



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

**APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES**

Date of Application:18-05-2021

Department	BIOTECHNOLOGY	Application No.	202110008
Area of Research	TISSUE ENGINEERING	Research Mode	FULL TIME

**Name** :KARTHICK A  
**Date of Birth / Age** :09-12-1996 / 24 Years  
**Gender** :MALE  
**Category** :BC  
**e-Mail ID** :danielkarthick1@gmail.com  
**Mobile** :8883161961



<b>Father's/Husband's Name</b>	ARUMUGAM	<b>Father's/Husband's Occupation</b>	BUSSINESS
<b>Family Income</b>	0	<b>Residential Type</b>	URBAN
<b>Birth Place</b>	MADURAI	<b>Mother Tongue</b>	TAMIL
<b>Religion</b>	HINDU	<b>Martial Status</b>	SINGLE
<b>Aadhaar No.</b>	873111793121	<b>PAN No.</b>	CTOPA1180L
<b>Physically Challenged</b>	NO	<b>Type of Disability</b>	-
<b>Address for Communication:</b> NO.5 JB NAGAR, GANDHIJI STREET EXT., PONMENI MADURAI MADURAI DISTRICT TAMIL NADU INDIA Pin-625016		<b>Permenant Address:</b> NO.5 JB NAGAR, GANDHIJI STREET EXT., PONMENI MADURAI MADURAI DISTRICT TAMIL NADU INDIA Pin-625016	

Qualification						
Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
B.TECH	BIOTECHNOLOGY	KALASALINGAM UNIVERSITY	2018	6.98	FIRST	REGULAR
M.TECH	BIOTECH	KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY	2020	8.15	FIRST	REGULAR

Experience				
Organization	Designation	Experience From	Experience TO	Work Nature

Payment Details				
Transaction ID	Reference	Date of transaction	Amount	Status
202110008_210518133529	VHD49978966506	18-05-2021	600	SUCCESS

## Evaluation of cytotoxic effect of Fucoxanthin and Phlorotannin on apoptosis

### **Abstract:**

We aimed to investigate the effect of Fucoxanthin and Phlorotannin present in *Sargassum tenerrimum* on apoptosis mechanism by *in-vitro* analysis. We have to characterize the extracting compound Fucoxanthin and Phlorotannin by phytochemical analysis, UV-Visible spectrophotometer and FTIR respectively. Further docking by PYRX tool to evaluate the apoptogenic potential through stimulation of caspases-3, 8, 6, 9 and Bax, where Bax protein gets interaction at active site amino acid residue gives better binding affinity, which blocks the Bcl-2 for the upregulation of Bax protein to induce apoptosis. Further *in-vitro* analysis shows the cytotoxicity of fucoxanthin and phlorotannin crude extract in MCF 7 breast cancer cell line.

### **Introduction:**

*Sargassum tenerrimum* species are tropical and sub-tropical brown macroalgae of shallow marine meadow. The derived bioactive compound Fucoxanthin and Phlorotannin have many biological activities such as anti-cancer, anti-coagulant, anti-oxidant and other activities. Breast cancer is the second leading cause of death in women worldwide, with nearly 1.7 million new cases in that 80% of breast cancer occur in women older than age 50. There are two major apoptosis signaling pathway, one is death receptor (extrinsic) pathway and the mitochondria (intrinsic) mediated pathway. Caspase 8,9 are initiators and Caspase 3, 7, 6 was executioners of apoptosis. The anti-apoptotic protein Bcl-2 blocks the mitochondrial outer membrane and inhibits apoptosis and the expression of pro-apoptotic Bax protein inhibit the Bcl-2 proteins might induce the apoptosis in cancer cells. We further demonstrated the apoptosis by *in-silico* analysis via extrinsic and intrinsic apoptotic signaling pathway through anti-apoptotic and pro-apoptotic proteins.

### **Materials and methods:**

The Fucoxanthin and Phlorotannin were extracted by Solvent extraction method (chloroform: methanol: water in the ratio 4:2:1), after 3 days separate the phases and store at 4 °C. The phytochemical screening of extracts for the presence of phenol, tannins, saponins were carried out. The pigment profile of the fucoxanthin was determined by using a double beam UV-Visible spectrophotometer at the wavelength range of 350-750 nm. The FTIR analysis was carried to evaluate the presence of fucoxanthin and phlorotannin through the functional groups respectively and then total phenolic content of phlorotannin crude extract was determined by the Folin-Ciocalteu method. For *in-silico* analysis, the proteins and ligands were obtained from PDB and PubChem respectively, then processed for the docking by using PYMOL. Then evaluate cytotoxicity by MTT assay with IC<sub>50</sub> value and through western blotting the Caspase 3,6,8,9 and bax, bcl-2 proteins were treated with MCF7 cells to evaluate the morphological changes to confirm cytotoxic effects respectively.

### **Advantages:**

Brown algae were abundantly available in Indian Coastal areas and the drug will be of low cost compared with available drugs. Further it may reduce most of the side effects.

# ANNA UNIVERSITY

CHENNAI - 600 025



## PROVISIONAL CERTIFICATE

Folio No.: **AUO2428207**

This is to certify that the following candidate has qualified for the award of Degree as detailed below:

Name : **KARTHICK A**

Registration Number : **920418509009**

Degree : **M.Tech.**

Branch/Specialization : **Biotechnology**

Month and Year of Passing: **April 2020**

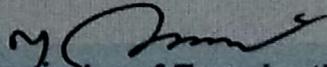
Classification : **FIRST CLASS**



Chennai - 600 025.

Date : **02/11/2020**

K117107091429A

  
Controller of Examinations i/c

Sl.No: 20180164

**KALASALINGAM ACADEMY OF RESEARCH AND EDUCATION**  
(Deemed to be University)  
(Under Section 3 of UGC Act 1956)

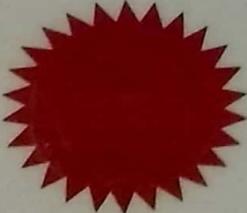


Register No.

9914001018

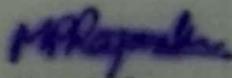
The Board of Management of the Kalasalingam Academy Of Research And Education ,  
hereby makes known that Ms./Mr. **KARTHICK A** ..... has  
been admitted to the Degree of **Bachelor of Technology in Biotechnology** .....  
he / she having been certified by duly appointed examiners to be qualified to receive the same  
and having been placed in the **First Class** .....  
at the examination held in **Apr/May 2018** .....

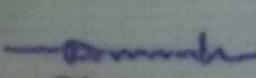
Given under the seal



Anand Nagar,  
Krishnankoil - 626 126,  
Tamil Nadu, India

Date: 28/10/2018

  
Controller of Examinations

  
Registrar

  
Vice - Chancellor



சான்றிதழ் வ.எண் /  
Certificate Sl. No. HSG

8761279



அரசுத் தேர்வுகள் துறை, சென்னை - 600006  
DEPARTMENT OF GOVERNMENT EXAMINATIONS, CHENNAI - 600006

மேல்நிலைப் பள்ளிக் கல்விச் சான்றிதழ்  
**HIGHER SECONDARY COURSE CERTIFICATE**

பொதுக்கல்வி / GENERAL EDUCATION

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



MAR. 2014

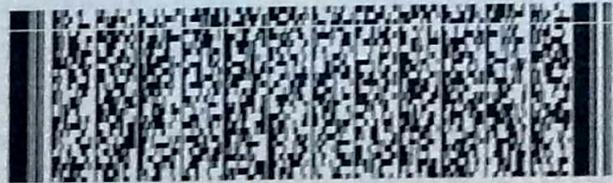
இல் மேல்நிலைப்

தேர்வர் **KARTHICK A**

பள்ளிக் கல்விப் பொதுத் தேர்வெழுதிக் கீழ்க்காணும் மதிப்பெண்களைப் பெற்றுள்ளார் என்று  
சான்றளிக்கப்படுகிறது.

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

பாடம் SUBJECT	கருத்தியல் THEORY 150	செய்முறை PRAC. 50	பெற்ற மதிப்பெண்கள் 200க்கு MARKS OBTAINED FOR 200		
TAMIL			181	ONE EIGHT ONE	(P)
ENGLISH			170	ONE SEVEN ZERO	(P)
PHYSICS	089	050	139	ONE THREE NINE	(P)
CHEMISTRY	095	050	145	ONE FOUR FIVE	(P)
BIOLOGY	072	050	122	ONE TWO TWO	(P)
MATHEMATICS			107	ONE ZERO SEVEN	(P)
மொத்த மதிப்பெண்கள் TOTAL MARKS	0864	ZERO EIGHT SIX FOUR			(PASS)
பிறந்த தேதி / DATE OF BIRTH	பதிவேண் / REGISTER NO.	ம.அ.ப.குறியீட்டெண் & நாள் / TMR CODE NO & DATE			
09.12.96	178258	G247822	09.05.2014		
பயிற்று மொழி / MEDIUM OF INSTRUCTION		பாடத்தொகுப்பு எண் / GROUP CODE			
ENGLISH		103			
பள்ளியின் பெயர் / NAME OF THE SCHOOL					
(20 \ 0545) DOLPHIN M HSS MADURAI					



*[Signature]*

செயலாளர்

மாநிலப் பள்ளிக் தேர்வுகள் துறை (மேல்நிலை) தமிழ்நாடு

SECRETARY

STATE BOARD OF SCHOOL EXAMINATIONS (HR SEC), TAMILNADU

A. Karthick

தேர்வாளர் கையெழுத்து

CANDIDATE'S SIGNATURE



சான்றிதழ் வ.எண் /  
Certificate Sl. No. SEC

0324656



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

இடைநிலைப் பள்ளி இறுதி வகுப்புச் சான்றிதழ்  
**SECONDARY SCHOOL LEAVING CERTIFICATE**

புதிய பாடத்திட்டம் / NEW SYLLABUS

பத்தாம் வகுப்பு / X STANDARD

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



தேர்வர் **KARTHICK A**

**APR 2012** இல் இடைநிலைப்

பள்ளி இறுதி வகுப்புச் சான்றிதழ் பொதுத் தேர்வெழுதிக் கீழ்க்காணும் மதிப்பெண்களைப் பெற்றுள்ளார் என்று சான்றளிக்கப்படுகிறது.

Certified that the above mentioned candidate appeared for the Secondary School Leaving Certificate Public Examination and obtained the following marks :

பாடம் SUBJECT	பெரும் அளவு மதிப்பெண்கள் MAX. MARKS	பெற்ற மதிப்பெண்கள் MARKS OBTAINED
தமிழ் TAMIL	100	077 ZERO SEVEN SEVEN
ஆங்கிலம் ENGLISH	100	081 ZERO EIGHT ONE
கணிதம் MATHEMATICS	100	074 ZERO SEVEN FOUR
அறிவியல்* SCIENCE*	059	084 ZERO EIGHT FOUR
கருத்தியல் THEORY	100	
செய்முறை PRACTICAL	025	
சமூக அறிவியல் SOCIAL SCIENCE	100	095 ZERO NINE FIVE
மொத்தம் TOTAL	500	411 FOUR ONE ONE



பிறந்த தேதி / DATE OF BIRTH 12-09-96	பதிவெண்/REGISTER NO. 1232169	ம.அ.ப.குறியீட்டெண் & நாள் / TMR CODE NO. & DATE G5219913 04.06.2012
09.12.96	பயிற்று மொழி / MEDIUM OF INSTRUCTION ENGLISH	
	பள்ளியின் பெயர் / NAME OF THE SCHOOL DOLPHIN M HSS MADURAI	

இடைநிலைப் பள்ளி இறுதி வகுப்புச் சான்றிதழ் பொதுத் தேர்வில் தேர்ச்சி பெற ஒவ்வொரு பாடத்திலும், 100-க்குக் குறைவான அளவு முடிந்ததை மதிப்பெண்கள் பெறுதல் வேண்டும். அறிவியல் பாடத்தில்\* கருத்தியலில் 75-க்கு 20 மதிப்பெண்களும் மற்றும் செய்முறைத் தேர்வில் 25-க்கு 15 மதிப்பெண்களும் பெறுதல் வேண்டும். இது பகுதி முறையில் தேர்வெழுதிக் தேர்ச்சி பெறுவதற்கும் பொருந்தும்.

A PASS IN THE SSLC PUBLIC EXAMINATION REQUIRES A MINIMUM OF THIRTY FIVE PERCENT OF MARKS IN EACH SUBJECT. IN SCIENCE SUBJECT\* 20 MARKS OUT OF 75 IN THEORY AND 15 MARKS OUT OF 25 IN PRACTICAL IS REQUIRED. THIS INCLUDES PASSING UNDER THE COMPARTMENTAL SYSTEM ALSO.

செயலாளர்

மாநிலப் பள்ளித் தேர்வுகள் குழுமம் (இடைநிலை), தமிழ்நாடு  
SECRETARY

STATE BOARD OF SCHOOL EXAMINATIONS(SEC), TAMILNADU

A. Karthick

தேர்வாளர் குறியீடு

CANDIDATE'S SIGNATURE



**ANNA UNIVERSITY, CHENNAI - 25**  
**M.Tech. DEGREE EXAMINATIONS**  
**CONSOLIDATED STATEMENT OF GRADES**



K117107091429A

Folio No. AUO2428207

NAME OF THE CANDIDATE	KARTHICK A			REGISTER NO.	920418509009
DATE OF BIRTH	09-DEC-1996	GENDER	MALE	MONTH & YEAR OF LAST APPEARANCE	APR 2020
COLLEGE OF STUDY	KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY			REGULATIONS	2017
PROGRAMME & SPECIALIZATION	M.Tech. Biotechnology				

SEM NO	COURSE CODE	COURSE TITLE	CREDITS	LETTER GRADE	GRADE POINT	MONTH & YEAR OF PASSING
01	BY5101	Advanced Genetic Engineering	3	B+	7	DEC 2018
01	BY5102	Enzyme Technology and Fermentation Technology	3	B+	7	DEC 2018
01	BY5103	Bioinformatics and Applications	3	B+	7	DEC 2018
01	MA5166	Statistical Techniques for Biotechnology	4	B+	7	NOV 2019
01	BY5003	Metabolic Process and Engineering (For Biotechnology Stream)	3	A	8	DEC 2018
01	BY5006	Analytical Techniques in Biotechnology	3	B	6	DEC 2018
01	BY5009	Environmental Biotechnology	3	B+	7	DEC 2018
01	BY5111	Preparative and Analytical Techniques in Biotechnology	3	A+	9	DEC 2018
02	BY5201	Bio Separation Technology	3	B+	7	APR 2019
02	BY5202	Bioprocess Engineering	4	B+	7	NOV 2019
02	BY5203	Bioreactor Design and Analysis	4	B	6	APR 2019
02	BY5204	Immunotechnology	3	B+	7	APR 2019
02	BY5205	Advanced Genomics and Proteomics	3	B+	7	APR 2019
02	BY5016	Advances in Molecular Pathogenesis	3	A	8	APR 2019
02	BY5019	Biopharmaceuticals and Biosimilars	3	A	8	APR 2019
02	BY5211	Immunotechnology Laboratory	3	O	10	APR 2019
03	BY5311	Advanced Genetic Engineering Laboratory	3	O	10	NOV 2019
03	BY5312	Bioprocess and Downstream Processing Laboratory	3	A+	9	NOV 2019
03	BY5313	Project Work (Phase I)	6	O	10	NOV 2019
04	BY5411	Project Work (Phase II)	12	O	10	APR 2020

\*\*\* End of Statement \*\*\*

**Cumulative Grade Point Average : 8.15**

**Classification : FIRST CLASS**



Medium of Instruction : ENGLISH

Chennai - 600 025.

Date 02/11/2020

SIGNATURE OF THE STUDENT



CONTROLLER OF EXAMINATIONS

Sl. No: 999002642



**KALASALINGAM UNIVERSITY**  
 (Kalasalingam Academy of Research & Education)  
 (Under Section 11 of U.C. Act 1956)  
 Anand Nagar, Krishnankoil - 626 126 Tamil Nadu, INDIA



Name of the Student: **KARTHICK A**

Register No: **9914001018**

Branch: **B.Tech-Biotechnology**

Batch: **2014-2018**

SEM	COURSE CODE	NAME OF THE COURSE	ATT. CODE	CREDITS	GRADE	MONTH & YEAR OF PASSING
1	CH106	Chemistry	H	3	B	Nov/Dec 2014
1	CV102	Basic Civ and Mechanical Engineering	H	4	B	Nov/Dec 2014
1	MS101	English for Technical Communication I	H	2	C	Nov/Dec 2014
1	MA100	Mathematics I	H	3	C	Nov/Dec 2014
1	ME101	Engineering Drawing	H	3	C	Nov/Dec 2014
1	PH131	Physics I	H	3	B	Nov/Dec 2014
1	VE101	Workshop	H	1	B	Nov/Dec 2014
1	PH183	Physics Laboratory	H	1	5	Nov/Dec 2014
2	BT102	Cell Biology and Genetics	B	3	A	Apr/May 2015
2	CV102	Environmental Sciences	B	2	B	Apr/May 2015
2	CE102	Programming Languages	B	2	B	Apr/May 2015
2	EE101	Basic Electrical and Electronics Engineering	H	4	D	Apr/May 2015
2	HS106	Soft Skills - I	H	1	C	Apr/May 2015
2	HS102	English for Technical Communications II	B	2	B	Apr/May 2015
2	MA104	Mathematics II	B	3	B	Apr/May 2015
2	PH132	Physics II	B	3	B	Apr/May 2015
2	CH102	Chemistry Laboratory	B	1	C	Apr/May 2015
2	CE101	Programming Languages Laboratory	B	1	C	Apr/May 2015
3	BT204	Microbiology	B	3	C	Nov/Dec 2015
3	BT209	Molecular Biology	B	3	D	Nov/Dec 2015
3	BT211	Principles of Biochemistry	H	3	D	Nov/Dec 2015
3	BT214	Analytical Techniques in Biotechnology	H	3	D	Nov/Dec 2015
3	CH203	Reprocast Calculations	B	4	D	Nov/Dec 2015
3	HS207	Soft Skills - II	B	1	D	Nov/Dec 2015
3	MA202	Mathematics III	B	3	D	Nov/Dec 2015
3	BT201	Biotechnology Laboratory	B	2	C	Nov/Dec 2015
3	BT202	Microbiology Laboratory	B	2	C	Nov/Dec 2015
3	BT206	Cell and Molecular Biology Laboratory	B	2	C	Nov/Dec 2015
4	BT203	Bioenergetics and Metabolism	H	4	E	Apr/May 2016
4	BT205	Industrial Biotechnology	H	3	D	Apr/May 2016
4	BT215	Bioinformatics and Computational Biology	B	4	D	Apr/May 2016
4	BT216	Protein Science and Engineering	B	3	D	Apr/May 2016
4	CH202	Unit Operations	B	4	D	Apr/May 2016
4	HS206	Professional Ethics	B	3	C	Apr/May 2016
4	HS208	Soft Skills - III	B	1	B	Apr/May 2016
4	BT208	Computational Biology Laboratory	B	2	A	Apr/May 2016
4	CH201	Chemical Engineering Laboratory	B	2	C	Apr/May 2016
5	BT300	Bioprocess Principles	B	4	D	Nov/Dec 2016
5	BT304	Genetic Engineering	H	4	C	Nov/Dec 2016
5	BT306	Food Processing and Technology	H	3	D	Nov/Dec 2016
5	BT322	Enzyme Technology	B	4	C	Nov/Dec 2016
5	CH304	Mass Transfer	B	3	D	Nov/Dec 2016
5	CH337	Reaction Engineering for Microbiologists	H	3	C	Nov/Dec 2016
5	BT307	Bioprocess Laboratory	H	2	A	Nov/Dec 2016
5	BT308	Genetic Engineering Laboratory	H	2	A	Nov/Dec 2016

CGPA CREDITS		NON-CGPA CREDITS	
EARNED	TOTAL TO BE EARNED	EARNED	TOTAL TO BE EARNED
183	183	18	18
CGPA: 6.98		CLASS AWARDED: First Class	

CGPA CREDITS		NON-CGPA CREDITS	
EARNED	TOTAL TO BE EARNED	EARNED	TOTAL TO BE EARNED
183	183	18	18
CGPA: 6.98		CLASS AWARDED: First Class	

Please see inverted for details



*M. Prayash*  
 Controller of Examinations

Place: Krishnankoil  
 Date: 08/06/2018



# KALASALINGAM UNIVERSITY

(Kalasalingam Academy of Education and Research)  
(Under Section 3 of the University Act, 1956)  
Anand Nagar, Krishnankoil - 606 001

## CONSOLIDATED

Name of the Student : **KARTHICK A**

Register No 9914001018

SEM.	COURSE CODE	NAME OF THE COURSE	ATT. CODE	CREDITS	GRADE	MONTH & YEAR OF PASSING
<b>CGPA COURSES</b>						
1	CHY106	C2 Chemistry	H	3	B	Nov/Dec 2014
1	CIV101	C3 Basic Civil and Mechanical Engineering	H	4	B	Nov/Dec 2014
1	HSS101	C1 English for Technical Communication I	9	2	C	Nov/Dec 2014
1	MAT103	C2 Mathematics I	9	3	C	Nov/Dec 2014
1	MEC101	C3 Engineering Drawing	8	2	C	Nov/Dec 2014
1	PHY131	C2 Physics I	9	3	B	Nov/Dec 2014
1	MEC181	C3 Workshop	H	1	B	Nov/Dec 2014
1	PHY183	C2 Physics Laboratory	H	1	S	Nov/Dec 2014
2	BIT103	C3 Cell Biology and Genetics	9	3	A	Apr/May 2015
2	CHY102	C2 Environmental Sciences	9	2	B	Apr/May 2015
2	CSE102	C3 Programming Languages	9	2	B	Apr/May 2015
2	EEE101	C3 Basic Electrical and Electronics Engineering	H	4	D	Apr/May 2015
2	HSS036	C1 Soft Skills - I	H	1	C	Apr/May 2015
2	HSS102	C1 English for Technical Communication II	9	2	B	Apr/May 2015
2	MAT104	C2 Mathematics II	8	3	C	Apr/May 2015
2	PHY132	C2 Physics II	9	3	B	Apr/May 2015
2	CHY182	C2 Chemistry Laboratory	8	1	C	Apr/May 2015
2	CSE181	C3 Programming Languages Laboratory	9	1	C	Apr/May 2015
3	BIT204	C4 Microbiology	9	3	C	Nov/Dec 2015
3	BIT209	C4 Molecular Biology	H	3	D	Nov/Dec 2015
3	BIT211	C4 Principles of Biochemistry	H	3	C	Apr/May 2016
3	BIT214	C4 Analytical Techniques in Biotechnology	H	3	D	Nov/Dec 2015
3	CHE253	C4 Bioprocess Calculations	9	4	D	Nov/Dec 2015
3	HSS037	C1 Soft Skills - II	H	1	C	Nov/Dec 2015
3	MAT202	C2 Mathematics III	9	3	D	Nov/Dec 2015
3	BIT281	C4 Biochemistry Laboratory	H	2	C	Nov/Dec 2015
3	BIT283	C4 Microbiology Laboratory	H	2	C	Nov/Dec 2015
3	BIT286	C4 Cell and Molecular Biology Laboratory	H	2	C	Nov/Dec 2015
4	BIT203	C4 Bioenergetics and Metabolism	H	4	E	Apr/May 2016
4	BIT205	C4 Industrial Biotechnology	H	3	C	Apr/May 2016
4	BIT215	C4 Bioinformatics and Computational Biology	8	4	D	Apr/May 2016
4	BIT216	C4 Protein Science and Engineering	9	3	D	Apr/May 2016
4	CHE252	C4 Unit Operations	9	4	D	Apr/May 2016
4	HSS006	C1 Professional Ethics	9	3	C	Apr/May 2016
4	HSS038	C1 Soft Skills - III	8	1	B	Apr/May 2016
4	BIT288	C4 Computational Biology Laboratory	H	2	A	Apr/May 2016
4	CHE291	C4 Chemical Engineering Laboratory	9	2	C	Apr/May 2016
5	BIT303	C4 Bioprocess Principles	9	4	D	Nov/Dec 2016
5	BIT304	C4 Genetic Engineering	H	4	C	Nov/Dec 2016
5	BIT309	C4 Food Processing and Technology	H	3	D	Nov/Dec 2016
5	BIT322	C4 Enzyme Technology	9	4	C	Nov/Dec 2016
5	CHE354	C5 Mass Transfer	9	3	D	Nov/Dec 2016
5	CHE357	C4 Reaction Engineering for Biotechnologists	H	3	C	Nov/Dec 2016
5	BIT387	C4 Bioprocess Laboratory	H	2	A	Nov/Dec 2016
5	BIT388	C4 Genetic Engineering Laboratory	H	2	A	Nov/Dec 2016



**GRADE CARD**

Branch : **B.Tech-Biotechnology**

Batch : **2014-2018**

SEM.	COURSE CODE	NAME OF THE COURSE	ATT. CODE	CREDITS	GRADE	MONTH & YEAR OF PASSING
5	BIT398	C4 Community Service Project Phase I	H	1	A	Nov/Dec 2016
6	BIT305	C4 Biochemical Engineering	B	4	D	Apr/May 2017
6	BIT306	C4 Immunology	B	4	E	Apr/May 2017
6	BIT409	C4 Cancer Biology	B	3	C	Apr/May 2017
6	CIV416	C5 Industrial Waste Water Management	H	3	C	Apr/May 2017
6	EEE313	C6 Energy Management and Energy Audit	9	3	C	Apr/May 2017
6	HSS002	C1 Engineering Management	9	3	D	Apr/May 2017
6	BIT389	C4 Immunology Laboratory	9	2	A	Apr/May 2017
6	BIT390	C4 Biochemical Engineering Laboratory	B	2	B	Apr/May 2017
6	BIT399	C4 Community Service Project-Phase II	9	2	B	Apr/May 2017
7	BIT401	C4 Animal Biotechnology	9	4	D	Nov/Dec 2017
7	BIT402	C4 Plant Biotechnology	H	3	C	Nov/Dec 2017
7	BIT403	C4 Downstream Processing	H	4	C	Nov/Dec 2017
7	BIT419	C4 Molecular Diagnostics and Therapeutics	H	3	C	Nov/Dec 2017
7	BIT424	C4 Clinical Trials and Management	9	3	C	Nov/Dec 2017
7	ECE443	C6 Wireless Sensor Networks	H	3	C	Nov/Dec 2017
7	HSS001	C1 Total Quality Management	H	3	C	Nov/Dec 2017
7	BIT491	C4 Downstream Processing Laboratory	B	2	B	Nov/Dec 2017
8	BIT406	C4 IPR in Biotechnology	H	3	D	Apr/May 2018
8	BIT499	C4 Project Work	H	10	B	Apr/May 2018
<b>Non-CGPA COURSES</b>						
6	NCG1004	National Service Scheme		3	Pass	
8	NCG1005	Extra-Curricular Activities		3	Pass	
6	NCG2001	Industrial Training - I		3	Pass	
7	NCG2004	Cocurricular Activities		3	Pass	
7	NCG2005	International Languages		3	Pass	
6	NCG3002	International Proficiency Exams-I		3	Pass	
<b>Category wise total credits earned</b>						
C1:Humanities		16	C2:Basic Sciences		22	
C3:Basic Engineering		17	C4:Professional Major		116	
C5:Minor Elective		6	C6:Free Elective		6	

**CGPA CREDITS**

EARNED	TOTAL TO BE EARNED	CGPA	CLASS AWARDED
183	183	6.98	First Class

**NON-CGPA CREDITS**

EARNED	TOTAL TO BE EARNED
18	18

Please see overleaf for details



*M. Prayash*  
Controller of Examinations

Place : Krishnankoil  
Date : 08/06/2018

# KAMARAJ

## COLLEGE OF ENGINEERING & TECHNOLOGY



(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)

S.P.G.Chidambara Nadar - C. Nagammal Campus

S.P.G.C.Nagar, K. Vellakulam - 625 701, (Near Virudhunagar), Madurai District

### TRANSFER CERTIFICATE

Sl. No.753/TC/2019-2020

Roll No. : 18PBTE04

Reg. No. : 920418509009

1. Name of the Student : KARTHICK.A
2. Name of the Father / Mother / Guardian : R. ARUMUGAM
3. Nationality, Religion & Caste : INDIAN, HINDU  
BC, KAMMALAR
4. Sex : MALE
5. Date of Birth : 09/12/1996
6. Class in which the student was Studying at the time of leaving : FINAL YEAR M.Tech.  
BIOTECHNOLOGY
7. Date of Admission : 19.06.2018, 2018-19
8. Whether qualified for promotion to a higher class : REFER MARK STATEMENT
9. Date on which the student actually left the College : 30.09.2020
10. Date on which application for Transfer Certificate was made : 30.09.2020
11. Conduct & Character : GOOD

Date :

30 SEP 2020



*[Handwritten Signature]*

PRINCIPAL

Kamaraj College of  
Engineering and Technology  
Virudhunagar

आयकर विभाग  
INCOME TAX DEPARTMENT

भारत सरकार  
GOVT. OF INDIA

स्थायी लेखा संख्या कार्ड  
Permanent Account Number Card  
CTOPA1180L

नाम / Name  
KARTHICK A

पिता का नाम / Father's Name  
ARUMUGAM

जन्म की तारीख / Date of Birth  
09/12/1996

हस्ताक्षर / Signature  
A. Karthick



*In case this card is lost / found, kindly inform / return to :*  
Income Tax PAN Services Unit, UTIITSL  
Plot No. 3, Sector 11, CBD Belapur,  
Navi Mumbai - 400 614.

इस कार्ड के खोने/पाने पर कृपया सूचित करें/लीटाएं :  
आयकर पैन सेवा यूनिट, UTIITSL  
प्लॉट नं: ३, सेक्टर ११, सी.बी.डी.बेलापुर,  
नवी मुंबई-४०० ६१४.

A. Karthick

 **UNION OF INDIA Driving Licence (Tamil Nadu)** 

DL. No. **TN58 20150003559** (NT)

 **Date of Issue** 22-04-2015 **Valid Till** 21-04-2035

**Date of Birth** 09-12-1996 **Blood Group** O+

**Name**  
**KARTHICK A**

**Son/Daughter/Wife of**  
**ARUMUGAM R**

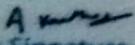

TND03930258 **TN58 20150003559**

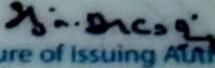
 **LMV**  
01-12-2020

 **MCWG**  
22-04-2015

**Badge Date**  
**Badge No.**

**Address**  
**13 A CHOKKALINGA NAGAR 7 TH STREET**  
**Madurai South, Madurai, TN 625016**

**Holder's Signature** 

**Signature of Issuing Authority**   
**TN58 MADURAI SOUTH RTO**

Form 7 Rule 16(2)

A. Karthick

B3/15425/2861/08

GCP-26-1-8,50,000 Cps.-13-9-2007 [P4-13]

R.Dis...../200

Dated.....200

BC



சான்றிதழ் எண் :  
Certificate No. :

மாவட்டக் குறியீடு எண் : 14  
District Code

வட்டக் குறியீடு எண் : 01  
Taluk Code

கிராமக் குறியீடு எண் : 057  
Village Code

7889454

வகுப்புச் சான்றிதழ்  
COMMUNITY CERTIFICATE

மதுரை மாவட்டம், மதுரை தென் வட்டம்  
மேல்குளி கிராமம்/நகரம், திரு/திருமதி/செல்வன்/செல்வி  
A. கார்த்திக் தகப்பனார்/கணவர் பெயர்  
R. சூரபகம் /கிங்கி/ கிளேன் வகுப்பைச் சார்ந்தவர்.  
அரசு ஆணை நிலை எண் 28, பிற்பட்ட மற்றும் மிகவும் பிற்பட்ட பிரிவின்  
நலத் துறை, நாள் 19-7-1994 வரிசை எண் 47 யடி 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 A. கார்த்திக்  
என்பவரும் அவருடைய குடும்பத்தினரும் தமிழ்நாட்டில் மதுரை  
மாவட்டத்தில் மதுரை தென் வட்டத்தில் கிராமத்தை, (கிளேன்)  
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  
District of  
Tamil Nadu.

முத்திரை  
Seal.



கையொப்பம் :  
Signature  
நாள் :  
Date  
பதவி : Head Quarters Deputy Tahsildar  
Designation : Madurai South Taluk  
7-7-08