that improves the user experience [1] – [4].

Application Scenarios and Key Indicators

As discussed in the introduction, mobile networks and internet of things are the game changing techniques in the field of 5g networks that were driven by markets, end users, cellular applications and various other applications [1]. These applications can be categorized into different scenarios.

1. LARGE COVERAGE IMPROVEMENT SCENARIO
2. MACHINE-TO MACHINE COMMUNICATION SCENARIO
3. ULTRA-DENSE COMMUNICATION SCENARIOS
4. DELAY-SENSITIVE SCENARIO

Based on above mentioned situations and requirements, many type of key performance indicators and key existing technologies are identified which can be achieved through 5G and beyond networks as shown in figure 2. Those are (i) User experienced data rate in downlink and uplink (15Mbps to 1024Mbps),(ii) Density of connections (number/km²) – (10⁵ – 10⁶ connections) , (iii) Traffic density (bps/km²) – 100 GHz – 15 THz , (iv) End-to-End Delay (less than 5ms – 20ms)and (v) Total number of Connections (10³ – 10⁶ connections) [1].To attain these performances, 5G network has developed some popular existing technologies (i) Massive MIMO, (ii) Non-orthogonal frequency division multiple access, (iii) High frequency communication. (iv) Device to Device Communication and (v) Intelligent Reflecting Surfaces [28]-[31].

Literature Review and Analysis of Related Work

The traditional concept of Multiple-Input, Multiple-Output introduced in 3G predominantly executed in 4G. MIMO with OFDM almost satisfied the requirements of 4G. But in 5G, the required data rate up to 10Gbps can be achieved using Massive MIMO which uses several hundreds of antennas at BS only not altering the antenna configuration at the user side. Massive MIMO has the advantage of providing data rate up to 10Gbps, latency of 1ms, Number of devices connected more than 100 times of previous generation, more coverage and low power consumption [5]-[7]. The potential of Massive MIMO in 5G are (i) Increased capacity by exploiting the spatial multiplexing by using large number of antenna arrays, (ii) Low power components with lesser cost amplifiers. (iii) Problem of accuracy and linearity availed in linear amplifiers and RF chains has been removed, (iv) Large number of antenna leads to beam forming that reduces latency due to fading [6].

When bandwidth and power resources are limited, multiple access schemes where multiple users share the same resources are used to improve spectral efficiency. Users with poor channel gain have to wait for transmission due to uneven sharing amongst users. Particularly for 5G networks with high data rates and beyond 5G that require 10Tbps/km², the traditional multiple access schemes will not be suitable [9] – [11]. NOMA is a compelling 5G technology that supports diverse environments, massive connectivity improves spectral efficiency and provides low cost and low latency (1ms). It is applicable to different situations like IoT massive environments, Mobile Broadband and mission-critical services where delay is not acceptable. It removes the other user's signal which act like an interference and the corresponding user signal will be retrieved and decoded and performs better than other OMA. Development of simple power allocation strategies and better precoding algorithm which reduces the complexity level is still a problem. Deep learning-based NOMA performs better than other variant NOMA eliminating these issues to a certain level.

To overcome the demand of above 30GHz, the unused spectrum from 30 GHz to 300 GHz, wavelength is 1-10mm and total bandwidth range of 252 GHz called millimeter frequency spectrum is used. It provides improved spectral efficiency, improved spectrum reuse, increased data traffic capacity and increased bandwidth and hence mm-Wave is one of the promising technologies in 5G networks [13]. This high frequency spectrum also has some drawbacks such as high path loss, high penetration loss, reflection and absorption, rain fading etc. Mm-Wave

communication is a short-range wireless system so that massive MIMO along with these can improve the capacity of system. MIMO with smart antenna can improve the Degrees of Freedom [15]. The Estimation methods are based on PLL based oscillators and upgrading the chances of coverage in mm-Wave communication. Also, beamforming techniques are used to progress towards nullifying the interference effect to improve the diversity order and Degrees of freedom (DoF) [14].

One of the significant technologies in 5G that enables the IoT applications in a broader way is the Device-Device communication. Large number of devices can be provided wireless connectivity by this key technique. It provides the connection of massive number of devices, low latency, fast speed and low-cost devices. Real time applications made possible with more reliable condition without delay which is a crucial factor for D2D communication [16] – [21]. D2D applications include smart cities, smart homes, healthcare related applications, smart grids, M2M video streaming and emergency network etc. Privacy and Security, Device lifetime, Device network Coverage, Device discovery, resource allocation, mode selection, interference management are some of the related issues to be addressed. D2D can be integrated with different technologies like C-RAN, mm-Wave, IoT, VLC and UDN networks. In future, 6G is expected to be licensed by 2030 which is comprised for Internet of Everything (IoE). D2D aligned with Artificial Intelligence (AI) could be a promising solution which leads to Intelligent D2D communication (ID2D).

Objectives

1. To learn about different future wireless technologies.

There are many technologies available in wireless communication. From those optimizing techniques need to be identified or proposed to meet out the research gap identified.

2. To identify suitable methodology for the proposed system.
3. To identify and demonstrate suitable software for implementing the proposed methodology
4. To analyse and compare the proposed technique with the existing technique with the results obtained.
5. To publish the result and work in peer reviewed journals

Time Line

Month	4	8	12	16	20	24	28	32	36	40	44	48
Literature survey, Background study	*	*										
Course Work and Comprehensive Viva		*	*	*								
Problem Identification and Methodology				*	*	*						
Simulation & Publication						*	*	*				

Drafting Thesis									*	*		
Review and Final Submission											*	*

References

- [1] Yifei, Yuan, and Zhu Longming. "Application scenarios and enabling technologies of 5G." *China Communications* 11, no. 11 (2014): 69-79.
- [2] Shah, AFM Shahren. "A survey from 1G to 5G including the advent of 6G: Architectures, multiple access techniques, and emerging technologies." In *2022 IEEE 12th Annual Computing and Communication Workshop and Conference (CCWC)*, pp. 1117-1123. IEEE, 2022.
- [3] Shrivastava, Utpal, and Jitendra Kumar Verma. "A Study on 5G Technology and Its Applications in Telecommunications." In *2021 International Conference on Computational Performance Evaluation (ComPE)*, pp. 365-371. IEEE, 2021.
- [4] Pavan, Gaddam, VKR Narasimha Reddy, Agatamudi Ram Prasad, Radhika Rani Chintala, and N. Raghavendra Sai. "A Comprehensive Survey on Recent Advances in 5G Networks and Mobile Systems." In *2023 7th International Conference on Computing Methodologies and Communication (ICCMC)*, pp. 949-953. IEEE, 2023.
- [5] Suyama, Satoshi, Tatsuki Okuyama, Nobuhide Nonaka, and Takahiro Asai. "Recent studies on massive MIMO technologies for 5G evolution and 6G." In *2022 IEEE Radio and Wireless Symposium (RWS)*, pp. 90-93. IEEE, 2022.
- [6] Shaikh, Aliya, and Maninder Jeet Kaur. "Comprehensive survey of massive MIMO for 5G communications." In *2019 Advances in Science and Engineering Technology International Conferences (ASET)*, pp. 1-5. IEEE, 2019.
- [7] Bhuvaneshwari, M., and S. Sasipriya. "Performance analysis of various techniques adopted in a 5G communication network with a massive MIMO system." In *2020 International Conference on Inventive Computation Technologies (ICICT)*, pp. 283-286. IEEE, 2020.
- [8] Vasuki, A., and Vijayakumar Ponnusamy. "Latest Wireless Technologies towards 6G." In *2021 International Conference on Computer Communication and Informatics (ICCCI)*, pp. 1-4. IEEE, 2021.
- [9] Madhan, C., and M. Pappa. "Design and Performance Analysis of NOMA_OFDM based MIMO System." In *2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT)*, pp. 140-144. IEEE, 2023.
- [10] Thakre, Prasheel N., and Sanjay B. Pokle. "A survey on power allocation in pd-noma for 5g wireless communication systems." In *2022 10th International Conference on Emerging Trends in Engineering and Technology-Signal and Information Processing (ICETET-SIP-22)*, pp. 1-5. IEEE, 2022.
- [11] Hassan, Mohamed, Manwinder Singh, and Khalid Hamid. "Survey on NOMA and spectrum sharing techniques in 5G." In *2021 IEEE International Conference on Smart Information Systems and Technologies (SIST)*, pp. 1-4. IEEE, 2021.

- [12] Saito, Yuya, Yoshihisa Kishiyama, Anass Benjebbour, Takehiro Nakamura, Anxin Li, and Kenichi Higuchi. "Non-orthogonal multiple access (NOMA) for cellular future radio access." In 2013 IEEE 77th vehicular technology conference (VTC Spring), pp. 1-5. IEEE, 2013.
- [13] Chen, Wen Chiang. "5G mmWAVE technology design challenges and development trends." In 2020 international symposium on VLSI design, automation and test (VLSI-DAT), pp. 1-4. IEEE, 2020.
- [14] Udayakumar, E., and V. Krishnaveni. "Analysis of various interference in millimeter-wave communication systems: a survey." In 2019 10th International Conference on Computing, Communication and Networking Technologies (ICCCNT), pp. 1-5. IEEE, 2019.
- [15] Misra, Gourav, Arun Agarwal, Saurav Misra, and Kabita Agarwal. "Device to device millimeter wave communication in 5G wireless cellular networks (A next generation promising wireless cellular technology)." In 2016 International Conference on Signal Processing, Communication, Power and Embedded System (SCOPEs), pp. 89-93. IEEE, 2016.
- [16] Alsulami, Mashael M., and Nadine Akkari. "The role of 5G wireless networks in the internet-of-things (IoT)." In 2018 1st International Conference on Computer Applications & Information Security (ICCAIS), pp. 1-8. IEEE, 2018.
- [17] Mir, Aabid, Megat F. Zuhairi, Shahrulniza Musa, Toqeer Ali Syed, and Ahmed Alrehaili. "Poster: A survey of security challenges with 5g-iot." In 2020 First International Conference of Smart Systems and Emerging Technologies (SMARTTECH), pp. 249-250. IEEE, 2020.
- [18] Khurpade, Jyoti Mante, Devakanta Rao, and Parth D. Sanghavi. "A Survey on IOT and 5G Network." In 2018 International conference on smart city and emerging technology (ICSCET), pp. 1-3. IEEE, 2018.
- [19] Ammar, Abdussalam Masaud, Amira Youssef Ellafi, Amer R. Zerek, and Moeid M. Elsokah. "A Survey on Device to Device Communications and the Impact on the 5G Networks Operators." In 2023 IEEE 3rd International Maghreb Meeting of the Conference on Sciences and Techniques of Automatic Control and Computer Engineering (MI-STA), pp. 640-646. IEEE, 2023.
- [20] Raghu, T. V., and M. Kiran. "A survey on device to device communications." In 2022 International Conference for Advancement in Technology (ICONAT), pp. 1-6. IEEE, 2022.
- [21] Gupta, Sucheta, Rajan Patel, Rajesh Gupta, Sudeep Tanwar, and Nimisha Patel. "A survey on resource allocation schemes in device-to-device communication." In 2022 12th International Conference on Cloud Computing, Data Science & Engineering (Confluence), pp. 140-145. IEEE, 2022.
- [22] Vaishnav, Anusha, Amulya Ratna Swain, and Manas Ranjan Lenka. "Device Discovery Approaches in D2D Communication: A Survey." In 2022 OITS International Conference on Information Technology (OCIT), pp. 391-396. IEEE, 2022.
- [23] Gismalla, Mohammed Salih Mohammed, Asrul Izam Azmi, Mohd Rashidi Bin Salim, Mohammad Faiz Liew Abdullah, Farabi Iqbal, Wafi A. Mabrouk, Maisara Binti Othman, Adel YI Ashyap, and Abu Sahmah Mohd Supa'at. "Survey on device to device (D2D) communication for 5GB/6G networks: Concept, applications, challenges, and future directions." IEEE Access 10 (2022): 30792-30821.
- [24] Al-Shareeda, Mahmood A., Abeer Abdullah Alsadhan, Hamzah H. Qasim, and Selvakumar Manickam. "Software defined networking for internet of things: review, techniques, challenges, and future directions." Bulletin of Electrical Engineering and Informatics 13, no. 1 (2024): 638-647.

- [25] Makondo, Ntshuxeko, Hlabishi I. Kobo, and Topside E. Mathonsi. "The latest developments in Software Defined Networking: Adoption rate and challenges." In 2023 IEEE AFRICON, pp. 1-6. IEEE, 2023.
- [26] Chaudhary, Rajat, Gagangeet Singh Aujla, Neeraj Kumar, and Pushpinder Kaur Chouhan. "A comprehensive survey on software defined networking for smart communities." International Journal of Communication Systems (2022): e5296.
- [27] Horvath, Raphael, Dietmar Nedbal, and Mark Stieninger. "A literature review on challenges and effects of software defined networking." Procedia Computer Science 64 (2015): 552-561.
- [28] Goyal, Riya, Nitish Mahajan, Tanu Goyal, Sakshi Kaushal, Nishant Gupta, and Harish Kumar. "Exploration of 5G technology for cellular communication: A survey." In 2018 Second International Conference on Intelligent Computing and Control Systems (ICICCS), pp. 330-334. IEEE, 2018.
- [29] Beenish, Hira, and Muhammad Fahad. "5G a review on existing technologies." In 2019 2nd international conference on computing, mathematics and engineering technologies (iCoMET), pp. 1-6. IEEE, 2019.
- [30] Ni, Yunfeng, Jiahao Liang, Xiaohong Shi, and Dongdong Ban. "Research on key technology in 5G mobile communication network." In 2019 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS), pp. 199-201. IEEE, 2019.
- [31] Agarwal, Vivek, Chandra Sharma, Rajaneesh Shetty, Anil Jangam, and Rajiv Asati. "A journey towards a converged 5G architecture & beyond." In 2021 IEEE 4th 5G World Forum (5GWF), pp. 18-23. IEEE, 2021.

Anna University Chennai



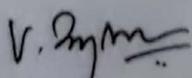
Reg. No.81204106049/RG

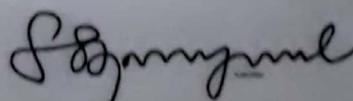
The Syndicate of the Anna University Chennai hereby makes known that **SUBHA BHARATHI S** has been admitted to the **DEGREE OF BACHELOR OF ENGINEERING in ELECTRONICS AND COMMUNICATION ENGINEERING** under the **Faculty of Information and Communication Engineering**, having completed the prescribed programme of study and having been certified by the duly appointed examiners to be qualified to receive the same, and has been placed in **FIRST CLASS WITH DISTINCTION** at the Examination held in **APRIL 2008**.

Given under the Seal of the University

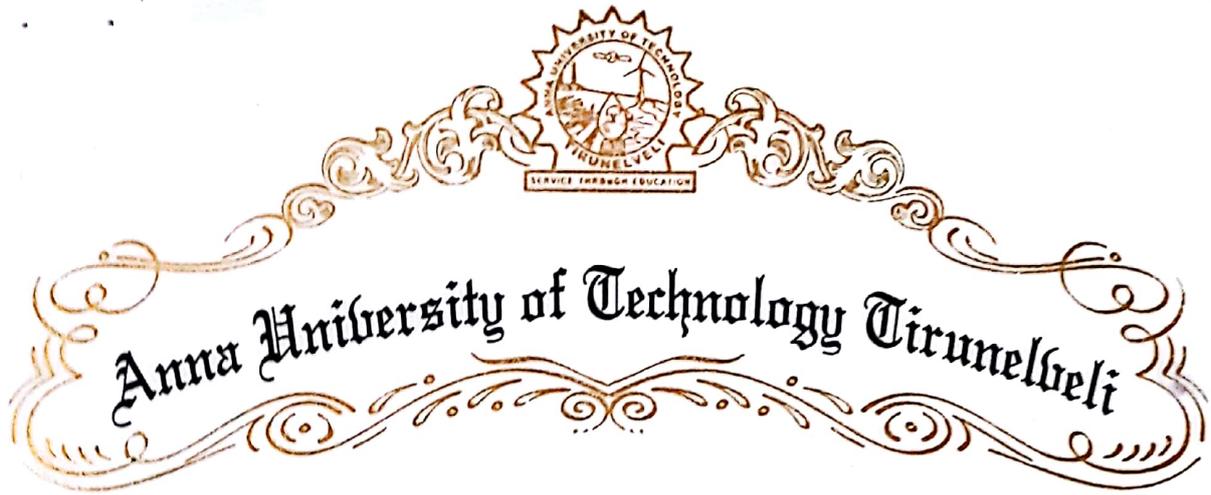


Chennai 600 025
India
December 2008
EUM106049


Controller of Examinations


Registrar


Vice-Chancellor



Reg. No. 1094301017



*The Syndicate of the Anna University of Technology Tirunelveli hereby makes known that **SUBHA BHARATHI S** has been admitted to the **DEGREE OF MASTER OF ENGINEERING** in **APPLIED ELECTRONICS** under the **FACULTY OF INFORMATION AND COMMUNICATION ENGINEERING**, having completed the prescribed programme of study through the **University Departments** of this University and having been certified by the duly appointed examiners to be qualified to receive the same, and has been placed in **FIRST CLASS** at the Examination held in **MAY 2011**.*



Given under the seal of the University

TIRUNELVELI-627 007
INDIA
February 2012


Controller of Examinations i/c


Registrar i/c


Vice-Chancellor

29/19/16
Apostille
6050/11/4



ATTESTED

NOTARY PUBLIC
GF 13 B, Aruna Mahal Building 19,
Barakhamba Road, New Delhi-110001
Reg. entry No. 10642

Asia
Pune

(RADHA CHARAN)
SDM (Karawal Nagar)
Govt. of NCT of Delhi



5

भारत सरकार GOVERNMENT OF INDIA
अपोस्टिल / APOSTILLE
(Convention de La Haye du 5 octobre 1961)

Country: INDIA

This public document of the type
CERTIFICATE
is issued to SUBHA BHARATHI S
has been signed by RADHA CHARAN
with the seal / stamp of SDM, KARAWAL NAGAR, DELHI

Certified by
Section Officer(OI) MINISTRY OF EXTERNAL AFFAIRS
on 04-Apr-2016 at NEW DELHI, INDIA
with reference no. DLND0011037316

(PUSHPABALLANI)
Secretary (External Affairs)
Ministry of External Affairs
New Delhi



Sl.No. 3138

Read by	
Checked by	



ANNA UNIVERSITY OF TECHNOLOGY TIRUNELVELI

TIRUNELVELI - 627 007

UNIVERSITY DEPARTMENTS

M.E. DEGREE EXAMINATIONS

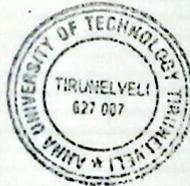
CONSOLIDATED STATEMENT OF GRADES

Folio Number: DU0900173



NAME OF THE CANDIDATE	SUBHA BHARATHI S	REGISTER NO.	1094301017
DEGREE & BRANCH	M.E. Applied Electronics	MONTH & YEAR OF LAST APPEARANCE	JUNE 2011
MODE	REGULAR		
DEPARTMENT OF STUDY	ELECTRONICS AND COMMUNICATION ENGINEERING	REGULATIONS	2009

SEM. NO.	SUBJECT CODE	SUBJECT TITLE	CREDITS	GRADE	MONTH & YEAR OF PASSING
01	UAP9111	Advanced Digital System Design	3	A	Dec 2009
01	UAP9112	Digital CMOS VLSI Design	3	B	Dec 2009
01	UAP9113	Analog Integrated Circuit Design	3	C	Dec 2009
01	UAP9114	Statistical Signal Processing	3	B	Dec 2009
01	UMA9125	Applied Mathematics for Electronics Engineers	4	C	Dec 2009
01	UAP9165	Wireless Sensor Networks	3	A	Dec 2009
01	UAP9117	Embedded Systems Design Laboratory	2	A	Dec 2009
02	UAP9121	Advanced Control Engineering	3	B	June 2010
02	UAP9151	Neural Networks and Its Applications	3	S	June 2010
02	UAP9162	Advanced Microprocessors and Microcontrollers	3	B	June 2010
02	UAP9163	Embedded Systems	3	A	June 2010
02	UAP9164	High Speed Switching Architectures	3	C	June 2010
02	UCP9167	Digital Image Processing	3	B	June 2010
02	UAP9124	Integrated Circuits Design Laboratory	2	A	June 2010
03	UAP9155	Electromagnetic Interference and Compatibility in System Design	3	B	Dec 2010
03	UAP9158	Internet Working and Multimedia	3	B	Dec 2010
03	UAP9166	Introduction to MEMS System Design	3	A	Dec 2010
03	UAP9135	Project Work - Phase I	6	A	Dec 2010
04	UAP9141	Project Work - Phase II	12	A	June 2011
*** End of Statement ***					
Classification: FIRST CLASS					



Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	
Grade Point Average (GPA)	8.048	8.400	8.600	9.000							
Total Credits Earned : 68	Cumulative Grade Point Average (CGPA)						8.441	Medium of Instruction: ENGLISH			

* Previously Anna University Tirunelveli

Tirunelveli - 627 007
Date : 05 September 2011

SIGNATURE OF THE STUDENT



CONTROLLER OF EXAMINATIONS

Range	91 - 100	81 - 90	71 - 80	61 - 70	56 - 60	50 - 55
Grade	S	A	B	C	D	E
Points	10	9	8	7	6	5

This document is issued without any correction.



B.E. DEGREE EXAMINATIONS
CONSOLIDATED STATEMENT OF MARKS

NAME OF THE CANDIDATE						REGISTER NO.							
SUBHA BHARATHI S						81204106049							
COLLEGE OF STUDY						MONTH & YEAR OF LAST APPEARANCE							
812: Mookambigai College of Engineering						April 2008							
PROGRAMME & BRANCH						REGULATIONS							
B.E. Electronics and Communication Engineering						2004							
SEM	SUBJECT CODE	SUBJECT TITLE	MAX	MIN	MARKS SECURED	MONTH & YEAR OF PASSING	SEM	SUBJECT CODE	SUBJECT TITLE	MAX	MIN	MARKS SECURED	MONTH & YEAR OF PASSING
01	CY1101	Chemistry-I	100	50	062	NOV 2004	06	CS1251	Computer Architecture	100	50	078	APR 2007
01	GE1101	Engineering Graphics	100	50	079	NOV 2004	06	CS1302	Computer Networks	100	50	080	APR 2007
01	GE1102	Fundamentals of Computing	100	50	060	NOV 2004	06	EC1351	Digital Communication	100	50	083	APR 2007
01	HS1101	English-I	100	50	075	NOV 2004	06	EC1352	Antenna and Wave Propagation	100	50	068	APR 2007
01	MA1101	Mathematics-I	100	50	063	NOV 2004	06	MG1351	Principles of Management	100	50	080	APR 2007
01	PH1101	Physics-I	100	50	086	NOV 2004	06	MA1011	Numerical Methods	100	50	075	APR 2007
01	CY1102	Chemistry Laboratory	100	50	081	NOV 2004	06	EC1353	Communication System Lab	100	50	094	APR 2007
01	GE1103	Engineering Practices Lab	100	50	091	NOV 2004	06	EC1354	Networks Lab	100	50	093	APR 2007
01	GE1104	Computer Practice-I	100	50	093	NOV 2004	06	EC1355	Electronic System Design Lab	100	50	097	APR 2007
01	PH1102	Physics Laboratory	100	50	092	NOV 2004	06	GE1352	Communication Skills Laboratory	100	50	081	APR 2007
02	CY1201	Environmental Science and Engineering	100	50	072	APR 2005	07	EC1401	VLSI Design	100	50	067	NOV 2007
02	EC1151	Circuit Analysis	100	50	072	APR 2005	07	EC1402	Optical Communication	100	50	063	NOV 2007
02	GE1151	Engineering Mechanics	100	50	075	APR 2005	07	EC1403	Microwave Engineering	100	50	078	NOV 2007
02	HS1151	English - II	100	50	085	APR 2005	07	MG1401	Total Quality Management	100	50	070	NOV 2007
02	MA1151	Mathematics - II	100	50	077	APR 2005	07	EC1009	Digital Image Processing	100	50	071	NOV 2007
02	PH1154	Physics - II	100	50	082	APR 2005	07	EC1011	Television and Video Engineering	100	50	066	NOV 2007
02	EC1152	Electric Circuits Lab	100	50	099	APR 2005	07	EC1404	VLSI Lab	100	50	098	NOV 2007
02	GE1152	Computer Practice-II	100	50	096	APR 2005	07	EC1405	Optical and Microwave Lab	100	50	094	NOV 2007
03	CS1151	Data Structures	100	50	069	NOV 2005	08	EC1451	Mobile Communication	100	50	072	APR 2008
03	EC1201	Digital Electronics	100	50	061	NOV 2005	08	EC1013	Wireless networks	100	50	081	APR 2008
03	EC1202	Electron Devices	100	50	082	NOV 2005	08	EC1015	Satellite Communication	100	50	075	APR 2008
03	EC1203	Electronic Circuits - I	100	50	071	NOV 2005	08	EC1452	Project Work	200	100	191	APR 2008
03	EE1211	Electrical Machines	100	50	067	NOV 2005							
03	MA1201	Mathematics - III	100	50	068	NOV 2005							
03	CS1152	Data Structure Lab	100	50	096	NOV 2005							
03	EC1204	Electronic Devices and Circuits Lab I	100	50	094	NOV 2005							
03	EE1251	Electrical Machines Lab	100	50	087	NOV 2005							
04	EC1251	Electronic Circuits II	100	50	058	APR 2006							
04	EC1252	Signals and Systems	100	50	073	APR 2006							
04	EC1253	Electromagnetic Fields	100	50	053	APR 2006							
04	EC1254	Linear Integrated Circuits	100	50	065	APR 2006							
04	EC1255	Measurements and Instrumentation	100	50	075	APR 2006							
04	MA1254	Random Processes	100	50	060	APR 2006							
04	EC1256	Electronics circuits II and simulation Lab	100	50	093	APR 2006							
04	EC1257	Linear Integrated Circuit Lab	100	50	093	APR 2006							
04	EC1258	Digital Electronics Lab	100	50	093	APR 2006							
05	EC1301	Communication Theory	100	50	085	NOV 2006							
05	EC1302	Digital Signal Processing	100	50	073	NOV 2006							
05	EC1303	Microprocessors and Its Applications	100	50	077	NOV 2006							
05	EC1304	Control Systems	100	50	077	NOV 2006							
05	EC1305	Transmission Lines and Waveguides	100	50	073	NOV 2006							
05	GE1301	Professional Ethics and Human Values	100	50	071	NOV 2006							
05	EC1306	Digital Signal Processing Lab	100	50	094	NOV 2006							
05	EC1307	Microprocessor and Application Lab	100	50	096	NOV 2006							

End of Statement

Classification : **FIRST CLASS WITH DISTINCTION**

Total Marks (from 3rd to 8th semester): 3859 / 4900

Percentage (rounded to nearest integer) : 79

Medium of Instruction : ENGLISH

Chennai - 600 025.

Date : 21/05/2008

Controller of Examinations

அரசுத் தேர்வுகள் துறை, சென்னை - 600 006.

DEPARTMENT OF GOVERNMENT EXAMINATIONS, CHENNAI - 600 006.

மேனிலைப் பள்ளிக் கல்விச் சான்றிதழ் HIGHER SECONDARY COURSE CERTIFICATE

பொதுக்கல்வி / GENERAL EDUCATION

தமிழ்நாடு அரசின் அதிகாரத்திற்கு உட்பட்டு வழங்கப்படுகிறது
ISSUED UNDER THE AUTHORITY OF THE GOVERNMENT OF TAMILNADU

தேர்வர் **SUBHA BHARATHI S**

MAR. 2004

இல்

மேனிலைப் பள்ளி இறுதி வகுப்புத் தேர்வெழுதிக் கீழ்க்காணும் மதிப்பெண்களைப் பெற்றுள்ளார் என்று சான்றளிக்கப்படுகிறது.

Certified that the above mentioned candidate appeared for the Higher Secondary Examination and obtained the following marks :

பாடம் SUBJECT	கருத்தியல் THEORY 150	செய்முறை PRAC. 50	பெற்ற மதிப்பெண் 200 க்கு MARKS OBTAINED FOR 200	
TAMIL			183	ONE EIGHT THREE
ENGLISH			179	ONE SEVEN NINE
PHYSICS	141	050	191	ONE NINE ONE
CHEMISTRY	146	050	196	ONE NINE SIX
BIOLOGY	139	050	189	ONE EIGHT NINE
MATHEMATICS			195	ONE NINE FIVE

மொத்த மதிப்பெண்

TOTAL MARKS

1133 ONE ONE THREE THREE

பிறந்த நாள் / DATE OF BIRTH

08/04/87

பதிவெண் / REGISTER NO.

134240

ம.அ.ப.குறியீட்டெண் & நாள் / TMR CODE NO. & DATE

G027327 12.05.2004

பள்ளியின் பெயர் / SCHOOL

SRM GOVT G HSS SHENCOTTAI

பாடத் தொகுப்பு எண் / GROUP CODE

501

இத்தேர்வில் தேர்ச்சி பெற ஒவ்வொரு பாடத்திலும், 200க்குக் குறாம அளவு 70 மதிப்பெண் பெறவேண்டும். இது பகுதி முறையில் தேர்வெழுதித் தேர்ச்சி பெறுவதற்கும் பொருந்தும். கருத்தியல் மற்றும் செய்முறைத் தேர்வுகள் கொண்ட பாடங்களில் தேர்ச்சி பெறக் கருத்தியல் தேர்வில் 150 க்குக் குறாம அளவு 40 மதிப்பெண்களும், செய்முறைத் தேர்வில் 50க்குக் குறாம அளவு 30 மதிப்பெண்களும் பெறவேண்டும்.

MINIMUM FOR A PASS : 70 MARKS OUT OF 200 IN EACH SUBJECT. THIS INCLUDES PASSING UNDER THE COMPARTMENTAL SYSTEM ALSO. FOR THE SUBJECTS CONSISTING OF THEORY AND PRACTICAL EXAMINATIONS MINIMUM MARKS FOR A PASS IS 40 OUT OF 150 IN THEORY AND 30 OUT OF 50 IN PRACTICAL.

சு. சீபா பாரதி

தேர்வரின் ஒப்பம்
Candidate's Signature



செயலாளர்
மாநிலப் பள்ளித்தேர்வுகள் குழுமம், தமிழ்நாடு
SECRETARY
STATE BOARD OF SCHOOL EXAMINATIONS, TAMILNADU

அரசுத் தேர்வுகள் துறை, சென்னை - 600 006.
DEPARTMENT OF GOVERNMENT EXAMINATIONS, CHENNAI - 600 006.

இடைநிலைக் கல்வி பள்ளி இறுதி வகுப்புச் சான்றிதழ் SECONDARY SCHOOL LEAVING CERTIFICATE

பத்தாம் வகுப்பு - திருத்தி அமைக்கப் பெற்ற முறை
X STANDARD - REVISED PATTERN

தமிழ்நாடு அரசின் அதிகாரத்திற்கு உட்பட்டு வழங்கப்படுகிறது
ISSUED UNDER THE AUTHORITY OF THE GOVERNMENT OF TAMIL NADU

தேர்வர் SUBHA BHARATHI S

MAR. 2002 இல்

பத்தாம் வகுப்புப் பொதுத் தேர்வு எழுதிக் கீழ்க்காணும் விழுக்காட்டு மதிப்பெண்களைப் பெற்றுள்ளார் என்று சான்றளிக்கப்படுகிறது.

Certified that the above mentioned Candidate appeared for the SSLC Public Examination and obtained the following percentage of marks.

பாடம் SUBJECT	மதிப்பெண் MARKS
மொழி LANGUAGE	88 EIGHT EIGHT
ஆங்கிலம் ENGLISH	91 NINE ONE
கணிதம் MATHEMATICS	95 NINE FIVE
அறிவியல் SCIENCE	97 NINE SEVEN
சமூக அறிவியல் SOCIAL SCIENCE	87 EIGHT SEVEN
மொத்தம் TOTAL	458 FOUR FIVE EIGHT

பிறந்த நாள் / DATE OF BIRTH 08.04.1987	பதிவேண் / REGISTER NO. 051492	ம.அ.ப.குறியீட்டெண் & நாள் TMR CODE NO. & DATE A040910 30.05.2002
பள்ளியின் பெயர் / SCHOOL SRM GOVT G HSS SHENCOTTAI		

பத்தாம் வகுப்புத் தேர்வில் தேர்ச்சி பெற ஒவ்வொரு பாடத்திலும் 100க்குக் குறாம அளவு முப்பத்தைந்து விழுக்காடு மதிப்பெண் பெறுதல் வேண்டும். இது பகுதி முறையில் தேர்வு எழுதித் தேர்ச்சி பெறுவதற்கும் பொருந்தும்.

A PASS IN THE SSLC (X STD.) EXAMINATION REQUIRES A MINIMUM OF THIRTY FIVE PERCENT OF MARKS IN EACH ONE OF THE FIVE SUBJECTS. THIS INCLUDES PASSING UNDER THE COMPARTMENTAL SYSTEM ALSO.

S. Subha Bharathi.
தேர்வரின் ஒப்பம்
Candidate's Signature




செயலாளர்

இடைநிலைக் கல்விக்குழுமம், தமிழ்நாடு
SECRETARY,
BOARD OF SECONDARY EDUCATION, TAMILNADU



VIT[®]
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Ref: VIT/HR/2018/3155

31st August 2018

SERVICE CERTIFICATE

Certified that Mrs. S. Subha Bharathi has served as Assistant Professor, School of Electronics Engineering [SENSE] of Vellore Institute of Technology from 23rd May 2012 to 31st August 2018.


REGISTRAR



To
Mrs. S. Subha Bharathi [Emp. Id.: 13330]

Cc : File


Vellore - 632 014, Tamil Nadu, India; Phone: 91 - 416 - 2243091 (10 Lines) Fax: 91- 416 - 2243092
E-mail: registrar@vit.ac.in
www.vit.ac.in

आयकर विभाग

INCOME TAX DEPARTMENT



भारत सरकार

GOVT. OF INDIA

S SUBHA BHARATHI

SEKAR

08/04/1987

Permanent Account Number

CDJPS0630N

S. Subhaba

Signature



13092012

इस कार्ड के खोने / पाने पर कृपया सूचित करें / लौटाएं :

आयकर पैन सेवा इकाई, एन एस डी एल
तीसरी मंज़ील, सफायर चेंबर्स,
बानेर टेलिफोन एक्सचेंज के नजदीक,
बानेर, पुना - 411 045.

*If this card is lost / someone's lost card is found,
please inform / return to :*

Income Tax PAN Services Unit, NSDL
3rd Floor, Sapphire Chambers,
Near Baner Telephone Exchange,
Baner, Pune - 411 045.

Tel: 91-20-2721 8080, Fax: 91-20-2721 8081
e-mail: tininfo@nsdl.co.in



இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு

Unique Identification Authority of India

முகவரி: க/பெ: செந்தில்குமார்,
69/18, 2ம் தெரு,
முத்துக்கிருஷ்ணாபுரம்,
கடையநல்லூர், கடையநல்லூர்,
திருநெல்வேலி, தென்காசி, தமிழ்
நாடு, 627751

Address: W/O: Senthilkumar,
69/18, 2ND STREET,
MUTHUKRISHNAPURAM,
Kadayanallur, Kadayanallur,
Tirunelveli, Tenkasi, Tamil Nadu,
627751

2788 7116 5339



1947

1800 300 1947



help@uidai.gov.in

WWW

www.uidai.gov.in



இந்திய அரசாங்கம்

Government of India

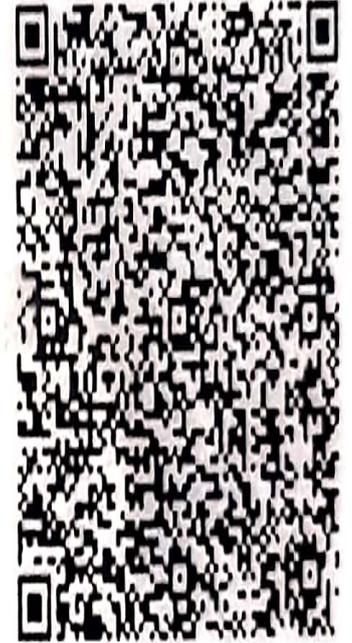


சுபா பாரதி

Subha Bharathi

பிறந்த நாள் / DOB : 08/04/1987

பெண்பால் / Female



2788 7116 5339

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

R.D. 1152...../2004 dt.

BC

சான்றிதழ் எண் :
Certificate No. :

6034680

மாவட்டக் குறியீடு எண் :
District Code :

18

வட்டக் குறியீடு எண் :
Taluk Code :

04

கிராமக் குறியீடு எண் :
Village Code :

024

சாதிச் சான்றிதழ் COMMUNITY CERTIFICATE

தென்காசி

கிருநெல்வேலி மாவட்டம் வட்டம்
இலட்சுமி கிராமம்/நகரம், திரு/திருமதி/செல்வி/
செல்வன் S. சிபா பாரதி தகப்பனார்/கணவர்
பெயர் S. சேகர்
இந்த - இலட்சுமி பாரதி

வகுப்பைச் சார்ந்தவர், அரசு ஆணை நிலை எண் 28, பிற்பட்ட மற்றும் மிகவும் பிற்பட்ட பிரிவின் நலத் துறை, நாள் 19-7-1994 வரிசை எண் 113 படி, பிற்பட்ட பிரிவினைச் சார்ந்தவர் எனச் சான்றளிக்கப்படுகிறது.

This is to certify that.....Son / Daughter of
Thiru.....of.....
.....Village / Town,.....Taluk,.....

..... District of the State of Tamil Nadu belongs to
.....Community, which is recognised as
a Backward Class as per Government Order. (Ms.) No. 28, Backward Classes
and Most Backward Classes Welfare, dated 19th July 1994
vide Serial No.....

2. திரு./திருமதி/செல்வன்/செல்வி.....S. சிபா பாரதி.....
என்பவரும் அவருடைய குடும்பத்தினரும் தமிழ்நாட்டில் கிருநெல்வேலி
மாவட்டத்தில் தென்காசி வட்டத்தில் இலட்சுமி
கிராமத்தில்/நகரத்தில் வசித்து வருகிறார்கள் எனச் சான்றளிக்கப்படுகிறது.

2. It is certified that Thiru/Tmt./Selvan/Selvi..... and
his/her family ordinarily reside(s) at.....Village/
Town.....Taluk.....District of
Tamil Nadu.....

முத்திரை.
Seal. கையொப்பம் :
Signature :
நாள் :
Date :

பெயர் (எழுத்துக்களில்)
Name (in Capital Letters) :
பதவி :
Designation :

A. Thangaraj 2015

மேலல துணை வட்டாட்சியர்

29.5.04 தென்காசி.

جامعة التقنية
والعلوم التطبيقية
University of Technology
and Applied Sciences

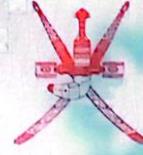


صباحا بحراتي سنثيل كومار
Subha Bharathi Senthilkumar

محاضر
Lecturer

عبري
IBRI

سلطنة عمان
SULTANATE OF OMAN



7E4000DB56032A7C

RESIDENT
CARD



بطاقة
مقيم

ش. شوبيا باراثي

SIGNATURE

التوقيع

CIVIL NUMBER

107134653

EXPIRY DATE

26/12/2026

DATE OF BIRTH

08/04/1987

الرقم المدني

تاريخ الإنتهاء

تاريخ الميلاد

مكان الميلاد

الهند

الإسم شوبيا باراثي

المهنة محاضر

عمل بدون مرافقين لـ جامعة التقنية والعلوم التطبيقية