



PROGRESS REPORT (2019-2020) & (2020-2021)

(Participating Departments-Botany, Chemistry, Mathematics, Physics, Zoology & Computer science)

2019-2020

&

2020-2021

PROJECT No.SR/FST/College-2018-315 (c)
dated 22nd July 2019

Submitted to



Department of Science & Technology
Technology Bhawan, New Mehrauli Road
New Delhi – 110 016

Submitted by



Since 1951

Jamal Mohamed College(Autonomous)
7, Race Course Road
Khaja Nagar, Tiruchirappalli – 620020
Tamil Nadu

DST – Fund for Improvement in S&T Infrastructure (FIST 2000)

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PART – A

Jamal Mohamed College(Autonomous) Tiruchirappalli – 620020

(Project No: SR/FST/College-2018-315 (c) dated 22nd July 2019)

Brief Outline of the College:

Jamal Mohamed College (Autonomous), Tiruchirappalli was established in the year 1951 by two philanthropists, late Janab N. M. Khajamian Rowther and Hajee M. Jamal Mohamed Sahib with the sole aim of catering to the higher educational aspirations of the deserving, downtrodden and socially backward sections of the society in general, and Muslim minority in particular. The college right now offers a plethora of academic programmes, namely 21-UG; 22-PG; 17-M.Phil.; and 16-Ph.D. Programmes and has on its rolls a total student strength of 11,841 comprising of both men and women in both aided and self-finance streams and a faculty strength of 492 members. With an aim of the holistic development of the student community and to inculcate a sense of societal responsibilities in them, the college has instituted many clubs and associations such as the NCC, NSS, Leo, Rotaract, Anti dowry, Youth Red Cross club etc., under its Extension Activities.

Due to the unstinting efforts of the college management committee, the college has over the years got much public acclaim and government support. In the year 1972, the college was recognized by the UGC New Delhi, for sanction of Grants and financial support under section 2(F) and 12(B) of the University Grants Commission Act 1956. In the year 2016, the college was accredited (3rd Cycle) with A Grade by NAAC and was also recognized as a College with Potential for Excellence (CPE) by the UGC. Recently in 2019, the college has secured 56th position in National Institution Ranking Frame work (NIRF)- a satisfactory improvement from the 89th position obtained hitherto.

Teaching and Research Activities:

Teaching:

We have an effective ERP system with which we have been conducting all the regular UG and PG classes through online mode using Microsoft Teams Application successfully.

Many online faculty development programs, webinars, training programs and workshops have been organized by the departments for the benefit of the teachers and students.

All our faculty members have attended many online faculty development programs, orientation / refresher programs, webinars and workshops for the enrichment of their knowledge and enhancement of their teaching skills.

Most of the faculty members are using the ICT facilities and smart classrooms available in their departments, for effective teaching.

The feedback on Teaching-Learning-Evaluation and on Campus Environment are also obtained online from all the students.

Research:

As research leads to the enrichment of the teachers' knowledge and understanding, the college management encourages the faculty members to carry out original research by providing cash incentives for the publication of research articles in the peer reviewed reputed journals approved by the UGC and for the publication of books with ISBN. A cash incentive of Rs. 1000/- is given for each publication in Web-of-Science/Scopus indexed journals and Rs. 500/- for the publications in other UGC CARE List journals. An incentive of Rs. 2000/- is given for publication of a book and Rs. 10000/- for patent. Monetary incentives are also given to the research guides for the guidance and supervision of M.Phil. and Ph.D. scholars pursuing both full-time and part-time research work.

The college publishes an Interdisciplinary referred journal entitled 'Jamal Academic Research Journal (JARJ) and a Peer reviewed science journal entitled 'Journal of Advanced Applied Scientific Research (JAASR) to promote research publications among the students and faculty members.

The faculty members are also encouraged to carry out socially relevant research projects, the college management provides a seed money of Rs. 10,000/- for each such project.

To promote innovation and startups, an Innovation and Incubation Center has been established in the college as the per the norms and guidelines of the Institution Innovation Council, MHRD, Government of India.

Faculty members are encouraged to submit research project proposals to various funding agencies such as DST, DBT, UGC, etc. and necessary infrastructure facilities are provided by the college authorities for all the sanctioned projects.

To coordinate all the research activities in the college, a separate cell for research, under a senior faculty member as Dean, has been set up. The services of a senior prominent scientist have also been availed for providing research guidance and counselling to our faculty members.

Facilities Created

A FTIR spectrometer and a FT Raman spectrometer are versatile instruments for obtaining the infrared and Raman spectra of samples, digitizing the information and displaying the spectra in real time. Both these instruments complement each other and therefore help in identifying the functional groups present in a given sample and other allied information.

Photographs of the Fourier Transform RAMAN spectrometer (Bruker - model MULTIRAM) installed using the DST-FIST Fund.

A.The FT-IR Spectrometer (Model ALPHA II, Bruker-Germany)

a. Entire Unit



b. IR Spectrometer unit



b. Installation, Training and Utilization of the Instrument



A. MultiRAM Bruker of FT Raman Spectrometer

a. Entire Unit



b. Proximal view of the unit



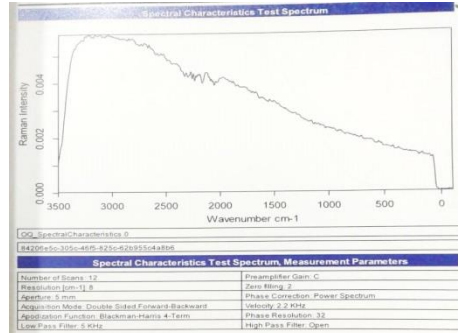
c. Interferogram



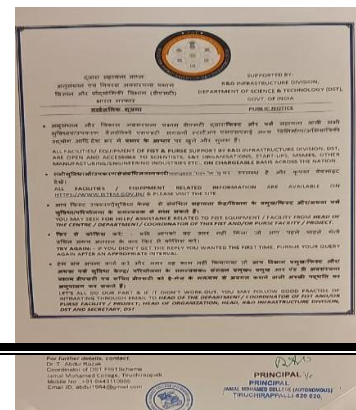
d. Tools Box for MultiRAM Bruker



e. Installation and Utilization of the Instrument



Public Notice for the availability of FIST Infrastructure Facility



Funding:

With a view to utilize the DST-FIST Funds granted judiciously, a Common Instrumentation Centre has been set up in the college. A Fourier Transform Infrared Spectrometer and a Fourier Transform Raman Spectrometer have been purchased and installed in this common facility using the DST-FIST Fund. It is pertinent to point out at this point that though the DST-FIST fund Rs. 60 lakhs/- only was sanctioned under the equipment head, the college management has borne an additional expenditure to the tune of Rs. 11 lakhs for this purpose.

In addition, books on instrumentation techniques in the field of FTIR and FT-Raman Spectroscopy were purchased utilizing the DST-FIST funds under the Books and Reference head.

<i>For further details, contact:</i> Dr. T. Abdul Razak Head Coordinator	Tel. No. 0431-2331135,2331235 Mobile No: +91-9443110965
Jamal Mohamed College(Autonomous) No.7, Race Course Road, Khaja Nagar, Tiruchirappalli – 620 020, Tamil Nadu.	Email ID; abdul1964@gmail.com

PART - B

Pro-forma for Report for utilization of FIST support

1. Name of College:

Jamal Mohamed College(Autonomous) Tiruchirappalli – 620020

2. Address for communication:

Dr. S. Ismail Mohideen
Principal
Jamal Mohamed College (Autonomous)
Tiruchirappalli – 620 020 0431
Phone: 0431-2331135, 2331235 (Mobile: +91-9894113582) 0431–2331035, 2331435
Email ID: principaljmc@ymail.com
Website: www.jmc.edu

3. Date and Ref. No. of DST Sanction letter:

SR/FST/College-2018-315 (c) dated 22nd July 2019.

4. Details of the Grants:

Amount Sanctioned with Date: Rs.110.0 lakh (Rupees One crore and Ten lakh only) on 22nd July, 2019.

Amount Received with Date: Rs. 60.5 lakh (Rupees sixty lakh and fifty thousand only) on 31st July,2019.

Budget Heads	Amount Sanctioned on 22 nd July 2019 (Rs in lakh)						Amount Received on 31 st July,2019 (Rs in lakh)
	1 st Year	2 nd year	3 rd year	4 th year	5 th year	Total	1 st Year
a. Equipment	60 .0	32.0	-	-	-	92.0	60.0
b. Infrastructure (Books & Renovation of labs)	0.50 (B)	0.50 (B)+5.0 (E learning class room)	0.50 (B)	0.75 (B)	0.75 (B)	3.0+5.0	0.50(B)
c. Networking	-	7.0	-	-	-	7.0	-
d. Maintenance	-	0.75	0.75	0.75	0.75	3.0	-
e. Total	60.5	45.25	1.25	1.50	1.50	110.0	60.5

5. Equipment ordered/purchased/ installed: Equipment installed

Name (with Model & Make)	Order Date	Installation date	Cost in INR
Alpha II FT- IR MULTIRAM	29-11-2019	24-11-2020	Rs: 70, 96,646.86/-

Total cost of the instrument is Rs. 70, 96,646.86 (Rupees Seventy Lakhs Ninety-six Thousand Six hundred and forty-six and Eighty-six paise only). DST has sanctioned Rs. 60 lakhs (Rupees Sixty lakhs only) for procuring the instrument and the balance amount of Rs. 10, 96,646.86 (Rupees Ten Lakhs Ninety-six Thousand Six hundred and forty-six and Eight six paise only) has been contributed by the Management of Jamal Mohamed College, Tiruchirappalli.

5. Details of Infrastructure developed:

S. No.	Name of the Instrument	Date of Order	Date of Delivery	Date of Installation
1.	FT-IR spectrometer model ALPHA II of Bruker& MUTIRAM-Bruker of FT RAMAN spectrometer model MULTIRAM.	29/11/2019	18/02/2020	24/11/2020

6. Details of Networking:

(Specify if the Internet facility is available to UG/PG/research students)

Campus is Wi-Fi enabled with 300 MBps broad band for the access by students and research scholars.

7. Utilization of the facilities created under FIST support:

- a. **For teaching:** *list the Classroom use of equipment and new experiments introduced, if any.*

Though theoretical courses in spectroscopy are prescribed in the UG and PG Programmes, due to the sophisticated nature and high cost of the FTIR and FT-Raman spectrometers bought under DST-FIST support, no class room usage is included. However, the final year students of PG Physics, M. Phil and Ph.D. Research Scholars are provided access to these instruments under the care and supervision of their guides.

- b. **For research:** *Identify the research programs, including names of groups or individual faculty members, who are using the major equipment (> 5 lakhs) acquired with the FIST support*

Currently, research work in Molecular Spectroscopy is undertaken in the Department of Physics by Dr. R. Raj Muhamed and his research scholar Capt. F. S. Muzammil, both of them are Associate Professors in the department. They make use of these facilities created under DST-FIST support to carry out their research activities. For Chemistry Department, the FTIR Alpha II instrument is more supportive for the research

scholars of M.Phil., and Ph.D., programs Currently Dr. M. Seeni Mubarak, Dr. A. Jafar Ahamed and Dr. Syed Ali Padusha, Associate Professors of Chemistry are working on Structural determination of Organic molecules, nanomaterials and Inorganic materials respectively. Other Faculty members are also actively participating in the research activities using the facilities introduced under DST-FIST support. Page 7

8. Details of full length research publications (in peer-reviewed journals) during the period under report

(Annexure – I)

9. Sponsored research projects in operation during the period under report (please provide name/s of PI/Co-PIs, title of the project, funding agency and total quantum of external support)

The Department of Biotechnology (DBT) has selected five science departments viz., Botany, Chemistry, Mathematics, Physics and Zoology under Star College Scheme - 2020 and sanctioned a grant of Rs.104 lakhs for the period of three years.

Documentation of Traditional Knowledge and grassroots innovations from foot Hills of Pachaimalai and Kolli hills of Eastern Ghats of Tamil Nadu funded by National Innovation Foundation – DST, Government of India. Principal Investigator: Dr. A. Shajahan, Co-Principal Investigator: Dr. B. Balaguru, Grant: Rs. 4,70,000 (2020-2021).

10. Utilization of Equipment from outside the College

It has been decided by our college authorities to open up the facilities set up under DST-FIST support to be utilized by the researchers from other institutions for a nominal fee. However, due to the COVID-19 Pandemic, the response is muted right now.

11. Self-Assessment of the impact of FIST support

Please specify if any of the following activity emerged/ improved as a consequence of the FISTsupport:

a. New class-room experiments at B.Sc./ M.Sc. or otherlevels

As the Alpha II FT- IR MULTIRAM equipment is sophisticated and costly, no experiments involving general usage of UG / PG students are introduced. However, the final year PG students can avail these facilities for their project work and M. Phil and Ph.D. scholars for the research studies.

b. Success of students at national level tests (various PG/Ph.D. entrance tests and tests for JRF etc.)

For the period under consideration, no success of students in PG / Ph.D. and JRF competitive examinations at national level has been reported.

S.No	Name	Type of Test	Register No	Year	University	Subject
1.	Mr. Mohamed Suhaib. I	Ph.D. Entrance Test	2002061025	February - 2020	Bharathidasan University	Botany/Plant Biotechnology / Plant Science [Science]

c. Any new research project that emerged on the basis of the FIST support

The faculty members of the participating departments (Physics, Chemistry, Botany and Zoology) who are working on Molecular spectroscopy and Structural determination of new molecular entities are expected to submit the research proposals in this academic year to DST and DBT as major research projects by making use of these facilities.

d. Did the newly created facility lead to betterment of quality of research publications

Our staff members have been hitherto making use of the facilities at IIT Madras, IISc and other national facilities for their research and publications. This entailed long delays. However, as the facilities have been established in our institution itself, it is hoped that the quality of in-house research and publications will improve and get accelerated.

e. Any training program/ workshop organized by the department during the period of report, especially those involving the newly created facility)

A Hands on training program on FTIR and FT-Raman spectroscopic techniques is being organized for PG students and research scholars of Physics, Chemistry, Botany and Zoology during the month of March 2021 (*Date is postponed due to Covid 19 pandemic*).

12. Is any problem faced in utilization of the grant/facilities?

Though the supplier was identified and the order was placed for the purchase of Alpha II FT- IR MULTIRAM by the college on 29. 11. 2019 itself, the instrument was supplied only on 29. 02. 2020 and the installation by the supplier was delayed due to Covid-19 Country wide lockdown. It was installed only on 24.11.2020.

A report highlighting the research activities of the College during the period under review may also be provided.

1. Atal Ranking of Institutions on Innovation Achievement (ARIIA) - 2020

Jamal Mohamed College is categorized as 'Band A' institution (rank between 06-25) in category of 'Institutes & Colleges (Govt. and Govt. aided)' in Atal Ranking of Institutions on Innovation Achievement (ARIIA) 2020 announced on 18th August 2020.

2. The institution provides seed money for research and the following faculty members from DST FIST participating departments were selected for the seed money scheme.

Name of the teacher getting seed money	The amount of seed money	Year of receiving grant
Dr.M.Salahudeen Assistant Professor, Department of Zoology	10000	2019 - 20
Dr.G.Hema Sindhuja Assistant Professor, Department of Chemistry	10000	2019 - 20
Dr.S.Peer Basha Assistant Professor, Department of Computer Science	10000	2019 - 20
Dr.Y.Mohamed Iqbal Assistant Professor, Department of Computer Science	10000	2019 - 20
Dr.R.Sathis Kumar Assistant Professor, Department of Botany	10000	2019 - 20
Dr.R.Syed Moideen Assistant Professor, Department of Botany	10000	2019 - 20

3. No of ongoing research projects per teacher funded by government and non-government agencies during the period

Documentation of Traditional Knowledge and grassroots innovations from foot Hills of Pachaimalai and Kolli hills of Eastern Ghats of Tamil Nadu funded by National Innovation Foundation – DST, Government of India. Principal Investigator: Dr. A. Shajahan, Co-Principal Investigator: Dr. B. Balaguru, Grant: Rs. 4, 70,000 (2020-2021).

4. No of Ph. Ds awarded and Research publications during the period

Name of the Department	Ph.Ds. Awarded		Research publications	
	2019-20	*2020-21 (Only up to April-2021)	2019-20	2020-21 (Only up to April-2021)
Department of Botany	08	04	9	10
Department of Chemistry	13	04	11	8
Department of Computer Science	05	09	8	8
Department of Mathematics	10	02	15	11
Department of Physics	01	01	7	8
Department of Zoology	01	04	15	11
Total	38	24	65	56

*Due to Pandemic the research scholars were not able to complete their work and submit their Ph.D thesis. Bharathidasan University has given extension for this period.

Annexure – I

(Research Publication for the period from 2019 -2020 and 2020- 2021)

Publications 2019 - 20

(i) Department of Botany

1. A. Shajahan and A. Aslam, 2019, Indirect somatic embryogenesis and Agrobacterium-mediated transient transformation of ginger (*Zingiber officinale* Rosc.) using leaf sheath explant, *The Journal of Horticultural Science and Biotechnology*, Pages 753-760 | Accepted 21 May 2019, Published online: 08 Jun 2019, <https://doi.org/10.1080/14620316.2019.1624201>.
2. R. Ravikumar, 2019, Lofty frequency and reproducible plant regeneration from mature nodal explants of “Egusi” melon (*Citrullus colocynthis* L.), *Biotechnology, Computational Biology and Bionanotechnology*, vol. 100 (3) C pp. 263–272 C 2019, <https://doi.org/10.5114/bta.2019.87585>
3. H. Syed Jahangir, 2019, Effect of Secondary Metabolites of Actinobacteria Strain on *Leucinodes orbonalis* (Guen.), *Research Journal of Life Sciences, Bioinformatics, Pharmaceutical and Chemical Sciences*. <http://www.rjlpcs.com/>
4. A. Shajahan, 2019, Elicitation of withaferin-A in hairy root culture of *Withania somnifera* (L.) Dunal using natural polysaccharides, *Biologia*, <https://link.springer.com/article/10.2478/s11756-019-00236-9#article-info>
5. A. Shajahan, 2019, Direct organogenesis and microrhizome production in ginger (*Zingiber officinale* Rosc.), *Journal of Pharmacognosy and Phytochemistry*, <https://www.phytojournal.com/archives/2019/vol8issue3/PartAO/8-2-553-417.pdf>.
6. A. Shajahan, 2019, Effect of nitrogen sources and 2, 4-D treatment on indirect regeneration of ginger (*Zingiber officinale* Rosc.) using leaf base explants, *Journal of Plant Biotechnology*, <https://doi.org/10.5010/JPB.2019.46.1.017>.
7. R. Syed Moideen, 2020, Biosynthesis of Silver Nanoparticle Using *Vitex negundo* Leaf Extract and Its Antibacterial Activity, *IJRAR Journal*, <http://www.ijrar.org/>.
8. B. Balaguru, 2020, Diversity and Distribution of Tropical Dry Forests: A Case Study From Pudukkottai District of Tamil Nadu, India, In *Handbook of Research on the Conservation and Restoration of Tropical Dry Forests*, R. Bhadouria et al (eds.) IGI Global, USA, [10.4018/978-1-7998-0014-9.ch006](https://doi.org/10.4018/978-1-7998-0014-9.ch006).
9. B. Balaguru, 2020, Protection of Indian Traditional Rice Varieties: Role of PPV and FRA, Intellectual Property Rights and the Protection of Traditional Knowledge IGI Global, USA, <https://www.igi-global.com/book/intellectual-property-rights-protection-traditional/234496>.

(ii) Department of Chemistry

1. A.Jafar Ahamed, 2019, Synthesis and characterization of NiO nanoparticles by chemical as well as green routes and their comparisons with respect to cytotoxic effect and toxicity studies in microbial and MCF-7 cancer cell models-, SN Applied Sciences-Springer Nature, September 2019, [SN Applied Sciences](https://doi.org/10.1007/s42452-019-1113-0) 1(9) DOI:[10.1007/s42452-019-1113-0](https://doi.org/10.1007/s42452-019-1113-0).
2. A.Jafar Ahamed, 2020, The investigation on structural, optical and morphological behavior of pure and co-doped TiO₂ nanoparticles developed via sol-gel approach for biological activity, Materials Research Express, Published 19 February 2020 • © 2020 IOP Publishing Ltd, Materials Research Express, Volume 6, Number 12, Citation K Manikandan et al 2019 Mater. Res. Express 6 1250k1. <https://doi.org/10.1016/j.apr.2019.08.011>.
3. A. Jafar Ahamed, 2019, Robust green synthetic approach for the production of iron oxide nanorods and its potential environment and cytotoxicity applications, Advanced Powder Technology, Volume 30, Issue 11, November 2019, Pages 2636-2648, <https://doi.org/10.1016/j.apr.2019.08.011>
4. Jafar Ahamed, 2020, Synthesis of Mg²⁺ doped NiO nanoparticles and their structural and optical properties by Co-precipitation method, Journal of Advanced Applied Scientific Research, <http://www.joaasr.com/index.php/joaasr/issue/view/15>.
5. M. Syed Ali Padusha, 2019, Suzuki-Miyaura coupling under microwave enhanced conditions: synthesis of 2-(hetero)aryl benzimidazoles, The Free Internet Journal for Organic Chemistry, <http://dx.doi.org/10.24820/ark.5550190.p011.121>.
6. J. Sirajudeen, 2019, In- vitro antimicrobial activity of Croton tiglium Medicinal Plant, Sirajudeen J et al. /Asian Journal of Research in Chemistry and Pharmaceutical Sciences. 7(2), 2019, 508-513.
7. J. Sirajudeen, 2019, Assessment of physico – chemical contaminants in ground water using water quality index in and around the Pennai river, Villupuram District and Tamil Nadu, India, L. Adalya journal, <https://doi.org/10.1007/s10661-006-9198-5>.
8. M. Anwar Sathiq, 2020, Is β -dehydrohalogenation of betamethasone and dexamethasone hindering the detection of banned co-eluting meprednisone? A reverse-phase chiral liquid chromatography-high-resolution mass spectrometry approach, Steroids, <https://doi.org/10.1016/j.steroids.2019.108572>
9. A. Asrar Ahamed, 2019, Spectral Characterization and In-Vitro Anti-Inflammatory potential of An EDP Schiff Base, Research Journal of Pharmaceutical, Biological and Chemical Sciences, <https://doi.org/10.1155/2020/1745236>.
10. G. Hema Sindhuja, 2020, Removal of sulfide and recycling of recovered product from tannery lime wastewater using photo assisted electrochemical oxidation process, Journal of Industrial and Engineering Chemistry, <http://dx.doi.org/10.1016/j.jiec.2019.11.024>.
11. G. Hema Sindhuja, 2020, A hybrid treatment process for product recycling from tannery process effluent and soak liquor, Journal of Environmental Chemical Engineering, <https://doi.org/10.1016/j.jece.2019.103516>.

(iii) Department of Computer Science

1. K. N. Abdul Kader Nihal, 2019, Research Inferences in Video Compression Domain-, International Journal of Engineering and Advanced Technology- ([IJEAT](#)) ISSN: 2249-8958 ([Scopus](#)).
2. K. N. Abdul Kader Nihal, 2019, Insight of Next-Gen Video Compression – A Review, Journal of the Applied Science and Computations ([JASC](#)) ISSN No: 1076-5131- ([Scopus](#)).
3. B. Mohamed Faize Basha, 2019, Cancer Detection Method Using lung Nodule Images of ROI Performance Predication Evaluation, faizejmc@gmail.com.
4. B. Mohamed Faize Basha, 2019, Hybrid Feature Extraction and Firefly Based Feature Selection Techniques for Lung Cancer Computer Aided Diagnosis, <http://serisc.org/journals/index.php/IJAST/issue/view/237>.
5. M.A. Jamal Mohamed, Yaseen Zubeier, 2019, Feature Correlation Measure Based Real Time Discrimination Prevention with Transactional Data Sets using Social Networks, International Journal of Innovative Technology and Exploring Engineering, [ISSN: 2278-3075, Volume-8 Issue-12, October, 2019](#)
6. M.A. Jamal Mohamed, Yaseen Zubeier, 2019, Real Time Feature Convergence Measure for Efficient Discrimination for Transactional Data Set-, International Journal of Recent Technology and Engineering, [ISSN: 2277-3878, Volume-8 Issue-4, November 2019](#)
7. S. Peerbasha, 2019, Prediction of the College Students with Bi-polar Disorder who requires Psychology Motivation using Data mining techniques, International Journal of Recent Technology and Engineering, <https://www.ijrte.org/wp-content/uploads/papers/v8i4/A9253058119.pdf>.
8. S. Peerbasha, 2019, Behavioral Pattern Based Psychotic Analysis for Improved Student Performance using Fuzzy set, International Journal of Engineering, Applied and Management Sciences Paradigms, <http://dx.doi.org/10.47750/cibg.2021.27.03.001>

(iv) Department of Mathematics

1. A. NagoorGani, 2019, Some Composition Properties On Totally Regular Intuitionistic Fuzzy Graphs, Bulletin of Pure and Applied Sciences, <http://dx.doi.org/10.5958/2320-3226.2019.00024.9>.
2. A. NagoorGani, 2019, Fuzzy Gamma Semi-Preopen And Fuzzy Gamma Semipreclosed Sets In Fuzzy Bitopological Spaces, Bulletin of Pure and Applied Sciences, <http://dx.doi.org/10.5958/2320-3226.2019.00029.8>.
3. A. Nagoor Gani, 2019, Simplistic Method to Work Out the EOQ-EPQ With Shortages by Applying Algebraic Method And Arithmetic Geometric Mean Inequality In Fuzzy Atmosphere, Bulletin of Pure and Applied Sciences, <http://dx.doi.org/10.5958/2320-3226.2019.00037.7>.
4. A. Nagoor Gani, 2019, Alpha Beta And Gamma Product Of Fuzzy Matrices Bulletin of Pure and Applied Sciences, <http://dx.doi.org/10.5958/2320-3226.2019.00039.0>.

5. A.Nagoor Gani,2019,Optimality Conditions For Fuzzy Non-Linear Unconstrained Minimization Problems, Bulletin of Pure and Applied Sciences, <http://dx.doi.org/10.5958/2320-3226.2019.00041.9>.
6. A.Nagoor Gani,2019,Fixed Point Theorems For Integral Type Contraction In Fuzzy Metric Spaces Using Altering Distance Function,Bulletin of Pure and Applied Sciences. <http://dx.doi.org/10.5958/2320-3226.2019.00046.8>.
7. A.Nagoor Gani,2019,A New Modified Optimal Perfect Matching In Partial Feasible Matching For Solving Fuzzy Linear Sum Assignment Problems,Bulletin of Pure and Applied Sciences, <http://dx.doi.org/10.5958/2320-3226.2019.00047.X>.
8. S. Mohamed Ismayil,2020,Equal Eccentric Domination in Graphs, Malaya Journal of Matematik, https://www.malayajournal.org/selected_article.php?id=1
9. S. Mohamed Ismayil,2019,Detour Eccentric Domination in Graphs, Bulletin of Pure and Applied Sciences, <http://dx.doi.org/10.5958/2320-3226.2019.00036.5>,
10. A.Prasanna,2020,Algebraic Properties on ω – Fuzzy Translation and Multiplication in BP– Algebras, International Journal of Innovative Technology and Exploring Engineering, International Journal of Innovative Technology and Exploring Engineering (*IJITEE*) ISSN: 2278-3075, Volume-9 Issue-3, January 2020.
11. A.Prasanna,2020,Anti Q- Fuzzy CI-Sub algebras and Anti Q-Fuzzy Homomorphism of CI-Algebras, Journal of Xidian University, International Journal of Engineering Research & Technology (*IJERT*) Vol. 1 Issue 5, July - 2012 ISSN: 2278-0181.
12. A.Prasanna,2020, On Fundamental Algebraic attributes of χ –Fuzzy Subring, Normal Subring and Ideal, International Journal of Recent Technology and Engineering, International Journal of Recent Technology and Engineering (*IJRTE*) ISSN: 2277-3878, Volume-8 Issue-6, March 2020.
13. A.Prasanna, 2020,On algebraic Properties of ω - Fuzzy CI-Algebras,MuktShabd Journal, Mukt Shabd Journal Volume IX, Issue V, MAY/2020 ISSN NO : 2347-3150,
14. D.Dhamodharan,2019, Common Fixed Point Theorems Satisfying Implicit Relations On 2-Cone Banach Space with an Application, Mathematical Sciences and Applications E-Notes, <https://www.researchgate.net/project/fixed-point-theorems-on-cone-metric-spaces>.
15. M.A. Rifayathali,2019,Just Chromatic Excellence In Anti-Fuzzy Graphs, Bulletin of Pure and Applied Sciences, <http://dx.doi.org/10.5958/2320-3226.2019.00045.6>.

(v) Department of Physics

1. A.IshaqAhamed& R. Raj Muhamed,2019,Spectroscopic (FT-IR, FT-Raman), first order hyperpolarizability, NBO and HOMO-LUMO analysis of Z)-3-(2,4-dichlorophenyl)1-(1Himidazol-1-yl)prop-2-en-1-one --,International Journal of Scientific & Technology, <https://sciencesolutions.wiley.com/software/>
2. A.IshaqAhamed & R. Raj Muhamed,2019,The Synthesis and Characterization Of (Z)-1-(1Himidazol-1-Yl)-3-(3-Nitrophenyl) Prop-2-En-1-One – A Quantum Chemical Study, International Journal of Scientific & Technology, <https://doi.org/10.1016/j.ejmech.2008.01.019>,
3. N.Peer Mohamed Sathik, 2019, Incomplete momentum transfer in $^{16}\text{O} + ^{148}\text{Nd}$ system [at energy $\approx 5\text{-}8$ MeV-nucleon],Indian Journal of Pure & Applied Physics, <http://nopr.niscair.res.in/handle/123456789/50539>,

4. R. Raj Muhamed,2019,DFT investigation of role of N – H···O and N – H··· π interactions in the stabilization of the hydrogen bonded complexes of anisole with aromatic amines, Heliyan, Elsevier, <https://doi.org/10.1016/j.heliyon.2019.e02155>,
5. A. Abbas Manthiri,2019, Analysis on biological importance of antiseptic drug, O-Benzyl hydroxylamine, by the application of spectroscopic and theoretical tools,Heliyan, Elsevier, <https://doi.org/10.1016/j.heliyon.2019.e02447>.
6. A.Abbas Manthiri,2019, Structural and mulliken-electronic property analysis of Metronidazole using Spectroscopic and computational tools, Adalya Journal, <https://www.researchgate.net/journal/Adalya-1301-2746>.
7. S. Haja Hameed,2019, Structural, optical, thermal and magnetic properties of nickel calcium and nickel iron co-doped ZnO nanoparticles,Journal of Materials Science: Materials in Electronics, <https://www.x-mol.com/paperRedirect/1225036701862772739>.

(vi) Department of Zoology

1. K.Prabakar,2019,Phylogenetic Insight of Nonribosomal Peptide Synthetases (Nrps) Adenylate Domain In Antibacterial Potential Streptomyces Bdusmp 02 Isolated From Pitchavaram Mangrove, Journal of Biomedical Informatics, [Annexure - I & II DST FIST.docx](#).
2. K.Prabakar,2019,Environmental prevalence of carbapenem resistance Enterobacteriaceae (CRE) in a tropical ecosystem in India: Human health perspectives and future directives, Pathogens, <https://doi.org/10.3390/pathogens8040174>.
3. M. Aneez Mohamed,2019,A Study On ThePhysico-Chemical Characteristics Of Tannery Waste Water International Journal of Research in Pharmaceutical Sciences, <https://doi.org/10.26452/ijrps.v10i3.1489>.
4. K. Prabakar,2019,Extreme Environment Streptomyces: Potential Sources for New Antibacterial and Anticancer Drug Leads?,International Journal of Microbiology, <https://doi.org/10.1155/2019/5283948>.
5. S. Mohamed Hussain,2019,Antibacterial Potential of Sea Star Protoreasterlinckii from Mandapam Southeast Coast Of India,Research Journal of Life Sciences, Bioinformatics, Pharmaceutical and Chemical Sciences, DOI: 10.26479/2019.0504.06. <http://www.rjlbpcs.com/>.
6. M. Aneez Mohamed,2019,Efficiency of Microbes In Bioremediation of Tannery Waste Water At Dindigul District, International Journal of Research in Pharmaceutical Sciences, <https://pharmascope.org/ijrps/issue/view/41>.
7. S. Mohamed Hussain,2019,Screening of Bioactive Metabolites from the Starfish Pentacerastermammillatus against Human Urinary Tract Infectious Pathogens,International Journal of Pharmaceutical Sciences and Drug Research, <https://doi.org/10.25004/IJPSDR.2019.110507>,
8. A.Sadiq Bukhari & H.E. Syed Mohamed,2019, Haemato- immunological studies in ZnO and TiO₂ nanoparticles exposed euryhaline fish, Oreochromismossambicus,EnvironmentalToxicology and Pharmacology, <https://doi.org/10.1016/j.etap.2018.12.011>,
9. A.Sadiq Bukhari & H.E. Syed Mohamed,2019, Effect of cobalt-60 gamma radiation on reproductive disturbance in freshwater prawn Macrobrachiumrosenbergii,Toxicology Reports, <https://doi.org/10.1016/j.toxrep.2019.10.021>

10. A.Sadiq Bukhari & H.E. Syed Mohamed,2019,Effect of cobalt- 60 gamma radiation on total hemocyte content and biochemical parameters in *Macrobrachium rosenbergii*, International journal of radiation biology, <https://doi.org/10.1080/09553002.2019.1589014>.
11. A.Sadiq Bukhari & H.E. Syed Mohamed,,2019,Hepatic toxicological responses of SiO₂ nanoparticle on *Oreochromis mossambicus*-, Environmental Toxicology and Pharmacology, https://www.academia.edu/download/54274808/Liver_paper.pdf.
12. H.E.Syed Mohamed,2020,Alterations in renal markers of tilapia fish exposed to silicon dioxide nanoparticle Uttar Pradesh Journal of Zoology, <https://mbimph.com/index.php/UPJOZ/article/view/1515>.
13. H.E.Syed Mohamed, 2020,Activity concentration of polonium-210 and lead-210 in tobacco products and annual committed effective dose to tobacco users in Tiruchirappalli District (Tamil Nadu, India), Journal of Radioanalytical and Nuclear chemistry, <http://dx.doi.org/10.1007/s10967-019-06879-x>,
14. Rajasekar.P,2020, Biochemical and molecular aspects of 1,2-dimethylhydrazine (DME)-induced colon carcinogenesis: a review, Toxicology Research, <https://doi.org/10.1093/toxres/tfaa004>.
15. Rajasekar. P,2020,Beneficial Biological role of *Allium hirtifolium* on various diseases, Research journal of Pharmacy and Technology, <http://dx.doi.org/10.5958/0974-360X.2020.00187.0>.

Publications 2020 - 21

(i) Department of Botany

1. A.Shajahan, 2020, Protocol for Enhanced withaferin-A Production in Elicited *Withania somnifera* (L) Dunal Hairy Root Cultures, Hairy Root Culture Based Applications,
2. A.Shajahan, 2020, Indole acetic acid (IAA) producing endophytic bacteria on direct somatic embryogenesis and plant regeneration of *Exacum travancoricum* Bedd, VEGETOS: An international journal of plant Research,
3. H. Syed Jahangir, 2020, Green Synthesis, Characterization and Antibacterial Studies of Silver (Ag) and Zinc Oxide (ZnO) Nanoparticles, Journal of pure and applied microbiology, J Pure Appl Microbiol. 2020;14(3):1999-2008 | Article Number: 6199 <https://doi.org/10.22207/JPAM.14.3.39>.
4. N. Ahamed Sherif, 2020, DNA barcoding and genetic fidelity assessment of micro propagated *Aenhenryarotundifolia* (Blatt.) C.S. Kumar and F.N. Rasm.: a critically endangered jewel orchid, Physiology and Molecular Biology of Plants, December 2020, Physiology and Molecular Biology of Plants 26(12) [DOI:10.1007/s12298-020-00917-9](https://doi.org/10.1007/s12298-020-00917-9).
5. R. Radhakrishnan, 2020, Combined *in vitro* and *in silico* approach to evaluate the inhibitory potential of an underutilized allium vegetable and its pharmacologically active compounds on multidrug resistant *Candida* species, Saudi Journal of Biological Sciences, <https://doi.org/10.1016/j.sjbs.2020.11.082>
6. R. Radhakrishnan,2020, Biostimulants in plant Science (Editor for chapters in book), Intech Open Limited,
7. R. Radhakrishnan, 2020, Combined *in vitro* and *in silico* approach to evaluate the inhibitory potential of an underutilized allium vegetable and its pharmacological active compounds on multidrug resistant *Candida* species, Saudi Journal of Biological Sciences,

8. B. Balaguru, 2020, Protection of Indian TradionalRice Varitis: Role of PPV & FRA, BOOK Cheptor - Intellecton property Rights and the prodection of Treditional Knowledge,
9. M. GhouseBasha, 2021, Biocidal chitosan-magnesium oxide nanoparticles via a green precipitation process, Journal of Hazardous Materials. Volume 411, 5 June 2021, 124884, <https://doi.org/10.1016/j.jhazmat.2020.124884>.
10. H. Syed Jahangir, 2021, Biodegradation and Characterization of Streptomyces sp. (JMCACA3) from Acid Corroded Iron Plate, Current Microbiology, DOI: [10.1007/s00284-021-02374-3](https://doi.org/10.1007/s00284-021-02374-3)

(ii) Department of Chemistry

1. M. Syed Ali Padusha, 2020, Synthesis, quantum chemical calculations and molecular docking studies of 2-ethoxy-4[(2-trifluoromethyl-phenylimino) methyl] phenol, Molecular Physics, <https://doi.org/10.1080/00268976.2020.1781945>.
2. R.AbdulVahith, 2021, Spilanthesacmella leaves extract for corrosion inhibition in acid medium, Coatings – MDPI, <https://doi.org/10.3390/coatings11010106>.
3. M. Syed Ali Padusha1, (2020). Synthesis, Characterization and Antimicrobial Studies Ofsome Azomethine Compounds Derived Via Schiff Base Condensation Chemistry. *Journal of Natural Remedies*, 21(7(S2), 84-100. <https://jnronline.com/ojs/index.php/about/article/view/464>
4. R. Mohamed Abdul Vahith , 2021, *Spilanthesacmella*Leaves Extract for Corrosion Inhibition in Acid Medium, Coatings – MDPI, Coatings 11, 106. <https://doi.org/10.3390/coatings11010106>
5. M. Mohamed Sihabudeen., 2020, Influence of physico chemical parameters on potability of ground water in ariyalur area of Tamil Nadu, India, Materials Today: Proceedings, <http://dx.doi.org/10.1016/j.matpr.2020.07.033>.
6. S.K. Periyasamy, 2020. Cooxidation of Dibenzalacetone with Oxalic Acid by PyraziniumChlorochromate, International Letters of Chemistry, Physics and Astronomy, 2020. Vol. 85, pp. 1-14, <https://doi.org/10.18052/www.scipress.com/ILCPA.85.1>
7. M. Mohamed Sihabudeen. (2020). Interpretation of groundwater quality using piper diagram in and around ariyalur district Tamilnadu, India. *Journal of Natural Remedies*, 21(8(1), 193-198.
8. M. Syed Ali Padusha, Fabrication of Sustained Release System of Electro spunPoly (acrylic acid) Dextran Nanofibers Using Emulsion Electrospinning as Wound Dressing Applications, Journal of Nanoscience and Nanotechnology, 2021. Mar 1;21(3):1613-1622. doi: [10.1166/jnn.2021.18987](https://doi.org/10.1166/jnn.2021.18987).

(iii) Department of Computer Science

1. G. Ravi,2020, Dual Objective Task Scheduling Algorithm in Cloud Environment, International Journal of Advanced Trends in Computer Science and Engineering, <http://dx.doi.org/10.30534/ijatcse/2020/07932020>.
2. G. Ravi,2020, A Survey on Recent Trends in Content Based Image Retrieval System, Journal of Critical Reviews, <http://dx.doi.org/10.31838/jcr.07.11.171>.
3. G. Ravi,2020, Content Based Medical Image Retrieval Using Multilevel Hybrid Clustering Segmentation with Feed Forward Neural Network, Journal of Computational and Theoretical Nanoscience,

<https://doi.org/10.1166/jctn.2020.9452>,

4. D.I George Amalarethinam, 2020, GLObfus : An Enhanced Data Security Method to Protect Numerical Data in Public Cloud Storage, International Journal of Computer Theory and Engineering, <http://dx.doi.org/10.7763/IJCTE.2020.V12.1274>.
5. D.I George Amalarethinam, 2020, CHS_QoS: Cluster Head Selection using QoS properties in Heterogenic IoT based WSN, Malaya Journal of Matematik, <https://doi.org/10.1080/13614576.2017.1297734>.
6. T. Abdul Razak, 2020, Application of Bayesian Approach To Decision Tree Algorithm For Classification of Soil Types, International Journal of Advanced Research in Engineering and Technology [IJARET], ISSN Print: 0976-6480 and ISSN Online: 0976-6499 DOI: 10.34218/IJARET.11.8.2020.079.
7. T. Abdul Razak, 2020, Application of Ensemble Learning Approach To Decision Tree Algorithm For Classification of Soil Types, Journal of Maharaja Sayajirao University of Baroda, <https://link.springer.com/book/10.1007%2F978-981-15-7106-0#editorsandaffiliations>.
8. S. Mohamed Iliyas, 2020, A Survey on Cryptographic Algorithm for Secure Authentication in Wi-Fi Application, International Journal of Innovations in Engineering & Technology (IJIET), <http://dx.doi.org/10.21172/ijiet.164.01>.

(iv) Department of Mathematics

1. S. Satham Hussain, R. Jahir Hussain, & Ghulam Muhiuddin. (2020). Neutrosophic Vague Line Graphs. *Neutrosophic Sets and Systems*, 36, 121-130. Nagoor Gani, 2020, Fuzzy Pairwise.
2. Compactness and Fuzzy Pairwise a, b, g Compactness in Fuzzy Bitopology, *Advances in Mathematics: Scientific Journal*. <https://doi.org/10.37418/amsj.9.12.10>
3. Mohamed Ismayil, 2020, Complementary Nil G-Eccentric Domination in Fuzzy Graphs, *Advances in Mathematics: Scientific Journal*. <https://doi.org/10.37418/amsj.9.4.28>
4. Mohamed Ismayil, 2020, Eccentric Domination Polynomial of Graphs, *Advances in Mathematics: Scientific Journal*. *Advances in Mathematics: Scientific Journal* 9 (2020), no.4, 1729–1739 ISSN: 1857-8365 (printed); 1857-8438 (electronic) <https://doi.org/10.37418/amsj.9.4.29>
5. N Mohamed Thoiyab, 2020, [Global Stability Analysis of Neural Networks with Constant Time Delay via Fresenius Norm](https://doi.org/10.1155/2020/4321312), *Mathematical Problems in Engineering*. <https://doi.org/10.1155/2020/4321312>.
6. N Mohamed Thoiyab, P Muruganantham, 2020, Global robust stability analysis for hybrid BAM neural networks, *IEEE*.
7. N. Mohamed Thoiyab, P Muruganantham, 2020, Novel results on global robust stability analysis for dynamical delayed neural networks under parameter uncertainties, *IEEE*
8. A.Prasanna, 2020, Algebraic Structures on Product of $\psi - \bar{Q}$ –Fuzzy Subgroup and Normal Subgroup, *Materials Today: Proceedings*. <https://doi.org/10.1155/2016/4918948>
9. Prasanna, 2020, Algebraic Properties on $\omega -$ Fuzzy Translation and Multiplication in BH– Algebras, *AIP Conference Proceedings*. <https://doi.org/10.1063/5.0017626>.

10. Prasanna, 2020, $\kappa - Q$ –Fuzzy Orders Relative to $\kappa - Q$ –Fuzzy Subgroups and Cyclic group Fundamental Various Aspect, Materials Today: Proceedings.
11. U. Abuthahir, 2020, Estimation of Error Using Various Measures of Averages in Forecasting Problems, Advances in Mathematics: Scientific Journal. <http://dx.doi.org/10.5829/idosi.wasj.2013.24.itmies.80032>.

(v) Department of Physics

1. Mr. A. Mohamed Saleem, 2020, Preparation and characterization studies of TiO₂ doped ZrO₂ on ITO nanocomposites for optoelectronic applications, Materials Today: Proceedings. <https://doi.org/10.1016/j.matpr.2020.04.748>
2. Ishaq Ahamed, 2020, State feedback control and observer-based adaptive synchronisation of chaos in a memristive Murali–Lakshmanan–Chua circuit, A Springer Link Journal published by the Indian Academy of Sciences in association with the Indian National Science Academy and Indian Physics Association. Pramana – J. Phys. (2020) 94:152 © Indian Academy of Sciences <https://doi.org/10.1007/s12043-020-02017-5>.
3. Ishaq Ahamed, 2020, Sliding Bifurcations in the Memristive Murali–Lakshmanan–Chua Circuit and the Memristive Driven Chua Oscillator, International Journal of Bifurcation and Chaos. <https://doi.org/10.1142/S0218127420502144>.
4. R. Raj Muhamed, 2020, Synthesis, Spectroscopic elucidation (FT-IR, FT-Raman, UV-Vis), electronic properties and biological activities (antimicrobial, docking) of semicarbazide derivative, Synthesis, Spectroscopic elucidation (FT-IR, FT-Raman, UV-Vis), electronic properties and biological activities (antimicrobial, docking) of semicarbazide derivative. <https://doi.org/10.1016/j.matpr.2020.09.569>.
5. A. S. Haja Hameed, 2020, Biomolecule chitosan, curcumin and ZnO-based antibacterial nanomaterial, via a one-pot process, Carbohydrate Polymers. <https://doi.org/10.1016/j.carbpol.2020.116825>.
6. C. Hariharan, 2020, Influence of Nickel oxide nanoparticles on the absorption enhancement of solar radiation for effective distillation by single slope wick-type solar still, Materials Today: Proceedings. December 2020 [Materials Today: Proceedings](https://doi.org/10.1016/j.matpr.2020.10.704) , DOI:10.1016/j.matpr.2020.10.704.
7. J. Ebenezar, 2020, Synchronous fluorescence spectral intensity ratio mapping for early discrimination of epithelial cancers, Asian Journal of Physics, DOI: [10.1111/j.1751-1097.2009.00628.x](https://doi.org/10.1111/j.1751-1097.2009.00628.x)

(vi) Department of Zoology

1. Mohamed Hussain, 2021, Exploration of acute toxicity, analgesic, anti-inflammatory, and anti-pyretic activities of the black tunicate, Phallusianigra (Savigny, 1816) using mice model, Environmental Science and Pollution Research. <https://doi.org/10.1007/s11356-020-10938-2>
2. Mohamed Hussain, 2021, Assessment of Potential human health risk due to heavy metal contamination in edible finfish and shellfish collected around Ennore coast, India, Environmental Science and Pollution Research. <https://doi.org/10.1007/s11356-020-10764-6>.
3. K. Prabakar, 2020, Extracellular DNA (eDNA): Neglected and Potential Sources of Antibiotic Resistant Genes (ARGs) in the Aquatic Environments, Pathogens. PMID: 33114079 PMID: [PMC7690795](https://pubmed.ncbi.nlm.nih.gov/33114079/), <http://dx.doi.org/10.3390/pathogens9110874>.

4. Sadiq Bukhari, 2020, Hepatic toxicological responses of SiO₂ nanoparticle on *Oreochromis mossambicus*, *Environmental Toxicology and Pharmacology* .<http://dx.doi.org/10.1016/j.etap.2020.103398>.
5. Sadiq Bukhari, 2020, Activity concentration of polonium-210 and lead-210 in tobacco products and annual committed effective dose to tobacco users in Tiruchirappalli District (Tamil Nadu, India), *Journal of Radioanalytical and Nuclear Chemistry*. <http://dx.doi.org/10.1007/s10967-019-06879-x>.
6. R. Krishnamoorthy, (2021), A Study On The Naturally Occurring Radionuclides In The Soil Samples Of Kozhikode District, Kerala , *Journal of Natural Remedies* Vol. 21, No. 9(2): 6-10.
7. R. Krishnamoorthy (2021), Analysis of gross alpha radioactivity in sediment of Pulicat lagoon, south East coast of India, *Uttar Pradesh Journal of Zoology* 42(6): 90-97
<https://mbimph.com/index.php/UPJOZ/article/view/2025>
8. Krishnamoorthy, (2021), Environmental radio activity in the Malappuram district, Kerala, India - using bioindicator species, *Uttar Pradesh Journal of Zoology*, 42(4): 1-5.<https://mbimph.com/index.php/UPJOZ/article/view/1956>
9. R. Krishnamoorthy (2021), Primordial Radionuclides Activity and External Radiation Hazard Index Evaluation in Pulicat Lake Sediments, South East Coast of India, *Uttar Pradesh Journal of Zoology*, 42(4): 37-43.<https://mbimph.com/index.php/UPJOZ/article/view/1967>
10. Sadiq Bukhari., Diversity, Dominance and Evenness of Butterflies in Southern Part of Western Ghats (Palani Hills) *Indian Journal of Natural Sciences* , IJONS - ISSUE 65 APRIL 2021/ISSN – 0976-0997. Page – 29589-29597(2021)<http://s-o-i.org/1.15/ijarbs-2016-3-5-23>
11. Sadiq Bukhari., The Role Of Butterflies Towards Creating Ecological Balance And Biodiversity Conservation In Southern Part Of Western Ghats (Palani Hills), *Uttar Pradesh Journal Of Zoology*, 41(23): 95-112, 2020 ISSN: 0256-971X (P)(2020)<https://mbimph.com/index.php/UPJOZ/ article/view/1796>

PART –C Audited Documents and Receipts

Enclosure 1

FIST PROGRAM

STATEMENT OF EXPENDITURE

(For the period from 31st July 2019 to 31st March 2021)

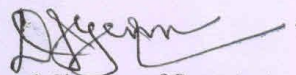
1. Sanction Order No. & Date: SR/FST/College-2018-315(C), Dt.22 July 2019
2. Total Sanctioned Project Cost (in Rs): 1,10,00,000
3. Date of Commencement of the Project: 31-07-2019
4. Grant Received in 1 year (in Rs) : 60,50,000

Head	1 st Year <small>(31st July 2019 to 31st March 2020)</small>	2 nd Year <small>(01st April 2020 to 31st March 2021)</small>	3 rd Year	4 th Year	5 th Year	Interest if any	Total
Sanctioned	60,50,000.00	--				1,75,746.00	62,25,746.00

5. Statement of Expenditure

Sanctioned Budget Heads	Allocation of Funds (in Rs)	Total Grant Received	Expenditure					Total	Balance as on March 2021 (in Rs)	Remark if any
			1 st Year (31 st July 2019 to 31 st March 2020)	2 nd Year (01 st April 2020 to 31 st March 2021)	3 rd Year	4 th Year	5 th Year			
Equipment (E)	92,00,000.00	60,00,000.00	46,099.60	70,50,547.26				*70,96,646.86	--	*
Net Working & Computational Facilities (NW)	7,00,000.00	--	--	--					--	
Books 3L + E learning Class Room 5L= 8L	8,00,000.00	50,000.00	17,793.00	32401.00				** 50194.00	--	**
Maintenance (M)	3,00,000.00	--	--	--					--	
Total	1,10,00,000.00	60,50,000.00	63892.60	7082948.26				7146840.86	--	Rs.1096840.86 contributed by the management for purchase of Equipments & Books


 Name & Signature of Project Coordinator
 Date: 27/4/21
 Dr. T. ABDUL RAZAK
 Associate Professor
 Department of Computer Science
 Jamal Mohamed College (Autonomous)
 Tiruchirappalli - 620 020


 Name & Signature of Competent Financial Authority
 Date: 27.04.2021
 Dr. D.L. George
 Amalarethinan

BURSAR
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-20.



Note:

1. Expenditure under sanctioned Heads, at any point of time should not exceed funds allocated under that Head without prior approval of DST.
2. Utilization certificate for each financial year ending 31st March has to be enclosed along with request for carry forward permission to next year.

UDIN: 21201447AAAACK2513

Enclosure 2

GFR 12 – A

[(See Rule 238 (1))]

FORM OF UTILIZATION CERTIFICATE FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION

UTILIZATION CERTIFICATE FOR THE YEAR 2019-2020 (31st July 2019 to 31st March 2020) in respect
of recurring/non-recurring
GRANTS-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

1. Name of the Scheme : DST – FIST Program
2. Whether recurring or non-recurring grants : Recurring & Non Recurring
3. Grants position at the beginning of the Financial year
 - (i) Cash in Hand/Bank : --
 - (ii) Unadjusted advances : --
 - (iii) Total : --
4. Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3	4			5	6	7
--	1,23,449.00	1,23,449.00	SR/FST/ College- 2018-315(C)	Dt.22 July 2019	60,50,000.00	60,50,000.00	63,892.60	5986107.40

Component wise utilization of grants:

Grant-in-aid–General	Grant-in-aid–Salary	Grant-in-aid–creation of capital assets	Total
--	--	Rs.63,892.60	Rs.63,892.60

Details of grants position at the end of the year

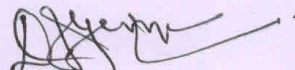
1. Cash in Hand/Bank : Rs.5986107.40
2. Unadjusted Advances : --
3. Total : Rs.5986107.40


Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

- (i) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.
- (ii) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.
- (iii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.
- (iv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.
- (v) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.
- (vi) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.
- (vii) It has been ensured that the physical and financial performance under..... (name of the scheme has been according to the requirements, as prescribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the fund resulted in outcomes given at Annexure – I duly enclosed.
- (viii) The utilization of the fund resulted in outcomes given at Annexure – II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)
- (ix) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure –II (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

Date: 27-04-2021

Place: Tiruchirappalli


Signature 
Name ..Dr. D. S. George Analevethinam
Chief Finance Officer (Head of the Finance)

Signature 
Name ..Dr. S. Suman Mohidevan
Head of the Organization

BURSAR
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-20.

PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.




UDIN: 21201447AAAAKK2513

Enclosure 3

GFR 12 – A

[(See Rule 238 (1))]

FORM OF UTILIZATION CERTIFICATE FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION

UTILIZATION CERTIFICATE FOR THE YEAR 2020-2021 (1st April 2020 to 31st March 2021) in respect
of recurring/non-recurring
GRANTS-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

1. Name of the Scheme : DST – FIST Program
2. Whether recurring or non-recurring grants : Recurring & Non Recurring
5. Grants position at the beginning of the
Financial year
- (iv) Cash in Hand/Bank : Rs.5986107.40
- (v) Unadjusted advances : --
- (vi) Total : Rs.5986107.40
6. Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Governme nt	Grant received during the year			Total Available funds (1+2- 3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
5986107.40	52,297.00	52,297.00	--	--	--	* 5986107.40	* 70,82,948.26	--

Component wise utilization of grants:

Grant-in-aid- General.	Grant-in-aid- Salary	Grant-in-aid-creation of capital assets	Total
--	--	70,82,948.26	70,82,948.26

*Available funds Rs.5986107.40 – Expenditure incurred Rs. 70,82,948.26 = Rs.1096840.86 Towards College Management contribution for the purchase of Equipments & Books

Details of grants position at the end of the year

1. Cash in Hand/Bank : --
2. Unadjusted Advances : --
3. Total : --

:: 2 ::

Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

- (x) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.
- (xi) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.
- (xii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.
- (xiii) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.
- (xiv) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.
- (xv) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.
- (xvi) It has been ensured that the physical and financial performance under..... (name of the scheme) has been according to the requirements, as prescribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the fund resulted in outcomes given at Annexure – I duly enclosed.
- (xvii) The utilization of the fund resulted in outcomes given at Annexure – II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)
- (xviii) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure –II (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

Date: 27.04.2021

Place: Tiruchirappalli

Signature 

Name Dr. D. E. George Amalathasan

Chief Finance Officer (Head of the Finance)


BURSAR
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-20,



Signature 

Name Dr. S. Ismail Mohideen

Head of the Organization

PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.
N.H. 



UDIN: 21201447AAAAKK2513

Enclosure 4



bharatkosh.gov.in
Government of India Receipt Portal

RECEIPT

Transaction Ref.No. 1904210002834 Dated: Apr 19 2021 12:20PM

Received from M/S. JAMAL MOHAMED COLLEGE with Transaction
Ref.No. 1904210002834

Dated Apr 19 2021 12:20PM the sum of INR 175746 (One Lakhs Seventy-Five
Thousand Seven Hundred Forty-Six Only) through Internet based Online
payment in the account of

interest receipt on unspent balances, Jamal Mohamed College - Refund of Int.
on grant-2019-21.

Disclaimer:- This is a system generated electronic receipt, hence no physical signature
is required for the purpose of authentication

Printed On: 19-04-2021 12:23:05

Courtesy :- Controller General of Accounts

d. Jy
19/4/21

Enclosure 5

I-STEM Registration Screen Shot web page

The screenshot displays the I-STEM website interface. At the top, there are navigation buttons for 'Login', 'Register', and 'Contact Us', along with a 'Select Language' dropdown menu. The main header features the I-STEM logo with the tagline 'Linking Researchers and Resources' and the text 'Indian Science Technology and Engineering facilities Map'. To the right of the header is the emblem of the Government of India and the text 'Office of the Principal Scientific Adviser to the GoI'. Below the header, there are three tabs: 'Facility Map' (highlighted in orange), 'Supplier Map', and 'Service Map'. A search bar with the placeholder text 'Search for Equipment...' is located below the tabs. The main navigation menu includes 'HOME', 'EQUIPMENT', 'INSTITUTIONS', and 'PEOPLE'. A green notification banner at the top of the content area reads: 'Institution registration submitted. You will receive confirmation mail with login credentials once registration is approved.' Below the notification is a world map with the text 'Linking Researchers and Resources' overlaid in white and orange.



Centre for Nano Science and Engineering,
Indian Institute of Science, Bangalore 560 012 Karnataka, India.
www.istem.gov.in

Ref.: I-STEM/ECS Form_01

ECS FORM FOR BANK ACCOUNT DETAILS
(For fund transfer through Bill Desk: A payment Gateway for I-STEM)

Name of the Institution: Jamal Mohamed College

Institution Code (User ID) : To be filled by Nodal Centre

Email ID: principaljmc@gmail.com

DETAILS OF ACCOUNT HOLDER *

NAME OF THE ACCOUNT HOLDER (Registrar/Director/Principal/Accounts Officer/Finance Officer/Secretary/President etc.)	FIST PROGRAM A/C (Operated by S. Ismail Mohideen, Principal)
COMPLETE CONTACT ADDRESS	No.7, Race Course Road, Khaja Nagar, Tiruchirappalli, Tami Nadu 620020
TELEPHONE NUMBER/FAX/EMAIL	0431-2331135, 2331035
GST No.	33AAABJ0006F1Z1
PAN No.	AAABJ0006F
YEAR OF ESTABLISHMENT	1951

A. BANK ACCOUNT DETAILS*

BANK NAME	Indian Overseas Bank
BRANCH NAME WITH COMPLETE ADDRESS, TELEPHONE NUMBER AND E-MAIL	Jamal Mohamed College Campus, TVS Tollgate, Khaja Nagar, Tiruchirappalli - 620 020. 0431-2332030; iob0467@iob.in
IFSC CODE OF THE BRANCH	IOBA0000467
MICR CODE	620020010
COMPLETE BANK ACCOUNT NUMBER	046701000078920
SWIFT CODE	IOBANBB001

*Information of the recipient University / Institute / College / Society etc. Only

I hereby declare that the particulars given above are correct and complete. I also on behalf of my Institution accept all the Terms and Conditions laid down by Reserve Bank of India Payment and Settlement act, along with Visa/Master/ Banks/ Partner channels of Billdesk and will adhere to Charge back Guidelines as given in Annexure-I.

- GST and other tax / taxes if any applicable, will be charged in addition.
- All payment options are subject to issuance of ME code by the banks.

Date: 04/05/2021

Signature of the Competent Authority
(Head of Institution/Finance Controller/ Principal/Director)

PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020

Certified that the particulars of bank account furnished above are correct as per our bank records.

Date: 04/05/2021

(Signature of Authorized Official of the Bank)

Ph No.(Bank): 0431 233 2031



CC: Billdesk Payment Gateways



Centre for Nano Science and Engineering,
Indian Institute of Science, Bangalore 560 012 Karnataka, India.
www.istem.gov.in

Annexure-I

Structure of Transaction Charges

Sr. No	Type Of Transaction	Transaction Processing Fee	Total Fees Charged to Customer/User/Institution
1.	Credit Cards Transaction processing Fee – (Visa/Master/Rupay)	1.00% of the value of the transaction	1.00% of the value of the transaction Charged to the Customer/User
2.	Debit Cards Transaction processing Fee – (Visa/Master/Rupay)	NIL 0.90%	0.00% of the value of the transaction up to Rs 2000 0.90% of the value of the transaction above Rs 2000 - Charged to Institution
3.	Net Banking	Rs 20.00 per transaction for Banks like HDFC, ICICI, Axis & SBI Rs 15.00 per transaction for Banks other than HDFC, ICICI, Axis & SBI	Rs 20.00 per transaction for Banks like HDFC, ICICI, Axis & SBI Charged to the Customer/User Rs 15.00 per transaction for Banks other than HDFC, ICICI, Axis & SBI Charged to the Customer/User
4.	UPI	Rs 15.00 per transaction	Rs 15.00 per transaction Charged to Institution

I on behalf of my Institution will agree to all the Terms and Conditions laid down by Reserve Bank of India Payment and Settlement act along with Visa/Master/ Banks/ Partner channels of Billdesk and will adhere to Charge back Guidelines.

- GST and other tax / taxes if any applicable, will be charged in addition.
- All payment options are subject to issuance of ME code by the banks.

Thanking You.

Head of Institution/Director/Vice-Chancellor

**PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.**

CC: The Bill Desk Payment Gateways

Note: The Institution Authority is requested to fill the form and upload the scan copy to the I-STEM Portal for record purpose. This is mandatory for each institution to have smooth transaction of usage charges in their authorised bank account and avoid any kind fraudulent transaction in the name of the Institution.

T- 1800-425-3281 (Toll Free), 080-22933635, 23603281, 23607022, F-080-23600209, M- 91-9868263821, 91-8277566371

E: istem.india@gmail.com