Metric No. 3.3.3.

Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings

Year	**2019 - 2020**	**2018- 2019**	**2017 - 2018**	**2016- 2017**
Number of research papers	40	16	22	26
Number of full time teachers	98	124	160	184
Percentage per Year	41	13	14	14

CRITERIA NO :3 **TEACHING- LEARNING AND EVALUATION**

METRIC NO. 3.3.3 **NUMBER OF BOOKS AND CHAPTERS IN EDITED VOLUMES/BOOKS PUBLISHED AND PAPERS PUBLISHED IN NATIONAL/ INTERNATIONAL CONFERENCE**

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PAPERS PUBLISHED IN NATIONAL/ INTERNATIONAL CONFERENCE PROCEEDINGS
2019 -2020

Sl. No.	Name of the teacher	Title of the paper	Name of the conference	National / International
1.	Mr.P.A.Edwin Fernando	Experimental Verification of concrete by replacing with CFL	PSCEES-2019	National Conference
2.	S.Sureshkumar	An Experimental Study and behavior of banana fibre in concrete	RICET-19	National Conference
3.	Mr.K.Thirunavukkarasu	Experimental Study on the properties of concrete with the partial replacement of cement by rice husk ash.	RICET-19	National Conference
4.	A.Mukkannan	Experimental study of partial replacement of cement and coarse aggregate with fly ash and coconut shell.	CREATE 2019	International Conference
5.	Dr. N. Rajkumar	Leukemia Diagnosis In Blood Microscopic Image Using Local Binary Pattern And Supervised Classifier	NCACT	National Conference
6.	Dr. N. Rajkumar	Brain Tumour Detection Using Deep Learning	NCACT	National Conference
7.	Dr. N. Rajkumar	An Enhanced Data Security Policy Based on Cloud Storage	IICT'19	National Conference
8.	Dr. N. Rajkumar	Automatic LPG Booking and Leakage Detection system using IOT	IICT'19	National Conference
9.	Mr.P.Parthasarathi	Twitter Sentimental Analysis	NCACT	National Conference
10.	Mr.P.Parthasarathi	Enhanced SecurityMechanism for Multicast Broadcast in Group Communication	Innovative Technologies in Computer Science	National Conference

11.	Mrs.S.Nithyapriya	Smart Monitoring of Medical Data in Machine Learning Against Leaking Models	Innovative Technologies in Computer Science	National Conference
12.	Mrs.S.Nithyapriya	Traffic Density Estimation Based on Video Processing	NCACT	National Conference
13.	Mrs.R.Saranya	Bridge Safety Monitoring System Using IoT	Innovative Technologies in Computer Science	National Conference
14.	Mrs.R.Saranya	Intelligent MediboxIoT Enabled Patient Assisting Device	NCACT	National Conference
15.	Mr.S.Jeevanandham	Raising Hand Disaster Management Mobile Application	Innovative Technologies in Computer Science	National Conference
16.	Mrs.J.Keerthika	Prediction of Heart Disease Using Artificial Intelligence	Innovative Technologies in Computer Science	National Conference
17.	Ms.P.Sowkarthiga	An Efficient Image Annotation Using LSTM Algorithm	Innovative Technologies in Computer Science	National Conference
18.	Ms.P.Sowkarthiga	Smart Surveillance System Using Image Processing Technique	Innovative Technologies in Computer Science	National Conference
19.	Dr.J.Jaya	Enhanced Security mechanism for multicast broacast in group communication	Innovative Technologies in Computer Science	National Conference
20.	Dr.C.Viji	Grid Partitioning For Anomaly Detection (Gpad) In High Density Distributed Environment For Mining Techniques	ICIEEIC	International Conference
21.	Dr.C.Viji	An Efficient Software Fault Prediction Scheme To Assure Qualified Software Implementation Using Improved Classification Methods	NCETEIAC	National Conference
22.	Mr.S.Madhavapandian,	Solar operated smart oil skimmer with water qualty monitoring usng PLC	ICRIE'19	International Conference

23.	Mr.K.Sabareeshwaran.	Quick response based payment system for physically challenged people	NCSRIET-2019	National Conference
24.	Mrs.D.Gunapriya.	Human hand gesture control Robotic arm	NCSRIET-2019	National Conference
25.	Mrs.K.Kavitha,	Army spy robot using hand gesture control with wireless camera	NCSRIET-2019	National Conference
26.	Ms.S.Vedhanayaki,	Bidirectional contactless charging system for electric vehicles	NCSRIET-2019	National Conference
27.	Mr.R.Balakrishnan	IoT based plant irrigation	NCSRIET-2019	National Conference
28.	Mr.R.Mohanraj	RO Water Purification with Zero Wastage	ICIEI-2019	International Conference
29.	Mr.G.Selvaraj	Multi Response Process Parameters Optimization of CNC- Wire- cut EDM on INCONEL 625 using Taguchi Method	ICIEI-2019	International Conference
30.	Mr.S.Rajasekar	Design and fabrication of Magneto Rheological Damper	ETEDM-2019	National Conference
31.	Mr.V.Suresh Kumar	Automatic Cloth Retrieval System	SDTCME'19	National Conference
32.	Mr.V.Suresh Kumar	Design and fabrication of Tomato Paste making machine	SDTCME'19	National Conference
33.	Mr.S.Rajasekar	Design and Fabrication of Semi Automatic crop cutter and collecting machine	SDTCME'19	National Conference
34.	Mr.S.Rajasekar	Mechanical Behaviour of Coir/Glass Fibre Reinforced Epoxy based Hybrid composite	SDTCME'19	National Conference
35.	Dr.R.Sivakumar	A Hyper Heuristics Technique for data Partitioning and scheduling to heterogeneous systems using genetic algorithm and Improved Particle Swarm Optimization	ICI2EIC'19	International Conference
36.	Dr.N.Suguna	Smart Paper Evaluation using AI	NCICC'19	National Conference

37.	Mrs.V.Suvetha	Object and face detection for visually impaired person using raspeberry Pi	Emerging Trends in Electronics Instrumentation Automation and Control	National Conference
38.	Ms.P.Sowkarthiga	Image based graphical authentication and multi factor Authentication scheme on Exam scheduling Management	Emerging Trends in Wireless Communication Signal Processing and Networking	International Conference

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C. GOKUL

Co-authors: D.N. MANONMANI, K. ARUNKUMAR, V. KISHORE, A. INNOCENT PETER DAMIAN

Mr. A. MOHAMMED SIRAJ ANSARI	Dr. R. SARASWATHI	Dr. S. SHANMUGAM	Dr. V. SELLADURAI
Co-ordinator	Convenor	Professor & Head	Principal

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EXHIBIT No. 3.3.3 - A2

the sandwich beams under short beam test and 1-3 for the sandwich beams tested under asymmetrical beam shear test.

2.5 VIBRATION CHARACTERISTICS OF FIBER REINFORCED POLYMER BRIDGE SUPERSTRUCTURE', AMJAD J. AREF(2001)

This paper demonstrates that the dynamic response of first fiber reinforced polymer composite bridge built in US was studied using experimental modal tests. This slab bridge was manufactured with a longitudinal joint as a shear key and is connected in the field using epoxy resin.

An experimental model was used to evaluate the integrity followed by a finite element model validated with field test data was developed to further study the effect of deformation on the vibration characteristics of the structure. Results showed that there is less deformation in the bridge due to vibration. This paper helped us to understand that there will be less deformation in a structure when it is made of a fiber reinforced polymer material.

2.6 MICROMECHANICAL PHENOMENA DURING HYGROTHERMAL AGEING OF MODEL COMPOSITES INVESTIGATED BY RAMAN SPECTROSCOPY.PART I: TWARON FIBRES WITH DIFFERENT SURFACE TREATMENTS', A.J.CERVENKA(2004)

This paper explains that the Raman spectroscopy combined with gravimetry has been used to investigate hygrothermal ageing in model composites based on an epoxy resin containing a single filament of a Twaron PPTA fibre. Three Twaron fibres have been studied: untreated fibre (HM), fibre with a surface finish (HMF) and fibre with an activated surface (HMA) using two specimen configurations: the diffusion slab (DS) and the double pull out geometry.

TWARON

Time evolutions of the Raman strain profiles 3(x,t) and the water uptake M(t) have been determined for specimens immerse in liquid water and exposed to water vapour. Eliminating the exposure time, the swelling behaviour of the matrix is assessed and a concept for determination of the interface fracture energy is proposed.

Time dependencies of n, Ld and G(t) are used to rank surface treatments of Twaron fibres as to durability of their interfaces during hygrothermal ageing. This paper reveals that Twaron fibres had better durability properties and interface fracture energy during hygrothermal ageing.

2.7 MICROMECHANICAL PHENOMENA DURING HYGROTHERMAL AGEING OF MODEL COMPOSITES INVESTIGATED BY RAMAN SPECTROSCOPY. PART II: COMPARISION OF THE BEHAVIOUR OF PBO AND M5 FIBRES COMPARED WITH TWARON', A.J.CERVENKA(2004)

This paper explains that Raman spectroscopy combined with gravimetry has been used to investigate hygrothermal ageing in model composites based on an epoxy resin containing a single filament of a polymeric fibre. Two fibres have been studied—PBO and M5—using two specimen configurations:

The diffusion slab (DS) and the double fibre pull-out (DFPO). Simple micromechanical models developed for rationalizing data obtained for Twaron are used to process measurements for PBO and M5 (PIPD). This reveals that compared with the other two fibers used Twaron shows better durability characteristics.

2.7 INFLUENCE OF FIBER ORIENTATION AND THICKNESS ON THE RESPONSE OF GLASS/EPOXY COMPOSITES SUBJECTED TO IMPACT LOADING', RAHUL S. SIKARWAR(2014)

Composite laminates, made of glass/epoxy using compression molding technique, were subjected to impact loading. The ballistic limit and energy absorption capacity of the laminates were obtained. Experiments were carried out to study the effect of fiber orientation and thicknesses on ballistic limit and energy absorption of the laminates, by using a rigid conical bullet having 9.5 mm diameter and mass of 7.5 g in an air gun. This paper shows that if the thickness and dynamic modulus is increased it showed high resistance to impact loading.

2.9 INFLUENCE OF CARBON NANOTUBE INCLUSION ON THE FRACTURE TOUGHNESS AND BALLISTIC RESISTANCE OF TWARON/EPOXY COMPOSITE PANELS', W.Y.WAN HANIF(2015)

This paper explains the effect of multi walled carbon nanotube (MWCNT) inclusion on the fracture toughness and the ballistic resistance properties in terms of energy absorption. The determination of fracture toughness of the epoxy/MWCNT matrix was carried out by using a single edge notch bending (SENB) method according to the ASTM D5045-99.Four different weight percentage (wt.%) of multi-walled carbon nanotubes (MWCNTs) contents were used, which were 0wt.%,0.1 wt.%, 0.55 wt.% and 1.0 wt.%.

Epoxy binder and MWCNTs were mixed by using a mechanical stirrer for 10minutes at 1500rpm speed and was further sonicated for 30minutes at 30 Hz amplitude in order to enhance the homogeneity of MWCNTs in the matrix. The Twaron/epoxy/MWCNT composite panels were subjected to a ballistic test using 9mm Full Metal Jacket bullet at different impacting velocities.

From the SENB results, it can be reported that MWCNT inclusion up to 1.0% w.t content shows significant influence towards increment of fracture toughness value. This paper helped us to know that twaron has improved ballistic resistance to impact loading.

2.9 MULTISCALE GRAPHENE OXIDE-CARBON FIBER REINFORCEMENTS FOR ADVANCED POLYURETHANE COMPOSITES',SHUAI JIANG(2016)

This paper demonstrates Multiscale graphene oxide/carbon fiber (GO/CF) reinforcements were developed for polyurethane (PU) elastomer composites. GO was first coated on CF surface by electrophoretic deposition (EPD), aiming to improve the CF/PU interfacial adhesion.

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This is to certify that Prof./Dr./Mr/Ms. Dr. J. Jaya of

AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY

has Presented a Paper entitled ENHANCED SECURITY MECHANISM FOR MULTICAST BROADCAST IN GROUP COMMUNICATION in the One Day National level Conference on "INNOVATIVE TECHNOLOGIES IN COMPUTER SCIENCE" organized by Department of Computer Science and Engineering on 10th March 2020.

CONVENOR

PRINCIPAL

CERTIFICATE

OIIC1053

ICI2EIC 2019

Dr./ Mr./ Ms. **C. VIJI**

of **AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, COIMBATORE**

has presented a paper entitled

GRID PARTITIONING FOR ANOMALY DETECTION (GPAD) IN HIGH DENSITY DISTRIBUTED ENVIRONMENT FOR MINING TECHNIQUES

in SEEE **Online International Conference on Innovation in**

Electrical, Electronics and Intelligent Computing

on 19th and 20th July 2019 Organized by the Society for Engineering

Education Enrichment Association

(Registered under the Tamilnadu Societies Act 27 of 1975)

Tamilnadu Chapter

President-SEEE

SEEE
Society for Engineering Education Enrichment

KARPAGAM
COLLEGE OF ENGINEERING
Rediscover | Refine | Redefine

(An Autonomous Institution, Approved by AICTE & Affiliated to Anna University, Chennai)
Coimbatore-32.

DEPARTMENT OF
ELECTRONICS AND INSTRUMENTATION ENGINEERING

8th National Conference on
"EMERGING TRENDS IN ELECTRONICS, INSTRUMENTATION, AUTOMATION AND CONTROL"

Certificate of Participation

This is to certify that ~~Mr/Ms~~ C. VIJI
of S.V.S. COLLEGE OF ENGINEERING
has Presented a Paper Titled AN EFFICIENT SOFTWARE FAULT PREDICTION SCHEME TO ASSURE QUALIFIED SOFTWARE IMPLEMENTATION USING IMPROVED CLASSIFICATION METHODS
in 8th National Conference on "EMERGING TRENDS IN ELECTRONICS, INSTRUMENTATION, AUTOMATION AND CONTROL" Organised by the Department of Electronics & Instrumentation Engineering on 22nd March 2019.

SRI SUBRAMANYA
COLLEGE OF ENGINEERING AND TECHNOLOGY
PALANI - 624 615

ICRIE'19

6th International Conference on Recent Innovations in Engineering

CERTIFICATE OF APPRECIATION

This is to certify that Mr./Ms. S. MADHAVAPANDIAN

from AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY

has presented a Paper entitled SOLAR OPERATED SMART OIL SKIMMER WITH WATER QUALITY MONITORING USING PLC.

in the International Conference on Recent Innovations in Engineering'19 organized by the Department of Civil / CSE / ECE / EEE / MECH at Sri Subramanya College of Engineering and Technology, Palani, Tamilnadu on 23rd March 2019.

Head of the Department

Organizing Chair

Principal

6th International Conference on Recent Innovations in Engineering'19

SRI RANGANATHAR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)

Athipalayam, Coimbatore - 641 110.

National Conference on Scientific Research and Integrated Emerging Technologies (NCSRIET-2019)

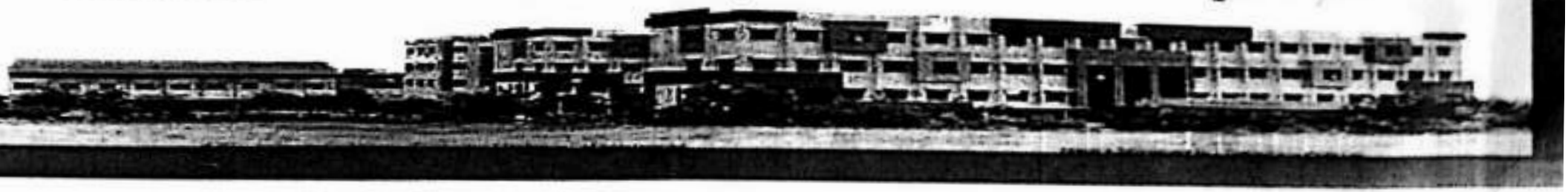
CERTIFICATE

This is certify that ~~Dr~~/Mr/~~Ms~~.....K:...SABAREESHWARAN.....AP/EEE..... of .....AKSHAYA.....COLLEGE.....OF.....ENGINEERING.....AND.....TECHNOLOGY.....has participated and presented a paper titled on..QUICK.....RESPONSE.....BASED.....PAYMENT.....SYSTEM.....FOR..... .PHYSICALLY...CHALLENGED.....PEOPLE.....in the National Conference of "Scientific Research and Integrated Emerging Technologies (NCSRIET-2019) " held on 20th March, 2019.

CO-ORDINATOR

HOD

PRINCIPAL



SRI RANGANATHAR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)

Athipalayam, Coimbatore - 641 110.

National Conference on Scientific Research and Integrated Emerging Technologies (NCSRIET-2019)

CERTIFICATE

This is certify that ~~Dr/Mr~~/Ms.....GUNAPRIYA.D.....AP/EEE..... of .....AKSHAYA.....COLLEGE.....OF.....ENGINEERING...AND...TECHNOLOGY....has participated and presented a paper titled on.....HUMAN.....HAND.....GESTURE.....CONTROL.....ROBOTIC..... .....ARM.....in the National Conference of "Scientific Research and Integrated Emerging Technologies (NCSRIET-2019) " held on 20th March, 2019.

CO-ORDINATOR

HOD

PRINCIPAL

SRI RANGANATHAR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)

Athipalayam, Coimbatore - 641 110.

National Conference on Scientific Research and Integrated Emerging Technologies (NCSRIET-2019)

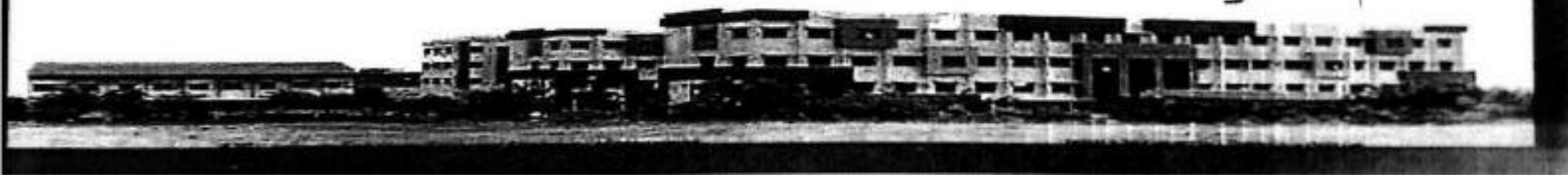
CERTIFICATE

This is certify that ~~Dr/Mr/Ms~~.....K..KAXITHA.....AP/EEE..... of .....AKSHAYA.....COLLEGE.....OF.....ENGINEERING.....AND.....TECHNOLOGY..has participated and presented a paper titled on....ARMY.....SPY.....ROBOT.....USING.....HAND.....GESTURE.....CONTROL .WITH.....WIRELESS.....CAMERA.....in the National Conference of "Scientific Research and Integrated Emerging Technologies (NCSRIET-2019) " held on 20th March, 2019.

CO-ORDINATOR

HOD

PRINCIPAL



SRI RANGANATHAR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)

Athipalayam, Coimbatore - 641 110.

National Conference on Scientific Research and Integrated Emerging Technologies (NCSRIET-2019)

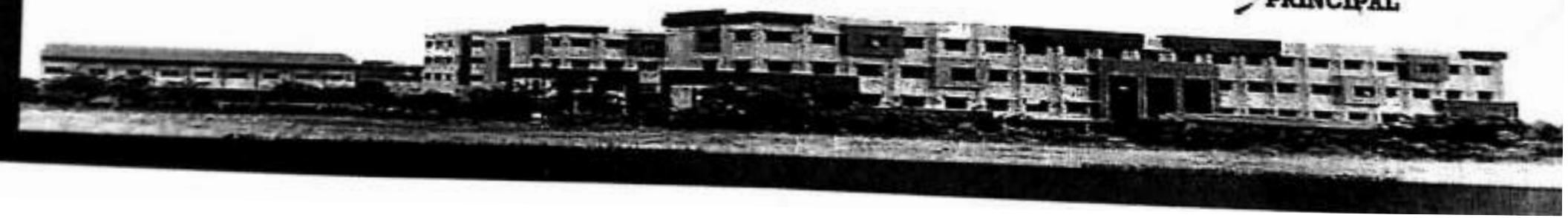
CERTIFICATE

This is certify that ~~Dr/Mr~~/Ms. S. VEDHANAYAKI, AP/EEE of AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY has participated and presented a paper titled on BIDIRECTIONAL CONTACTLESS CHARGING SYSTEM FOR ELECTRIC VEHICLES in the National Conference of "Scientific Research and Integrated Emerging Technologies (NCSRIET-2019) " held on 20th March, 2019.

CO-ORDINATOR

HOD

PRINCIPAL



SRI RANGANATHAR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Athipalayam, Coimbatore - 641 110.

National Conference on Scientific Research and Integrated Emerging Technologies (NCSRIET-2019)

CERTIFICATE

This is certify that ~~Dr/Mr/Ms~~ R. BALAKRISHNAN AP/EEE of AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY has participated and presented a paper titled on IOT BASED PLANT IRRIGATION in the National Conference of "Scientific Research and Integrated Emerging Technologies (NCSRIET-2019)" held on 20th March, 2019.

CO-ORDINATOR HOD PRINCIPAL

SRM TRP ENGINEERING COLLEGE

Near Samayapuram, Tiruchirappalli - 621 105.

International Conference on Innovative Engineering Initiatives (ICIEI - 2019)

Certificate

This is to certify that the following paper has been presented in the" International Conference on Innovative Engineering Initiatives " (ICIEI - 2019) held during 13th & 14th March 2019.

Title of the Paper : RO WATER PURIFICATION WITH ZERO WASTAGE

Author : MOHAN RAJ.R, ASSISTANT PROFESSOR.

AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY

Prof. S. PALANIYAPPAN
Coordinator

Dr. M. PRABHAKAR
Organizing Secretary

Dr. S. MALIKRAJ
Convener

SL.: SRM TRPEC/ICIEI'19/ ME-59-01

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SRM TRP ENGINEERING COLLEGE

Near Samayapuram, Tiruchirappalli - 621 105.

International Conference on Innovative Engineering Initiatives (ICIEI - 2019)

Certificate

This is to certify that the following paper has been presented in the" International Conference on Innovative Engineering Initiatives " (ICIEI - 2019) held during 13th & 14th March 2019.

Title of the Paper : MULTI RESPONSE PROCESS PARAMETERS OPTIMIZATION OF CNC-WIRE-CUT EDM ON INCONEL625 USING TAGUCHI METHOD

Author : G. SELVARAJ, ASSISTANT PROFESSOR

AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY

Prof. S. PALANIYAPPAN
Coordinator

Dr. M. PRABHAKAR
Organizing Secretary

Dr. S. MALIKRAJ
Convener

SL.: SRM TRPEC/ICIEI'19/ME - 58 - 01

HINDUSTHAN INSTITUTE OF TECHNOLOGY

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Coimbatore - 641032

Hindusthan Centre for Applied Rural Technology

EMERGING TRENDS IN ENGINEERING DESIGN & MANUFACTURING

Participation Certificate

This is to certify that Mr/~~Ms~~ .....RAJASEKAR.S.....AP/MECH.....

of....DHANALAKSHMI COLLEGE OF ENGINEERING AND TECHNOLOGY..*has presented the paper entitled on* ...DESIGN AND FABRICATION OF MAGNETO.....

.....RHEOLOGICAL DAMPER.....

in the national level conference on Emerging Trends in Engineering Design & Manufacturing "ETEDM - 2019" on 22.03.2019.

Coordinator
ETEDM 19

Organizing Secretary
ETEDM 19

Chairman
ETEDM 19

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SRI RANGANATHAR
Institute of Engineering & Technology
Athipalayam, Coimbatore - 641110

FIRST NATIONAL CONFERENCE

SUSTAINABLE DEVELOPMENT TECHNIQUES IN CIVIL & MECHANICAL ENGINEERING - SDTCME '19

Certificate of Merit

This is to certify that Dr/Mr/Ms SURESH KUMAR. V (AP/MECH)
of Akshaya College of Engg & Tech has
presented a paper titled Automatic cloth retrieval
System
in the "First National Conference" organized by Department of Civil and Mechanical Engineering held on 18th March 2019

Convener's

Patron

SRI RANGANATHAR
Institute of Engineering & Technology
Athipalayam, Coimbatore - 641110

FIRST NATIONAL CONFERENCE

SUSTAINABLE DEVELOPMENT TECHNIQUES IN CIVIL & MECHANICAL ENGINEERING - SDTCME '19

Certificate of Merit

This is to certify that ~~Dr/Mr/Ms~~ SURESH KUMAR.V
of AKSHAYA COLLEGE OF ENGG & TECH has
presented a paper titled Design and Fabrication of
Tomato Paste Making Machine
in the 'First National Conference' organized by Department of Civil and Mechanical Engineering held on 18th March 2019.

Convener's

Patron

SRI RANGANATHAR
Institute of Engineering & Technology
Athipalayam, Coimbatore - 641110

FIRST NATIONAL CONFERENCE

SUSTAINABLE DEVELOPMENT TECHNIQUES IN CIVIL & MECHANICAL ENGINEERING - SDTCME '19

Certificate of Merit

This is to certify that Mr/Ms RAJASEKAR.S (AP/MECH)
of Akshaya College of Engg & Tech has
presented a paper titled Design and Fabrication of Semi Automatic Crop Cutter and Collecting Machine.
in the "First National Conference" organized by Department of Civil and Mechanical Engineering held on 15th March 2019

Convener's

Patron

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SRI RANGANATHAR
Institute of Engineering & Technology
Athipalayam, Coimbatore - 641110

FIRST NATIONAL CONFERENCE

SUSTAINABLE DEVELOPMENT TECHNIQUES IN CIVIL & MECHANICAL ENGINEERING - SDTCME '19

Certificate of Merit

This is to certify that Dr/Mr/Mrs RAJASEKAR. S (AP/MECH)
of Akshaya College of Engg & Tech has
presented a paper titled Mechanical Behaviour of Coir/Glass
Fibre Reinforced Epoxy Based Hybrid Composites
in the "First National Conference" organized by Department of Civil and
Mechanical Engineering held on 18th March 2019.

Convener's

Patron

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ONLINE
INTERNATIONAL CONFERENCE ON INNOVATION IN ELECTRICAL, ELECTRONICS AND INTELLIGENT COMPUTING

(19-20 JULY 2019)

ICI2EIC'19 PROCEEDINGS

VOLUME-I

ISBN: 978-81-933187-0-6

CERTIFICATE

OEIC1119

ICI2EIC 2019

Dr./ Mr./ Ms. **R.SIVAKUMAR**

of **AKSHAYA COLLEGE OF ENGINEERING**

has presented a paper entitled

A HYPER HEURISTICS TECHNIQUE FOR DATA PARTITIONING AND SCHEDULING TO HETEROGENEOUS SYSTEMS USING GENETIC ALGORITHM AND IMPROVED PARTICLE SWARM OPTIMIZATION

in SEEE **Online International Conference on Innovation in**

Electrical, Electronics and Intelligent Computing

on 19th and 20th July 2019 Organized by the Society for Engineering

Education Enrichment Association

(Registered under the Tamilnadu Societies Act 27 of 1975)

Tamilnadu Chapter

President-SEEE

Society for Engineering Education Enrichment

SNS COLLEGE OF TECHNOLOGY

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Approved by AICTE and Affilliated to Anna university
Accredited by NBA - AICTE & NAAC - UGC with 'A+'Grade
Coimbatore - 35

CERTIFICATE

OF APPRECIATION

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

This certificate is proudly presented to

Dr. N. SUGUNA

of AKSHAYA COLLEGE OF ENGINEERING & TECHNOLOGY who has presented a paper titled SMART PAPER EVALUATION USING AI.

in **NCICC'19** - National Conference on Innovations in Communication and Computing Organized by SNS College of Technology on March 18th 2019.

DR. T. RAVICHANDRAN
(CO-CONVENER)

DR. S. CHENTHUR PANDIAN
(CONVENER)

KARPAGAM
COLLEGE OF ENGINEERING
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Coimbatore-32.

DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

8th National Conference on
"EMERGING TRENDS IN ELECTRONICS, INSTRUMENTATION, AUTOMATION AND CONTROL"

Certificate of Participation

This is to certify that Mr/Ms. SUVETHA.V
of AKSHAYA COLLEGE OF ENGINEERING & TECHNOLOGY
has Presented a Paper Titled OBJECT AND FACE
DETECTION FOR VISUALLY IMPAIRED PERSON
USING RASPBERRY PI
in 8th National Conference on "EMERGING TRENDS IN ELECTRONICS, INSTRUMENTATION, AUTOMATION AND CONTROL" Organised by the Department of Electronics & Instrumentation Engineering on 22nd March 2019.

CONVENER

PRINCIPAL

Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956 – Re-accredited with 'A+' Grade by NAAC. Recognised by UGC u/s 12-B)

School of Engineering

(Approved by AICTE)

Satellite Campus, Ayya Avinashilingam Nagar, Varapalayam, Thadagam P.O., Coimbatore-641 108, Tamil Nadu, India.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

(*Accredited by National Board of Accreditation, New Delhi)

Certificate of Participation

This is to certify that ~~Dr./Mr./~~Ms Sowkarthiga...., Akshaya College of Engineering & Technology, Coimbatore... has participated and presented a paper on ~~Image based Graphical Authentication and Multi-factor authentication schema~~ on Erath scheduling management. in the two day International Conference on 'EMERGING TRENDS IN WIRELESS COMMUNICATIONS, SIGNAL PROCESSING AND NETWORKING' held on 07.03.2019 and 08.03.2019 at School of Engineering Campus, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore.

Dr.R.Sudarmani & Mrs. R.Chitra
Co-ordinators

*B.E ECE is accredited by NBA from 2018 - 2021

Dr.B.Sargunam
HoD / Department of ECE
Organising Secretary

Dr.S.Maragatham
Dean, School of Engineering
Convener

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COLLEGE OF ENGINEERING AND TECHNOLOGY
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Kinathukadavu, Coimbatore - 642 109.

BOOKS AND CHAPTERS IN EDITED VOLUMES/BOOKS PUBLISHED 2019 – 2020

Sl. No.	Name of the teacher	Title of the book/chapters published	National / International	Name of the publisher
1.	Dr.S.Sendhil Kumar	Parabolic Trough Collector and its Performance Factors	International	Lambert Academic Publications, Latvia
2.	Dr.N.Mathankumar	Mechanical Properties & Characterization on AA2618 Metal matrix reinforced with Si3N4, Al and ZrB2 insitu composite	International	Anvy Publications, Delhi

Dr. J. JAYA, M.Tech., Ph.D.
PRINCIPAL
Akshaya College of Engineering and Technology
Kinathukadavu, Coimbatore-642 109

EXHIBIT No. 3.3.3 - A4

DATE
08.05.2020

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Brivibas gatve 197
LV-1039 Riga, Latvia

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Telefax: +371 686 20455

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www.omniscriptum.com

To Whom It May Concern

Dear Sir/Madam,

We are pleased to announce the publication of the book entitled "Parabolic Trough Collector and its Performance Factors", authored by Dr. Sendhil Kumar.S. and Mr. Vijayan.S.N. The book was released by Lambert Academic Publishing in May, 2020 and bears ISBN 978-613-9-92186-7.

Being an imprint of SIA OmniScriptum Publishing, Lambert Academic Publishing provides high-quality publications, with all the advantages of an international company in marketing, production and distribution. Books of LAP are therefore available on the worldwide market via more than 80,000 bookstores and 3,000 online stores.

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--

Kind regards,

Aurora Jian
Supervisor

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info@omniscriptum.com / www.omniscriptum.com

EMERGING TRENDS IN MECHANICAL, COMPUTING AND ELECTRICAL SCIENCE

Merit Certificate for Publication

24.11.19

This is to certify that Book chapter entitled "**Mechanical Properties and Characterization on AA 2618 Metal Matrix Reinforced With Si_3N_4, AlN and ZrB_2 Insitu Composites**", submitted by N.Mathan Kumar, N.Mohan Raj, S.Kannan, L.A.Kumaraswamidhas has been published in Emerging Trends in Mechanical, Computing and Electrical Science (ISBN: 978-81-941281-8-2) during November 2019.

Signed by:

The Chief Editor,

ETMCE,

ANVI Books & Publishers, Delhi.

AKSHAYA
COLLEGE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai. An ISO 9001:2015 Certified Institution)
Kinathukadavu, Coimbatore - 642 109.

PAPERS PUBLISHED IN NATIONAL/ INTERNATIONAL CONFERENCE PROCEEDINGS
2018 -2019

Sl. No.	Name of the teacher	Title of the paper	Name of the conference	National / International
1.	S.Sureshkumar	Study and Behaviour of hybrid fibre in concrete.	RICET-18'	National Conference
2.	S.Sureshkumar	Experimental Investigation on partial replacement on baggage ash in concrete	RICET-18'	National Conference
3.	Mr.K.Thirunavukkarasu	Hybrid fibre reinforced self compacting concrete	ICON 18	National Conference
4.	Mr.K.Thirunavukkarasu	Study on performance of Fresnel lens for Thermal efficiency and microbial reduction	ICON 18	National Conference
5.	Mr.K.Thirunavukkarasu	Experimental Investigation of Partial replacement of coarse aggregate with tyre waste	RICET-18'	National Conference
6.	Mr.K.Thirunavukkarasu	Partial replacement of coarse aggregate with tyre waste	ICCTET 2018	International Conference
7.	A.Mukkannan	Performance of concrete with partial replacement of fine aggregate by lime sludge.	ICCTET 2018	International Conference
8.	Mr.P.A.Edwin Fernando	Utilization of copper slag as sand replacement in rigid pavements	ICFACE-2018	International Conference
9.	Mr.P.A.Edwin Fernando	Experimental Study On High Strength Concrete With Recycled Aggregate	ICCTET 2018	International Conference
10.	Mr.P.A.Edwin Fernando	Experimental investigation of helipad by testing on static and dynamic loading	ICCTET 2018	International Conference
11.	Mr.P.A.Edwin Fernando	Experimental study on foam concrete by replacement of sand by M-Sand	RICET-18'	National Conference
12.	Ms.P.Sowkarthiga	IOT Based Smart Hostel Security System	ICCTET 2018	International Conference
13.	Dr.C.Viji	An Electronic nose for detection and blocking toxic gases in industries	NITCOM	National Conference

14.	Mr.G.Maruthupandian	Design of Magnetic Chip Collector	ICCTET 2018	International Conference
15.	Mr.V.Suresh Kumar	Manufacturing and evaluation of round rod based on cryogenic process by using wasted plastics	ICCTET 2018	International Conference
16.	Mr.S.Rajasekar	Experimental Investigation of Mechanical Behaviour of Composite plate made by using Pineapple Fibre, Chicken Feather and Epoxy Resin	ICCTET 2018	International Conference

JCT College of Engineering and Technology

IJSER

TÜV AUSTRIA

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

This is to certify that

SURESH KUMAR.S, AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY

has participated and presented a paper in the 2nd NATIONAL CONFERENCE ON RECENT INNOVATIONS IN CIVIL ENGINEERING AND TECHNOLOGY (RICET-18') held on 2nd March 2018 [illegible] Department of Civil Engineering

JCT College of Engineering and Technology [illegible] Tamil Nadu, India

Paper Title STUDY AND BEHAVIOUR OF HYBRID FIBRE IN CONCRETE

Co-ordinator
Prof.V.Murugesh

HoD/ Civil
Prof. A. Kumar

Principal
Dr G. Ramesh

JCT College of Engineering and Technology

IJSER IN RESEARCH & PUBLICATION

TÜV AUSTRIA

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

This is to certify that Dr. / Mr./ Ms.

S. SURESH KUMAR, AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY.

has participated and presented a paper in the 2nd NATIONAL CONFERENCE ON RECENT INNOVATIONS IN CIVIL ENGINEERING AND TECHNOLOGY (RICET-18') held on 7th March 2018, organized by the Department of Civil Engineering JCT College of Engineering and Technology, Coimbatore, Tamilnadu, India.

Paper Title EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT ON BAGGASE ASH IN CONCRETE.

Co-ordinator
Prof.V.Murugesh

HoD/ Civil
Prof. A. Kumar

Principal
Dr. G. Ramesh

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IEI Students Chapter (Civil Division)

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ICON' 18

6th & 7th March 2018

Certificate of Appreciation

This is to certify that Mr./Miss /Mrs./Prof./Dr. K. THIRUNAVUKKARASU from AKSHAYA COLLEGE OF Engg & Tech participated in National Conference on INNOVATIONS IN CONCRETE AND CONSTRUCTION (ICON 2018) and presented a paper entitled. HYBRID FIBER REINFORCED SELF-COMPACTING CONCRETE on 6th and 7th March, 2018 at Sona College of Technology, Salem.

Dr. [illegible]ESWARAN
CONVENER

Dr. R. MALATHY
HOD/CIVIL

Dr. S.R.R. SENTHIL KUMAR
PRINCIPAL

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FOURTH NATIONAL CONFERENCE ON

INNOVATIONS IN CONCRETE AND CONSTRUCTION

ICON' 18

6th & 7th March 2018

Certificate of Appreciation

This is to certify that Mr./Miss./Mrs./Prof./Dr. K.THIRUNAVUKKARASU

from AKSHAYA COLLEGE OF ENGG & TECH participated in National Conference on INNOVATIONS IN CONCRETE AND CONSTRUCTION (ICON 2018) and presented a paper entitled: STUDY ON PERFORMANCE OF FRESNEL LENS FOR THERMAL EFFICIENCY AND MICROBIAL REDUCTION on 6th and 7th March, 2018 at Sona College of Technology, Salem.

IN ASSOCIATION WITH

ISTE Chapter ICI Students Chapter

IEI Students Chapter (Civil Division)

SUPPORTED BY

Dr. D. [illegible] ESWARAN
CONVENER

Dr. R. MALATHY
HOD/CIVIL

Dr. S.R.R. SENTHIL KUMAR
PRINCIPAL

JCT

IJSER
IN RESEARCH & PUBLICATION

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CERTIFICATE

This is to certify that Dr. / Mr./ Ms.

K. THIVUNAVUKKARASU, AKSHAYA COLLEGE OF ENGINEERING AND TECHNOLOGY,

has participated and presented a paper in the 2nd NATIONAL CONFERENCE ON RECENT INNOVATIONS IN CIVIL ENGINEERING AND TECHNOLOGY (RICET-18') held on 7th March 2018, organized by the Department of Civil Engineering JCT College of Engineering and Technology, Coimbatore, Tamilnadu, India.

Paper Title EXPERIMENTAL INVESTIGATION OF PARTIAL REPLACEMENT OF COARSE AGGREGATE BY TYRE WASTE.

Co-ordinator
Prof.V.Murugesh

HoD/ Civil
Prof. A. Kumar

Principal
Dr. G. Ramesh

EXHIBIT No. 3.3.3 - B2

AKSHAYA

COLLEGE OF ENGINEERING AND TECHNOLOGY

[illegible]

Kinathukadavu, Coimbatore - 642 109

Certificate of Appreciation

This is to certify that

Dr./Mr./Ms./ K. THIRUNAVUKARASU

of AKSHAYA COLLEGE OF ENGINEERING & TECHNOLOGY

has presented a paper entitled

PARTIAL REPLACEMENT OF COARSE AGGREGATE WITH TYRE WASTE

in

Fifth International Conference on Current Trends in Engineering & Technology

ICCTET 2018

held on ***23rd & 24th March, 2018***

organized by

Akshaya College of Engineering and Technology,

Coimbatore, Tamilnadu, India

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Conference Chair	Convenor	Patron	Chief Patrons	

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Certificate of Appreciation

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Paper Title EXPERIMENTAL RESEARCH ON FOAM CONCRETE USING FLYASH AND REPLACEMENT OF SAND BY M-SAND

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PAPERS PUBLISHED IN NATIONAL/ INTERNATIONAL CONFERENCE PROCEEDINGS
2017 – 2018

Sl. No.	Name of the teacher	Title of the paper	Name of the conference	National / International
1.	Mr.P.A.Edwin Fernando	Experimental Investigation on partial replacement of crumrubber for sand and silica fume for cement in Conventional Concrete	Spice 2017	International Conference
2.	Mr.P.A.Edwin Fernando	Experimental Investigation on bagasse ash and metakaolin in concrete with superplasticizer conplast SP430	Spice 2017	International Conference
3.	Mr.P.A.Edwin Fernando	Experimental research on foam concrete using flyash and replacement of sand by Eco sand.	Spice 2017	International Conference
4.	Mr.P.A.Edwin Fernando	Experimental Research on foam concrete using flyash and replacement of sand by M-Sand.	Spice 2017	International Conference
5.	Mr.P.A.Edwin Fernando	Studies on usage of ceramic powder and crumb rubber in road pavement	Spice 2017	International Conference
6.	Mr.P.A.Edwin Fernando	Experimental Investigation of beam strengthened using glass fibre reinforced polymer	Spice 2017	International Conference
7.	Mr.P.A.Edwin Fernando	Experimental Study on steel fibre reinforced concrete with partial replacement of cement by marble fines	Spice 2017	International Conference
8.	Mr.K.Thirunavukkarasu	Experimental Research on green concrete with partial replacement of cement with fly ash.	Spice 2017	International Conference
9.	Mr.Prithiveraj.A	Experimental Study on Bond strength of different concrete mixtures.	Spice 2017	International Conference
10.	Mr.M.Alagendran	Seismic retrofitting of RCC Beams by using the comparative study strength obtained from the combination of CF&AF,GF&AF for its flexural behavior.	Spice 2017	International Conference

11.	A.Mukkannan	Experimental study on partial replacement of cement by bentonite and partial replacement of fine aggregate by demolished concrete waste in paver block	Spice 2017	International Conference
12.	A.Mukkannan	Experimental Study on partial replacement of fine aggregate by vermiculite in concrete.	Spice 2017	International Conference
13.	S.Sureshkumar	Experimental Investigation on partial replacement of cement with flyash and fine aggregate with eco sand using conplast SP430 IN Concrete.	Spice 2017	International Conference
14.	K.MaruthiVenkatesh	Experimental Study on green concrete with partial replacement of fine aggregate by marble sludge powder and Quarry rock dust.	Spice 2017	International Conference
15.	Mr.M.Alagendran	Experimental study on flyash bricks with bottom ash as a full replacement of fine aggregates.	Spice 2017	International Conference
16.	P.Muthaiyan	Experimental study on self compacting concrete with partial replacement of sand by quarry dust	Spice 2017	International Conference
17.	S.Sureshkumar	Experimental study on biobacterial concrete	Spice 2017	International Conference
18.	S.Karuppasamy	Comparison of strength of Flemish bond and RAT Trap bond in brick masonry	Spice 2017	International Conference
19.	M.Dayaanandan	Experimental Analysis on partial replacement of cement with ricehusk ash and coarse aggregate with tile in concrete.	Spice 2018	International Conference
20.	Dr. N. Rajkumar	Cashless purchase using smart card	NCNICS'17	National Conference
21.	Mrs.P. Soundarya	Social Consciousness:Revenge and the quest for justice in Thomas Kyd's play The Spanish Tragedy and the movie MOM	ICART-17	International Conference
22.	Mrs. S. Sreelatha	Childlessness: An endless stream of Taunts and Insinuations for Women in comparison with the epic	ICART-17	International Conference

		'Mahabaratha' and the novel 'One Part Woman'.		

EXHIBIT No. 3.3.3 - C2

SEISMIC RESPONSE OF RECENTERING COLUMN WITH ELASTOMERS

[1]Delbin George, [2] Vidya Vijayan,[3]Edwin Fernando.P.A.,[4]Alagendran.M

[1]PG Student, [2,3,4]Assistant Professor, [1]Civil Department,

[1]Mar Baselios Institute of Technology and Science, Kerala, India,
[3,4]Akshaya College of Engineering and Technology, Coimbatore

Abstract--- The current study analytically discusses about seismic performance of self-centering columns with elastomers under cyclic loading, seismic loading and monotonic loading. A three dimensional non-linear finite element model for post tensioned precast column is developed. The model is subjected to constant axial loading, prestressing forces and lateral cyclic, monotonic and seismic loads. In the time history analysis the column is subjected to earthquake record of higher seismic zones. The different types of elastomers were also tested for finding the most suitable one. The force displacement results shows 20% decrease in deformation under monotonic loading, 83% decrease in deformation under seismic data. The Von Mises stress also shows a favourable decrease for elastomer incorporated model. Among the three types of elastomers, silicone elastomer proves to be better in terms of factor of safety, equivalent stress and deformation.

Keywords--- Self-centering columns, elastomers, Von Mises stress

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EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF CRUMB RUBBER FOR SAND AND SILICA FUME FOR CEMENT IN CONVENTIONAL CONCRETE

[1]P.A.Edwin Fernando, [2]K.Mahalakshmi and [3]G.Alagammal

[1]Assistant Professor, Department of Civil Engineering, Akshaya College of Engineering
[2,3] UG student, Department of Civil Engineering, Akshaya College of Engineering

Abstract--- Huge amount of rubber is produced worldwide. For example, 110 million tons rubber is produced annually only in India. It is not possible to discharge the rubbers in the environment because they decompose very slowly and cause soil pollution. So, it is necessary to have alternative uses of these wastages. These waste materials can be used to improve some mechanical properties of concrete, such as more energy absorption, better ductility, and better crack resistance. Rubberized concrete is a concrete in which the scrap tire rubber is used as a partial replacement of fine aggregate as well as coarse aggregate. Partial replacement of cement by silica fume can improve concrete properties. In the present study, the 7 day and 28 day compressive strength of concretes containing crumb rubber and silica fume is investigated. The purpose of this experimental investigation is to study the behaviour of strength from Crumb rubber concrete (CRC).

Keywords— Crumb rubber, silica fume, energy absorption, durability.

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EXHIBIT No. 3.3.3 - C2

EXPERIMENTAL INVESTIGATION ON BAGASSE ASH AND METAKAOLIN IN CONCRETE WITH SUPERPLASTICIZER CONPLAST SP430

[1]P.A.Edwin Fernando, [2]I.Karthikeyani and [3]D.Girija

[1,2] Assistant Professor, Department of Civil Engineering, Akshaya College of Engg & Tech., Coimbatore
Email: [1]tomygeorge@gmail.com, [2]cev.edw.a@gmail.com

Abstract— Indigenous resources for natural and artificial admixtures with high pozzolanic reactivity have been employed in many countries around the world. A lot of studies have been conducted for this purpose. With the use of agricultural waste residue, main benefits come from saving natural resources and energy, as well as protecting the environment by utilising these mineral admixtures. Sugarcane bagasse (SCB) is a voluminous by-product in the sugar mills when juice is extracted from the cane. The burning of bagasse leaves bagasse ash (BA) as a waste

bagasse ash can be used as a cement replacement material because of its pozzolanic property. Replacing cement with (10-20% by weight) bagasse ash produces a concrete mix. Metakaolin is a pozzolanic material widely used in partial replacement of cement (5-20% by weight) which is economical and its pozzolanic action increases the strength and durability properties. From the experiments it is obtained that partial replacement of bagasse ash with cement increases strength up to 15 %. In this paper a green technology is evolving to replace maximum amount of cement by bagasse ash and metakaolin. So by fixing 20% of bagasse ash as constant, metakaolin can be added in concrete mix to increase the strength and durability by varying percentage of 0, 5, 10, 15, and 20. The tests to be conducted are compressive strength, Flexural Strength, split tensile strength test and durability tests such chloride attack test and sulphate attack test.

Keywords— Pozzolanic property, Bagasse ash, Metakaolin, Compressive strength, Flexural strength, Split tensile strength

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EXPERIMENTAL RESEARCH ON FOAM CONCRETE USING FLYASH AND REPLACEMENT OF SAND BY ECO-SAND

P. A. Edwin Fernando[1], Muthamil selvan.G[2], Sivanesan.G[3], Tamilvanan.M[4], Vinoth.D[5]

[1] Assistant Professor, [2]B.E. 4th year, Dept. of civil engineering.
Akshaya College of engineering and technology, Kinathukadavu, Coimbatore.(India)

Abstract—Green building design involves finding the balance between homebuilding and the sustainable environment. Leadership in Energy and Environmental Design (LEED) is a set of rating systems for the design, construction, operation, and maintenance of green buildings. This paper gives a fast about green building and its goals. It is mainly about LEED, its development, the rating system, new versions and its overall performance. The comparison between LEED buildings and non-LEED buildings is done and the controversies are highlighted. It also discusses about whether it is reliable or not and its role in India.

Keywords—Green building; Sustainable; LEED; performance;

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EXHIBIT No. 3.3.3 - C2

EXPERIMENTAL RESEARCH ON FOAM CONCRETE USING FLYASH AND REPLACEMENT OF SAND BY M-SAND

P. A. Edwin Fernando[1], Achulya.V[2], Dimple.S[3], Jeevanandam.S[4], Mogesh.J[5]

[1] Assistant Professor, [2][3][4][5]B.E. 4th year, Dept. of Civil Engineering,
Akshaya College of Engineering and Technology, Kinathukadavu, Coimbatore.

Abstract--- The effect of mechanical properties of the foam concrete with fly ash and with replacement of sand with manufactured sand was researched. Concrete design mix was done to achieve target density of 1200kg/m³. Concrete cube and cylindrical specimens were tested for evaluating compressive and split tensile strength respectively. The concrete achieves light weight and low strength due to the addition of flyash and foaming agent. It achieves excellent strength when 60% of M-sand replaced. The experiment proves that M-sand gives higher strength than normal sand while flyash makes the concrete inexpensive. The research is carried out to find the strength achieved by the concrete when its raw materials get altered.

Keywords— Foam concrete; Manufactured sand; Flyash

STUDIES ON USAGE OF CERAMIC POWDER AND CRUMB RUBBER IN ROAD PAVEMENT

M.Alagendran[1], P.A.Edwin Fernando[2], N.Balakumar[3] and K.Ramkumar[4]

[1]Assistant Professors, Department of Civil Engineering, Akshaya College of Engg. & Tech., Coimbatore
[2,3,4] P.G Students, Department of Civil Engineering, Akshaya College of Engg. & Tech., Coimbatore

Abstract--- India produces 300 million ton industrial and agricultural waste in which ceramic production is 100million ton per year. Single ceramic industry generates about 15-30% of waste material from the total ceramic production of that industry. Now a days ceramic industry is one of the most rapidly developing concern in the world. Ceramics are very cheap and easily available. They have high melting point and low electrical and thermal conductivity. Crumb rubber is produced from tires and other waste rubber products. It is made by grinding the scrap tires into granular material. We can increase the pavement performance characteristics by using this crumb rubber. It does not create any negative health effects. So we are planned to use the crumb rubber and ceramic powder in pavements to increase the strength and lifetime.

Keywords--- Ceramic powder, crumb rubber, bitumen, additives, scrap tires.

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EXHIBIT No. 3.3.3 - C2

EXPERIMENTAL INVESTIGATION OF BEAM STRENGTHENED USING GLASS FIBRE REINFORCED POLYMER

M.Magendran[1], P.A.Edwin Fernando[2], N.Balakumar[3] and K.Ramkumar[4]

[1]Assistant Professors, Department of Civil Engineering, Akshaya College of Engg. & Tech , Coimbatore
[2,3,4] P.G Students, Department of Civil Engineering, Akshaya College of Engg. & Tech , Coimbatore

Abstract— Reinforced concrete structures often have to face modification and improvement of their performance during their service life. The repair and retrofitting of existing structures has become a major part of construction activity in many countries. The aim of the present study is to investigate the behaviour of retrofitted reinforced concrete beams. In this thesis, the retrofitting was done by wrapping glass fibre reinforced polymer sheet using epoxy as binding agent. In this thesis flexure failure was considered and it is strengthened by retrofitting. The result was focused on maximum deflection,ultimate load and mode of failure of concrete elements. In the present work all the beams that are strengthened using externally bonded are expected to withstand higher load compared to the control beam. The beams are tested to failure by applying two points loading to evaluate the enhancement of flexural strength due to strengthening of beams with GFRP with different geometry on the face of the beams.

Keywords— Glass fibre reinforced polymer, epoxy resin , Compressive strength, Flexural strength, Deflection

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EXPERIMENTAL STUDY ON STEEL FIBER REINFORCED CONCRETE WITH PARTIAL REPLACEMENT OF CEMENT BY MARBLE FINES

[1]P.A. Edwin Fernando, [2]P.Gokila and [3]J.Anushia

[1]Assistant professor, Department of Civil Engineering, Akshaya College of Engineering and Technology
[2,3]UG student, Department of Civil Engineering, Akshaya College of Engineering and Technology

Abstract— Fibres are generally used for resistance against cracking and strengthening of concrete. In this thesis, test is conducted on stainless steel fibre reinforced concrete to check the influence of fibres on compressive strength, flexural strength and splitting tensile strength of concrete. Steel fibres can partly or entirely replace conventional reinforcement owing to the fact that steel fibres also increase the load carrying capacity of structures and improve crack control.

Based on research papers, it has been found that steel fibres give the maximum strength in comparison to polypropylene and glass fibers. From the exhaustive and extensive experimental work it was found that with increase of steel fibre in concrete there has been a tremendous increase in flexural strength.

This study also deals with utilization of marble fines, industrial waste as cement replacement. Marble dusts are used partially by the percentage of cement in the manner of 5%, 10%, 15%, 20% respectively. The combination of steel fibre and marble fines will be studied based on test value and the maximum value will adopted and compared with the conventional concrete.

Index Terms—Marble fines, steel fiber, compressive strength, industrial waste, flexural strength

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EXPERIMENTAL RESEARCH ON GREEN CONCRETE WITH PARTIAL REPLACEMENT OF CEMENT WITH FLY ASH

K.Thiruvavukkarasu, D.Muhil, K.Ajith Kumar, M.Ashok and M.Kumaraguru

Department of Civil Engineering, Akshaya College of Engineering, Kinathukadavu.
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Abstract--- Concrete became an essential element in architecture world next to water in recent years. Although by concrete we can able to build strong and sustainable structures, the bad fact is around 900 kg carbon dioxide evolved per 1000 kg of Cement Production. Reports stated that 6-10% of emission of greenhouse gas was evolved from cement producing industries. To overcome this, green concrete is introduced with reduced cement and coarse aggregate.Here in M25, we replace 60% of cement by flyash and 50% of coarse aggregate by glass pieces or iron pieces to increase the durability of concrete. The green concrete which has negative & positive results according to the mix proportion. But it has a scope ahead in future as cost effective material and an ecofriendly material to bring a revolution in construction field. Using green concrete we can reduce the emission of carbon dioxide present in the cement, consumption of natural resources, energy and pollution of the environment.

Keywords--- Green concrete fly ash, coarse aggregate, iron pieces to, glass pieces.

EXPERIMENTAL STUDY ON BOND-STRENGTH OF DIFFERENT CONCRETE MIXTURES

Prithiveraj.A[1], Nithin pranav.B[2], Aravind.S[3], Dhanasheelan.K[4] and Gowtham.T[5]

[1] Assistant Professor, [2,3,4,5] B.E. 4th year, Dept. of civil engineering,
[1,2,3,4,5] Akshaya College of Engineering and Technology, Kinathukadavu, Coimbatore.

Abstract--- *A study on Bond strength of reinforcements within the concrete of different mixtures is studied. In concrete, when sand is partially replaced with (30%) M-sand or when cement is partially (30%) replaced with Flyash Bond strength varies significantly. As these mixtures are frequently used in construction, a study of bond strength on these two different mixtures would guide engineers to use the essential type of mixture where Bond strength plays a crucial role. The main objective of the experimental work is to compare the bond stress between two different concrete mixtures.*

Keywords—Bond strength; Manufactured sand; Flyash;

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EXHIBIT No. 3.3.3 - C2

EXPERIMENTAL STUDY ON PARTIALLY REPLACEMENT OF FINE AGGREGATE BY VERMICULITE IN CONCRETE

A.Mukkannan[1], S.Sarath[2], M.Vasanth[3], R.Prabakaran[4], Vishnu priyan[5]

U.G Student, Department of Civil Engineering, Akshaya College of Engg. & Tech., Coimbatore
Assistant Professor, Department of Civil Engineering, Akshaya College of Engg. & Tech., Coimbatore

Abstract—*Concrete is the single most widely used construction materials in the world. Concrete is used in such large amounts because it is simply, a remarkably good building material. Aggregate generally occupy 60 to 80 percent of the volume of concrete and greatly influence its properties, mix proportions and economy. Use of vermiculite in concrete, enhances the shrinkage and crack resistance, fire resistance and reduces environmental impact and also reduces the cost. Important characteristics of a good quality aggregate include resistance to abrasion, resistance to freeze action, proper gradation, density and compressive strength and split tensile strength of the concrete using vermiculite as partial replacement with 45%, 50% and 55% by weight. The main aim of this study is to make economical and eco-friendly concrete.*

Keywords— *Vermiculite , Compressive strength, split tensile strength.*

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EXHIBIT No. 3.3.3 - C2

SEISMIC RETROFITTING OF RCC BEAMS BY USING THE COMPARATIVE STUDY OF STRENGTH OBTAINED FROM THE COMBINATION OF CF&AF, GF&AF FOR ITS FLEXURAL BEHAVIOUR

M.Alagendran[1], T.Dinesh[2], Y.Joselin Mary[3], M.Gnanasundaram[4], G.Kasiviswanathan[5]

[1]Assistant professor, Department of Civil Engineering, Akshaya College of Engg. & Tech., Coimbatore
[2],[3],[4],[5]U.G Student, Department of Civil Engineering, Akshaya College of Engg. & Tech., Coimbatore

Abstract— Concrete is most widely used construction material in the world. Concrete needs to possess very high strength and sufficiently workability. Researchers all over the world are developing new techniques to increase the strength of concrete after damages occur. Recent techniques for strengthening the concrete structures is fiber wrapping. Fibers after wrapping on the structures increases the strength of the RCC structures. Fibers having the properties of tensile strength, fatigue characteristics, corrosion resistance, electrical properties, etc., This thesis details the experimental comparative study of strength obtained from the combination of cf&af, gf&af for its flexural behavior on RCC beams. The RCC beams damaged by earthquake are taken for the experiment. RCC beams are made manually using the essential materials. After 28 days curing , the point load which is considered as seismic load are applied on the beams. The cracked RCC beams are first strengthened by the combination of carbon and aramid fiber. And the strength of this beam has to be tested. Next RCC beams are strengthened by the combination of glass and aramid fiber and the strength is tested for this combination. And by comparing these two strengths whichever is the more strengthening combination are to be used for the strengthening of the earthquake damaged structures. It is a cost effective method which is used now a days by the construction field.

Keywords— *Fibre reinforced polymer, epoxy resin , Flexural strength, Deflection*

EXPERIMENTAL STUDY ON PARTIAL REPLACEMENT OF CEMENT BY BENTONITE AND PARTIAL REPLACEMENT OF FINE AGGREGATE BY DEMOLISHED CONCRETE WASTE IN PAVER BLOCK

A.Mukthannan [1], Balakrishnan.V[2], Edwin samuvel.P[3], Lalan.K[4] and Latha.S[5]

[1] Assistant Professor, [2]B.E. 4th year, Dept. of Civil Engineering,
Akshaya College of Engineering and Technology, Kinathukadavu, Coimbatore.

Abstract---In India, a huge amount of construction and demolish wastes are produced every year. Very little amount of demolished concrete is recycled or reused. Due to strict environmental laws and lack of dumping sites, demolished waste disposal is a great problem. On the other hand, production and utilization of concrete is rapidly increasing, which results in an increased consumption of natural aggregate. As a solution to these rising problems, we intend to propose an alternative for cement and natural aggregates. A possible solution to these problems is to reuse demolished concrete, thereby producing an alternate aggregate for structural concrete. By the replacement of cement by bentonite with all its added benefits, a concrete mix can be developed which is environment friendly. The study aims to conduct experimental investigations to assess the combined effect of partial replacement of cement by 5%, 10%, 15% with bentonite and the effect of partial replacement of fine aggregate by 15%, 30%, and 45% with demolished concrete waste in paver block. The paver blocks were tested for compressive strength, water absorption at 7, 14 and 28 days and the results are compare with the conventional concrete paver block.

Keywords—Demolished concrete waste; Bentonite; Economical; Eco friendly;

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EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF CEMENT WITH FLY ASH AND FINE AGGREGATE WITH ECO SAND USING CONPLAST SP430 IN CONCRETE

S.Suresh Kumar, A.Kalaiselvi, C.Manickalakshmi, S.Kavin and S.Anandhakrishnaguru

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Abstract--- This paper aims at making and studying the different properties of high performance concrete using this fly ash and the other ingredients, which is locally available eco sand andcoarse aggregates. The amount of the carbon dioxide released during the manufacture of OPC due to the calcinations of limestone and combustion of fossil fuel is at the order of one ton for every ton of OPC produced. In addition, the extent of energy required to produce OPC is only next to steel and aluminium. Attempts to reduce the use of Portland cement in concrete are receiving much attention due to environment-related. The role of Portland cement is replaced by silica fume and fly ash. An experimental investigation was carried out to evaluate the physical and mechanical properties of high performance concrete containing cementitious materials by the replacement of cement with fly ash (15-30%) and replacement of sand with eco-sand, a by-product of cement as filler material. The mechanical properties were assessed from the compressive strength, tensile strength and flexure. While the durability characteristics were investigated in terms of alkalinity and water absorption.

***Keywords—** Ecological balance, reduce environmental pollution, Compressive strength, Flexural strength, Split tensile strength.*

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EXHIBIT No. 3.3.3 - C2

EXPERIMENTAL STUDY ON GREEN CONCRETE WITH PARTIAL REPLACEMENT OF FINE AGGREGATE BY MARBLE SLUDGE POWDER AND QUARRY ROCK DUST

K.Maruthi Venkatesh[1], R.Prasath[2], C.M.Praveen[2], T.Rajapandian[2] and A.Santhiya[2]

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Abstract--- This project describes the optimum level of replacement for strength and workability of concrete by replacing different percentage of marble sludge powder and quarry rock dust by weight of fine aggregate for a mix of M25 grade concrete. Concrete is the most important component used in the construction throughout the world, where the fine aggregate is generally natural sand. The demand of natural sand in the construction has consecutively increased which has resulted in the reduction of sources and an increase in price. In such a situation the marble sludge powder and quarry rock dust can be an economical alternative to the river sand. Quarry dust can be defined as a residue, tailing or other non-volatile waste material after the extraction and processing of rocks to form fine particles less than 6mm. By the use of this marble sludge powder and quarry rock dust in the concrete, we can increase or change various properties of the concrete mix.

EXPERIMENTAL STUDY ON FLY ASH BRICKS WITH BOTTOM ASH AS A FULL REPLACEMENT OF FINE AGGREGATES

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Abstract--- To safeguard the environment, efforts are being made for recycling the industrial wastages and to utilize them in value added applications. Bottom ash is a new waste and abundantly available in thermal power plants. Generally it is a solid residue which falls into the furnace ottom in thermal power plant. Bottom ash consists of silicon dioxide, it is the compound which Enables the bonding strength by gradually testing the binding strength and by gradually increasing the amount of bottom ash in the mix ratio of fly ash bricks. The comparison between the compressive strength and water absorption is done in order to ensure that the brick is efficient for usage. The purpose of this study is to enable the practical use of this material as an alternative of fine aggregates. Hence this enables the large utilization of waste products and also bottom ash material is more sustainable and environment friendly which avoids the use of natural resources such as sand and gravel.

Index Terms--- Bottom Ash, Thermal power plant, Fly Ash Bricks, Bonding strength, Compressive Strength, Fine Aggregates

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EXPERIMENTAL STUDY ON SELF COMPACTING CONCRETE WITH PARTIAL REPLACEMENT OF SAND BY QUARRY DUST

P.Muthaiyan[1], Sharmila.S[2], Ragul.S[2], Naveen.R[2] and Saravana Kumar.D[2]

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Abstract--- Self-compacting concrete (SCC) is an innovative concrete that does not require vibration for placing and compaction. It is able to flow under its own weight, completely filling formwork and achieving full compaction, even in the presence of congested reinforcement. The investigation is on the study of workability and strength characteristics of Self-Compacting Concrete (SCC) containing Class F Fly Ash and Quarry Dust. The mix design for SCC was arrived as per the Guidelines of European Federation of National Associations Representing for Concrete (EFNARC). In this investigation, SCC is prepared by replacement of cement with Fly Ash and fine aggregate with quarry dust. Totally there are five mix designs such as QD 0%, QD25%, QD50%, QD75%, QD100%. The experiments are carried out by adopting a water-powder ratio of 0.36.The results compared with conventional SCC.

Keywords— Self-compacting concrete(SCC); Quarry Dust; FlyAsh; Workability; Compressive Strength; Split Tensile Strength

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EXPERIMENTAL STUDY ON BIO BACTERIAL CONCRETE

S.Suresh Kumar[1], M.Ramkumar[2],S.Sathish[2],A.Thangaraj[2],M.Venupriya[2]

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Abstract--- This study aims to develop and apply self- healing concrete as a new method for crack control enhanced service life in concrete structure. Concrete is a construction material that is used world - wide because of its first rate properties. However, the drawback of this material is that easily cracks due to low tensile strength. It is a well - known fact that concrete structures are very susceptible to cracking with allows chemicals and water to enter and degrade the concrete, reducing the performance of the structure and also requires expansive maintenance in the form of repairs. In this paper, the following points regarding classification of bacteria, self - healing of concrete, chemical process for crack remediation, self -healing mechanism of bacteria, application of bacteria, in construction field, Advantages & Disadvantages of bacterial concrete are observed and identified from the other research works. Cracking in the surface layer of concrete mainly reduce its durability, since cracks are responsible for the transport of liquids and gases that could potentially contain deleterious substances.

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EXHIBIT No. 3.3.3 - C2

COMPARISON OF STRENGTH OF FLEMISH BOND AND RAT TRAP BOND IN BRICK MASONRY

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Abstract— In India most of the houses constructed in villages and towns are either one storey or two storeys high. The spans of rooms are 2.5 or 3m.Under these circumstances, the stress in the brickwork are nominal. However most of the structures use solid 230mm brickwork using English Bond. In recent times HUDCO, a techno financing organization sponsored a project for considering the use of Flemish bond wall and Rat trap Bond wall, which has a cavity in the wall. This type of construction is very advantageous in a tropical humid climate.This paper deals with the comparison of strength of Flemish bond and Rat trap bond in brick masonry. The specimens were loaded and tested to destruction. Finally the strength and deflection compared between Flemish bond and Rat trap bond.

EXPERIMENTAL ANALYSIS ON PARTIAL REPLACEMENT OF CEMENT WITH RICE HUSK ASH AND COARSE AGGREGATE WITH TILE IN CONCRETE

M.Dayaanandan[1], Akhil B[2], Anees Rahiman P[3], Kamala Kannan S[4], Karthikeyan K[5]

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Abstract— The main aim of this project is to increase the workability and mechanical property of concrete. In this project the rice husk ash are partially replaced for cement and tiles for coarse aggregate in concrete. These admixtures are added to the concrete to determine the compressive strength of concrete by replacing various amounts of rice husk ash and coarse aggregate with tile in concrete. The cement is replaced with 10%, 20% and 30% of rice husk and the coarse aggregate is replaced with 10%,20% and 30% of tile in concrete. The compressive strength is increased after adding 20% of rice husk ash instead of cement and the strength decreased after it. The compressive strength is increased after adding 10% of tile instead of coarse aggregate in concrete. Compressive strength of combined concrete is decreased in all replacements of 10%, 20%, 30%. Split tensile test of combined concrete is decreased in all replacements of 10%, 20%, 30%.

Keywords— Rice husk ash, Tile waste, Concrete, Compressive strength, Tensile strength, flexural strength.

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EXHIBIT No. 3.3.3 - C2

Social Consciousness: Revenge and the Quest for Justice in Thomas Kyd's Play 'The Spanish Tragedy' And the Movie 'MOM'

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Abstract-- Revenge is as old as history and has been discussed and illustrated throughout literature, film, and conversation. The concept of revenge is an abstract idea to which anyone can relate. Kyd's play "The Spanish Tragedy" and the movie "Mom" is not just a revenge saga. It talks melancholy about parents' undying love. The play and film's pivot is the strained relationship between Hieronimo and Devki with their son and daughter respectively. Both tend on its emotional tug and struggle to contend with the moral quagmire of revenge and opt instead for the escape of pulp. This paper deals with parental love which makes them not only to find the justice for the victimized person of the family but also move towards the extreme end 'revenge' because of Ex post Facto that prevails around us even though it is prohibited.

"Revenge...is, in very large measure, an act of communication."[1]

This paper focuses on a movie and a play that depends on different genres. The work finds out the similarities in a few aspects. It deals about the movie MOM in which the director has portrayed the love and affection of the mother and revenge causing for abusing her step daughter. There is something deeply satisfying and visceral about watching rapists suffer. Throw in a castration as a violent method of retribution and the cheerleader in us is nudged awake. Mom, is about a parent who avenges the brutal gang-rape of her teenage daughter in a moving vehicle which is designed to evoke those feelings.

Revenge is a private act carried out by individuals. Similar concept is seen in Thomas Kyd's play The Spanish Tragedy that shows the love and affection of the father and revenge taken for his son's death. It also focuses on the core themes of revenge and the problems of justice. The notion of revenge, as a desire for retribution, versus justice, which brings with it the burden of a legal, moral, or divine authority, is carefully explored within the context of Renaissance thought.

Vengeance movies are uniformly exploitative. They ignite and pander to the base instincts and primal impulses. These two stories show the similar pathways which people can understand by comparing both of them. The similar theme for both plots is revenge. The theme appears in many different aspects of the plot, with varying degrees of moral justification.

The most important character of the play is the avenger. Much attention is taken to create a perfect hero according to the need of the story. Hieronimo is the very first hero of English revenge tragedy. He is an elderly man, father of an eligible son Horatio. He is the Knight Marshal of the Spanish court and a man of high official. He is very well known as a judge. His innocent son is killed and in grief for his son, his wife commits suicide. He is left with nobody in life whom he would wish to live for. He actively avenges his son's murder and at the end commits suicide.

In contrast to Hieronimo, Sridevi in the movie Mom is compelling as Devki, the tormented mother of a rape survivor. Her angst-ridden step daughter Arya, played by Pakistani actress Sajal Ali, is equally in control of her role. She brings her troubled dynamic with her step mother who is eager to win over her affections, without much drama and fuss. The helplessness of those seeking justice after a crime like rape — often a reality in a country like India — is bitingly captured in the first half of the film. Sridevi attacks her role of a fierce mother who takes law and justice in her own hands with a rabid ferocity. The scene in which she breaks down emotionally on seeing her wounded daughter hooked to machines in a hospital is heart-achingly raw. It is the collective solid performance that makes the revenge drama delicious. In Mom, however, revenge is just the means to a familial end — a hug-kiss and to hear that three-letter word, 'Mom'.

As believed in Vindictamihi; "Vengeance is mine, sayeth the lord; I will repay." (Rom. xii. 19.) Meaning that, it is God's responsibility to take revenge against the wrongdoers, not of men. The research work brings out with a different opinion of the above by comparing the film and the play.

First, revengers in both stories come from within an intimate circle of family and friends; second, the desire for revenge is maintained, and the act of revenge is later justified, through story-telling within the circle. Crimes ostensibly committed against an individual affect those nearest to the injured party, particularly close friends and family. Consequently, the revenger almost always comes from one of these two groups. While the revenger obviously seeks to punish the wrongdoer, he or she cannot stop there, for punishment is not enough; the wrongdoer must understand that he or she is paying the penalty for a previous misdeed. In order to redeem the reputation of a wrong friend or family member and restore the family honor, the revenger must justify his or her actions by telling the victim's story publically. This account distinguishes the principled revenger from the common criminal. The focus of the paper on the act of revenge is carefully balanced with sympathy and the revengers' plight against the destructive nature.

This paper goes hand in hand with the words of Francis Bacon, "A man that studieth revenge, keeps his own wounds green, which otherwise would heal." I believe that exacting revenge is a form of emotional release and that getting retribution will help us feel better. Movies often portray the act of revenge as a way of gaining closure after a wrong. If the opportunity to get justice ever comes up, gladly take it.

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EXHIBIT No. 3.3.3 - C2

Childlessness: An Endless Stream of Taunts and Insinuations for Women in Comparison with the epic "Mahabharata" and the novel "One Part Woman"

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[1,2]Assistant Professor, English Department, Akshaya College of Engineering and Technology, Kinathukadavu, Coimbatore, Tamil Nadu, India

Abstract: Childlessness plays a significant role in the lives of every human being particularly in women's lives. This paper paves way to undergo how Kunti in the Indian epic "Mahabharata" and Ponna in the novel "One Part Woman" experience the inner dilemma, anxiety, frustration, detachment, self-condemnation, self-approval and restlessness due to their inability to beget children naturally. They both suffer physically, socially and psychologically whether expressed or unexpressed. The paper also deals with their psyche and the unnatural steps they have opted to be blessed with children.

Keywords*: dilemma, trauma, barrenness & myth.*

Literature is taken to the most inclusive of a community's very being. Its hopes, fears, aspirations, nightmares, visions and confusions in a medium capture the very contours of its soul. Indian English Literature is veritably a mirror to the Indian psyche.Indian literature, through its umpteen legends and folklore in prehistoric times, is today unanimously recognized and acknowledged as one of the oldest literatures in the world. Hindu literary traditions dominated a sizeable part of Indian culture. Apart from the Vedas which are considered the cardinal sacred of knowledge, there are other works exist to fulfill the Hindu written and oral custom. Today, Indian literature has reached the apse of creation with the contribution of regional and national writers. Fiction, an expression of the most intimate consciousness of life and society, form an impressive core of literature. It witnesses changes taking place in life and society, and these changes are reflected in the fictional world.

The great Indian epic *Mahabharata* is alive even in the present context because it is spoken widely. Most people in India, even those who cannot read or write would know the epic. During the period of *Mahabharata,* women are responsible for their family. As Achla Sharma describe women in her article *Status of Women: A Socio- Historical analysis in different Ages of Indian Society,* they "are the fate of the household, the lamp of enlightment for all the household". Women are also considered free minded and not worthy of trust. They are seen as an object of lust of men, to serve men and to provide them children.

Kunti is one of the most important characters in the epic. Her birth story goes as a girl is born to a Yadava monarch Raja Shurasena of Mathura. He names her '*Pritha*'. One day Shurasena's cousin Maharaja Kunti-Bhoja of Bhojpur, came to visit. When Kuntibhoja is returning, Shurasena too gets into the chariot and asks Pritha to accompany him to Bhojpur. Little Pritha does what she is told but she does not get a chance to bid adieu to her mother. Several days passes in Bhojpur and Shurasena instructs that the chariot be readied for departure. Before climbing into the chariot, Shurasena summons Pritha, and pointing to Kuntibhoja, he said: "*Prithe, you will stay here from today. He is your father and mother*". A tearful Pritha asked her father if she had made a mistake, to which he replied: "*Twelve years ago, when your uncle and I were returning from hunting, we stood near a river to relax. Kuntibhoja was distressed, and upon asking him the reason, he told me he was childless and there was nobody to take care of his kingdom. I promised him that I will give my first-born to him. I really love you Prithu, but I am a Kshatriya and I have to fulfill my promise*." Her father leaves without another word and Pritha stands there, befuddled and scared. Kuntibhoja re-names Pritha after his name, and she is now princess Kunti, wife of Maharaja Pandu and Queen mother of the Pandavas. Transformation of Pritha to Kunti itself plays a significant role in emphasizing childlessness and its consequences in ancient India.

Kunti takes charge of the palace and is respected and adored in Bhojpur. One day sage Durvasacomes to perform 'Maha Yajna' in Bhojpur. Durvasa has a mercurial temperament and Kunti is entrusted with the responsibility to look after the eccentric sage, which she dutifully fulfills. Durvasa is pleased and so Kunti is given a 'mantra':"*Whichever Shakti you think of while chanting this Mantra, that Shakti will appear before you in human form, fulfill your desire like a slave, and leave after filling your womb with a son as refulgent as himself."*

Kunti's *Swayamvar* was held and she chose to marry Maharaja Pandu of Hastinapur. While hunting in the forest of Varanavat, he shoots an arrow at a deer coupling with his mate. When he approaches the animal, he finds that it is actually Rishi Kindama disguised as a deer. Kindama placed a curse on Pandu - that if he clasps his wife in the act of coition, he will die. He has been worrying about the curse. Due to the agony of childlessness, Kunti invokes the mantra given by Durvasa, and bears the children: 'Pandavas'.

The idea of the former is also witnessed in the novel **"*One Part Woman*" originally written as "*Madhorubagan*" in Tamil by Perumal Murugan. The novel has bagged Sahitya Akademy Award for Translation in English by Aniruddhan Vasudevan. The novel offers an outlet to few peculiar social traditions and religious blindness along with fine nuances of love, marriage and sex. It also puts forth the very significant sociological realities that cannot be denied by venting the anger on its writer.**

In *One Part Woman*, the author turns an intimate, crystalline gaze on a married couple in interior Tamil Nadu belonging to a particular community in which childlessness is brutally stigmatized. Kali and Ponna, land-owning farmers enjoy a completely

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EXHIBIT No. 3.3.3 - D2

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EXHIBIT No. 3.3.3 - D2

An Efficient Design of Low Power Speculative Han-Carlson Adder Using Concurrent Subtraction

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***Abstract*—The Binary addition is one of the mainly essential arithmetic function in VLSI systems. Adders are widely used in integrated circuits. Adders are not only necessary for addition, but it also needs for subtraction. This paper presents a speculative Han-Carlson adder using concurrent subtraction. The proposed adder uses speculation: the exact arithmetic function is substituted with an estimated one that provides right result most of the time but not forever. The estimated adder is augmented with an error detection network that states an error signal when approximation fails. It is based on parallel- prefix topology and uses subtraction process. The aim of the proposed technique is that to reducing the power. Simulation can be performed using ModelSim SE 6.3f and Xilinx ISE 8.1i Tool.**

***Keywords*—Addition, arithmetic, speculative adder, power.**

I. INTRODUCTION

Adders are basic efficient units in computer arithmetic. Binary adders are extensively used in microprocessor for addition and subtraction processes as well as for floating point multiplication and division. Therefore adders are fundamental components and improving their performance is one of the main challenges in digital designs.

High speed adders are based on well established parallel-prefix architectures [1], [2], including Brent-Kung [3], Kogge-Stone [4], Sklansky [5], Han-Carlson [6], Ladner-Fischer [7], Knowles [8]. These standard architectures consume more power. Better performance can be achieved by using approximation circuits that have been recently proposed in literature [9]. Proposed adder uses speculation: the exact arithmetic function is substituted with an estimated one that gives the right result most of the time, but not forever. The approximated adder is augmented with an error detection network that states an error signal when approximation fails. In this case (misprediction), another clock cycle is needed to obtain the right result with the help of a correction stage. The paper is planned as follows. In section II we recall Literature review. In section III we will describe the existing speculative HCA in detail. In section IV we will describe the proposed speculative HCA using concurrent subtraction in detail. Section V shows simulation results. Conclusion is given in section VI. Future work is given in section VII.

II. LITERATURE REVIEW

A. Kogge-Stone Adder

Kogge-Stone Adder (KSA) is a parallel-prefix structure of carry look ahead adder. KSA was introduced by P. M. Kogge and H. S. Stone [4] in 1973. Fig. 1 shows 16-bit KSA is a speedy adder design as it makes carry signal in O(log2 n) time and has the best performance in VLSI implementations. The work is generally focused on design time. It takes more area to implement than Brent-Kung adder but has lesser fan-out and wiring congestion is often a problem.

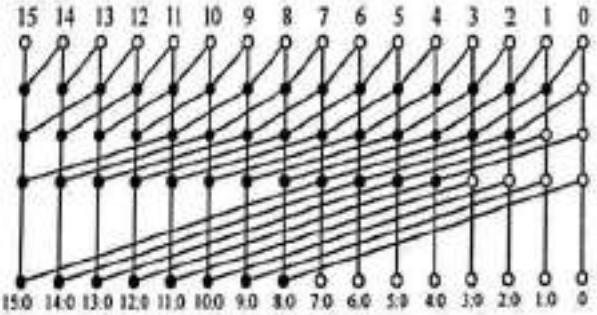

Fig. 1. 16-bit Kogge-Stone Adder

B. Brent-Kung Adder

Brent-Kung Adder (BKA) was introduced by R. P. Brent and H. T. Kung [3] in 1982. BKA has greatest logic depth, minimum area and avoid blast of wires. The work is commonly focused on area

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EXHIBIT No. 3.3.3 - D2

International Conference on Explorations and Innovations in Engineering & Technology (ICEIET - 2016)

DESIGN AND ANALYSIS OF VEDIC MULTIPLIER USING COMPRESSOR, 5-T AND 6-T ADDERS IN 45nm TECHNOLOGY

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Mr.S.Gladwin Moses Stephen, Asst. Prof. (ECE Dept), Akshaya College of Engineering and Technology, Coimbatore

***Abstract*- In recent existence, low power design has become one of the primary focuses for digital VLSI Circuits and Communication Applications. It is known fact that multiplier unit forms an integral part of a processor design. To survive up with the arising need, a novel low power eight bit Vedic Multiplier design is proposed. This project deals with performing low area and high speed multiplication using Vedic mathematics techniques. A new approach utilizing 4:2 compressor, 5:2 compressor and 7:2 compressor for addition has been incorporated and explored. The compressor based multiplier is faster than the popular methods of multiplication. Combining the Vedic Sutra- Urdhwa Tiryakbhyam and efficient compressors, multiplier architecture has been achieved. Power consumption has emerged as another primary design constraint in the multiplier design. The adder circuits in the compressor module are auxiliary redesigned using transistor logic. A 5-T Half adder using 3-T XOR gate and 2-T AND gate is designed and similarly a 6-T Full adder is designed using 2-T EX-NOR Gate and 2-T AND Gate. The designed full adder and half adder circuit is placed in compressor module and the multiplier architecture with low power, reduced area and also with high speed is designed and projected. The proposed work is simulated in Virtuoso platform of Cadence tool with the supply voltage 1.8V and frequency of 100MHz.**

***Key words*: Urdhwa Tiryakbhyam sutra, 4:2 compressor, 5:2 compressor, 7:2 compressor, 3-T XOR gate, 2-T AND gate, 2-T EX-NOR gate, 5-T half adder, 6-T full adder**

I. INTRODUCTION

Area optimization, less power consumption and performance of Multiplier is the main domain of concern in the field of VLSI Design. While using computers and smart phones sometimes we face a situation where the device (hangs) stops responding. One of the reasons behind it is processor speed that motivated us to go for a high speed multiplier design. Multiplier in particular application processors like Digital Signal Processor (DSPs) improves the speed of operation since the entire signal and data processing operations engage multiplication. Multiplication plays a vital role in DSP applications (like DFT, convolution, FFT etc.), Arithmetic and logic unit (ALU), and Multiply and Accumulate (MAC) unit. High Speed Multiplication thus becomes a necessity to increase the performance of processor.

Quite a few multipliers have been designed and proposed over last few decades but for multiplication these designs need several intermediate stages to calculate the final result due to which critical path length increases hence cause more delay. Moreover, the intermediate stages need additional hardware which becomes reason for increased area and power consumption. In a new approach for multiplier design based on Vedic Mathematics is explored to overcome these disadvantages. Vedic Mathematics is an ancient and prominent approach that serves as base to solve many mathematical challenges experienced nowadays. Swami Bharati Krishna Tirthaji Maharaja (1884-1960), a popular mathematician rediscovered and segregated ancient Vedic mathematics into 16 simple sutras (formulae) that are related to Arithmetic, Algebra, Geometry, Trigonometry, Analytical Geometry etc. These sutras are very simple and hence can be applied in various fields of engineering like computing, Signal Processing and VLSI.

In Vedic mathematics approach the partial products are calculated well in advance, even before the beginning of actual operations of multiplication. Then the final product is obtained by adding these partial products according to Vedic algorithm. This approach in turn provides a very high speed multiplication In this paper, we introduce modified compressor based multiplier architecture. This modified structure use the 4:2 compressor, 5:2 compressor and 7:2 compressor architectures to construct 8-bit multiplier using Vedic Mathematics (Urdhva Tiryagbhyam sutra).Use of compressors instead of half adders and full adders help to improve the speed as well as reduce the area. Compressors, are logic circuits capable of adding more than 3 bits at a time with a lesser gate count and higher speed in contrast with an equivalent full adder circuit. In order to achieve low power the full adders and half adders in compressor unit is designed using transistors.

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EXHIBIT No. 3.3.3 - D2

ANALYSIS OF VARIOUS PAPR REDUCTION TECHNIQUES OF OFDM SYSTEM

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Dr.J.Jaya, Principal, Akshaya College of Engineering and Technology, Coimbatore

Abstract- **The OFDM technique is an attractive modulation technique for transmitting large amounts of data over radio waves. One major drawback of OFDM is that the time domain OFDM signal which is a sum of several sinusoids leads to high peak to average power ratio (PAPR). In the paper, the combination of Companding transform, Amplitude clipping and filtering, Partial transmit sequence (PTS) technique, Selected Mapping technique (SLM) and Hadamard transform techniques are proposed to reduce peak-to-average of OFDM signal for 64 subcarriers. Significant PAPR reduction and good performance in the BER is expected from the proposed system when compared to other PAPR reduction techniques. We use MATLAB software to analyze the system. The performance of the system is analyzed from BER vs. SNR graph. PAPR reduction is analyzed using Complementary Cumulative Distribution Function (CCDF) plots.**

Keywords-PAPR, OFDM, CCDF, SLM, PTS

I.INTRODUCTION

Orthogonal Frequency Division Multiplexing is a well-known modulation scheme that is used in wireless LAN standards like 802.11a, g, HYPERLAN/2 and in the Digital Video Broadcasting standard (DVBT). It is also used in the ADSL standard, where it is given as Discrete Multitone modulation. OFDM modulation divides a broadband channel into many parallel sub channels. This makes it a very well-organized scheme for transmission in multipath wireless channels. The use of an FFT/IFFT couple for modulation and demodulation make it efficient as well. The transmitted signals appear at the receiver after being distorted from many objects. Sometimes the reflected signals add up in phase and sometimes they add up with phase causing a "fade". This causes the expected signal strength to fluctuate constantly. Also, different sub channels are distorted differently. An OFDM receiver has to identify the channel and correct these distortions on each of the channels before the transmitted data can be obtained. OFDM is effective in correcting such frequency selective distortions. OFDM has many advantages when compared with other transmission techniques. One such advantage is high spectral efficiency that is calculated in bits/sec/Hz. The "Orthogonal" part of the name is referred to a precise mathematical relationship between the frequencies of the sub channels that provides the OFDM system. Each of the frequencies is an integer multiple of a fundamental frequency. This secures that even though the sub channels overlap they do not interfere with each other.

OFDM is Multicarrier Transmission schemes that partition the available spectrum into many carriers each one being modulated by a low data rate stream. OFDM is same as Frequency Division Multiple Access (FDMA) in which the multiple user access is determined by partitioning the available bandwidth into multiple channels, which are then allocated to users. The bandwidth of each channel is typically 10-30 kHz. The allocated bandwidth is made wider than the minimum amount required to prevent channels from interfacing with one another. This extra bandwidth is to allow for signals of neighboring channels to be processed out and to allow for any drift in the center frequency of the transmitter or receiver. In a standard system up to 50% of the total spectrum is wasted due to the extra spacing between channels. This problem becomes inadequate as the channel bandwidth becomes narrower and the frequency band increases. In order to implement the traditional parallel data transmission by FDM, a guard band must be introduced between the different carriers to eliminate the inter channel interference.

II.PAPR REDUCTION FOR A MULTI - CARRIER SIGNAL

One of the major drawbacks of any Multi Carrier Modulation (MCM) system, which is often an obstacle to its use, is the fact that the signal has a varying envelope, i.e. it exhibits peaks whose power strongly exceeds the mean power and the signal is meant to have high PAPR. This prevents use of high-efficiency amplification devices (High Power Amplifiers, HPA), which exhibit deep nonlinearities that give rise to intermodulation products; the latter causes band distortion and increases Out-Of-Band

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