

PROGRESS REPORT

OF

DBT-STAR COLLEGE SCHEME
(THIRDYEAR)

NES RATNAM COLLEGE OF
ARTS, SCIENCE & COMMERCE,
BHANDUP(WEST),
MUMBAI

2019-20

Supported by Department of Biotechnology,
Ministry of Science & Technology, Government of India,
New Delhi


ACKNOWLEDGEMENT

I wish to place on record my sincere thanks to the Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India, for the financial support and opportunity given to strengthen Basic Sciences.

I thank our management for constant encouragement and motivation.

I also thank our Principal Dr. Mary Vimochana, Vice Principal Dr. Vinita Dhulia, Departmental Coordinators Mrs. Lakshmi Prasuna, Mrs. Veena Bhakta, Dr. Jayasree Sasangan and all the science teaching and non-teaching staff for their whole hearted cooperation and support. I also thank our advisors Dr. A.P. Jayaraman and Prof Dr. Sunita Shailajan for the timely advice.

This scheme has benefited more than 500 undergraduate students and enhanced the quality of teaching and learning of the students and teachers.


Dr. Sunita Chahar
Coordinator
DBT- Star College Scheme

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PREFACE

Science departments of NES Ratnam College feel proudly privileged to present the report of activities executed during the academic year 2019-20 under DBT-Star College Scheme. The departments of Botany, Zoology, Chemistry, Physics and Mathematics are fortunate to be beneficiaries under this scheme, which has facilitated the empowerment of students from underprivileged sections of the society to whom we cater, with latest knowledge in their chosen subjects by use of ICT tools and other sophisticated instruments procured from DBT grant.

The dedicated teams of faculty members, with the requisite skills and boundless interest to keep themselves abreast in the latest developments in their fields have put the resources procured under DBT-Star College Scheme to extremely rewarding use by conducting activities to accomplish the following objectives:

- Bridging the gap in the prescribed syllabus
- Enhancing the analytical, logical and realistic learning skills
- Developing research mindedness in students
- Motivating students to pursue higher education
- Developing entrepreneurial skills
- Fostering scientific attitude and environment consciousness
- Imparting soft skills necessary for success in life
- Empowering students to face competitive examinations
- Neighbourhood networking and knowledge sharing with nearby schools and colleges
- The report of activities conducted encompasses extended and additional practical's, small and feasible research projects, training Programs, workshops, outreach programs, visits and competitions.

We have successfully completed three years of the Star College Scheme and will be very happy to extend the scheme further. The college places on record, immense gratitude to Department of Biotechnology for providing funds on time which could be utilized for good academic causes. The science departments are indebted to Principal, Dr. Mary Vimochana and Dr. Sunita Chahar, Co-ordinator, DBT-Star College Scheme for their untiring guidance and support extended to make every activity meaningful and academically satisfying.

1. PARTICIPATING COLLEGE DETAILS

1	Name of the College	NES Ratnam College of Arts, Science & Commerce
2	Name of the Departments Supported	Botany, Zoology, Physics, Chemistry, Mathematics and Statistics
	Name of the Coordinator	Dr. Sunita Chahar
	Designation	Head & Associate Professor Dept. of Botany
	Address	NES Complex, N.H.S Marg, Bhandup (West), Mumbai-400078
	Phone No	9969411124 / 8928252678
	Email ID	sunitachahar@rediffmail.com sunitadchahar@gmail.com
3	No of Regular Faculty with Ph.D	10
4	No. of Faculty Pursuing Ph.D	04
5	List of Courses run by each department(B.Sc/M.Sc/Certificate)	
	Botany	<ul style="list-style-type: none"> ▪ B.Sc. & Ph.D ▪ Certificate course in Nutrition & Dietetics
	Zoology	<ul style="list-style-type: none"> ▪ B.Sc. ▪ Certificate course in Nutrition & Dietetics
	Chemistry	<ul style="list-style-type: none"> ▪ B.Sc. & M.Sc. ▪ Certificate Course in Instrumental & Analytical Techniques
	Physics	<ul style="list-style-type: none"> ▪ B.Sc. & M.Sc. ▪ Certificate course in Microprocessors & Microcontrollers
	Mathematics	<ul style="list-style-type: none"> ▪ B.Sc

6	Cut off % for Admission and Percentage of Results	50%
7	No.of Students admitted	<ul style="list-style-type: none"> ▪ Botany – 109 ▪ Zoology–102 ▪ Physics – 137 ▪ Chemistry– 275 ▪ Mathematics– 86
8	Percentage of Results	<ul style="list-style-type: none"> ▪ Botany –100% ▪ Zoology–100% ▪ Physics– 75% ▪ Chemistry–77.3% ▪ Mathematics– 91%

2. DETAILS OF THE ADVISORY COMMITTEE AND DATES OF THE MEETING

➤ ADVISORY COMMITTEE MEMBERS

Chair Person	Principal : Dr. Mary Vimochana
DBT Representative	Dr. Garima Gupta
External Experts (Members)	<ul style="list-style-type: none"> ▪ Dr.A.P.Jayaraman, Ex-Nuclear Scientist, BARC, Mumbai, President, STEAM Academy ▪ Prof.(Dr.) Dr.SunitaShailajan, Head, Department of Botany, Dean, Research, Development and Innovation, Ramnarain Ruia Autonomous College, Mumbai
Members (Departmental Coordinators-from all participating departments)	<ul style="list-style-type: none"> ▪ Dr.Vinita Dhulia–Physics ▪ Mrs.Lakshmi Prasunna-Chemistry ▪ Mrs.Veena Bhakta Kamat-Mathematics and Statistics ▪ Dr.Jayashree Sasangan–Zoology ▪ Dr.Sunita Chahar–Botany
Coordinator–Member	Dr. Sunita Chahar

➤ MEETINGS HELD IN 2019-2020

	Date	Details
1	13.08.2019	To discuss expenditure of recurring grant received for 2019-20
2	20.08.2019	Review meeting with our Advisor member
3	14.10.2019	To plan and decide dates, key note speaker and events for the research convention to be organized for students.
4	05.12.2019	To discuss the execution the conduct of the research convention to be held on 09.12.19
5	07.01.2020	To decide and discuss about the outreach activity to be organized in Feb 2020, compilation of progress report, Sci-Trek activities/Abdul Kalam Lecture series and Advisory meet
6	06.02.2020	To finalize the schedule of outreach activity to be held on 26 th , 27 th & 28 th February 2020
7	10.06.2020	To discuss preparation of Progress report ,auditing of Accounts & Advisory meet
8	11.06.2020	Advisory meet with the Advisors and the College team

3. PROJECTS UNDERTAKEN BY STUDENTS

Scientific research method involves identifying a problem, extensive literature survey, designing experimental protocols and their execution, collecting and analyzing data and drawing conclusion. To familiarize students with these aspects projects are assigned in groups supervised by the allotted supervising teacher. Assets acquired using DBT grant have played a pivotal role in achieving the objectives.

No	Title	Supervisor	Class	No. of Beneficiaries	Resources/ Equipment Used
Botany					
1	Study of structural defence mechanism in flora of NES Ratnam College Campus, Bhandup, Mumbai	Ms Shweta B & Ms. Mamta Y	FYBSc	05	Microscope with Camera
2	Algal Biodiversity of Shivaji Lake, Bhandup, Mumbai	Ms. Shweta .B	FYBSc	08	Membrane filtration unit
3	Synthesis of silver nanoparticles using neem leaf extract	Ms. Mamta Y	FYBSc	04	Magnetic shaker Spectrophotometer
4	Antifungal activity of few medicinal Plants	Ms. Mamta Y	FYBSc	04	Laminar air flow Autoclave
5	Study of Pollen grains of local flora from Bhandup, Mumbai	Ms Shweta & Ms. Mamta Yadav	SYBSc & FYBSc	14	Microscope with Camera
6	Study of types of stomata in plants of NES Ratnam College campus	Ms Shweta & Ms. Mamta Yadav	SYBSc	08	Microscope with Camera
7	Setup of pure algal culture of <i>Chlorella</i> and <i>Scenedusmus</i>	Dr. Sunita Chahar	SYBSc	06	Aerator, Glassware Colorimeter

8	Biomass Production of <i>Spirulina</i>	Dr. Sunita Chahar	SYBSc	04	Aerator, Glassware Colorimeter
9	Impact of Sewage Water and Industrial Effluent on Seed Germination and Vigour Index of <i>Cicer arietinum L.</i>	Dr. Sunita Chahar	SYBSc	05	Laminar air flow Autoclave
10	Home-made Mosquito Repellents and room fresheners	Dr. Sunita Chahar	SYBSc	04	Heating mantle Glassware
11	Composting from flower waste	Dr. Sunita Chahar	SYBSc	06	Basket with pores
12	Salinity Effects on germination and physiological Properties of <i>Vigna radiata</i>	Dr. Sunita Chahar	TYBSc	05	Autoclave Glassware
13	Phytochemical Analysis and Anti-microbial Activity of Medicinal Plants present in the N.E.S Ratnam college Garden.	Dr. Sunita Chahar	TYBSc	04	Laminar air flow Autoclave Glassware
14	Selection of Trees based on their Carbon Sequestration potential	Dr. Sunita Chahar	TYBSc	04	Reference books Computer Glassware
15	Phenology of <i>Stachychapheta</i>	Dr. Sunita Chahar	TYBSc	04	Reference books Computer

Zoology

1	Study of Rotifer and an attempt to make its single line culture	Dr. Jayasree.S	SYBSc	02	24 well microtitre plates Microscope Micropipette, Glassware
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2	To search for <i>Caenorhabditis elegans</i> in Indian native soil	Dr.Meenakshi.K	SYBSc	04	Microscope Glass ware
3	Management and breeding of Zebra Fish under improved condition	Ms Chetna.S	SYBSc	02	Tank and set up equipment's
4	Low priced laminar air flow for small laboratories	Dr Jayasree.S	SYBSc	01	Construction of model
5	Vermitechnology	Dr.Meenakshi.K	TYBSc	03	Out sourced for analysis

Chemistry

1	POGIL activity in understanding chemical kinetics of reaction between Iodine and Acetone	Dr Jayasree.G & Dr Phebe .K	FYBSc	08	Computer, Printer Glassware
2	Heat of neutralization	Dr Phebe K & Ms Suvarna.A	FYBSc	10	Computer, Printer Calorimeter
3	Adulterants of food commodities	Dr Jayasree.G & Dr Medha.S	SYBSc	70	Glassware Computer, Printer
4	Synthesis of Bioplastics	Dr Kiran.U	SYBSc	08	Spectrophotometer
5	Organic conversions using microwave –hydrolysis of esters/ anilides, oxidation of aromatic aldehydes	Dr Jayasree.G	TYBSc	05	Microwave
6	Extraction of natural dye from green chilly (capsicumannum) and used to dye cotton fabrics using selected synthetic and natural mordants	Dr Kiran.Upar & MsSuvarna.A	TYBSc	04	Thermostat, UV spectrophotometer, Printer

7	Calculation of CFSE values of transition metal complexes having a common ligand with different metal ions and metal complexes having common metal ion with different ligands	Dr Phebe K & Mr RamRaj	TYBSc	06	Spectrophotometer Computer, Printer
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Physics

1	Synthesis of TiO ₂ Nanoparticles & its application as photocatalyst in degradation of Methyl Orange dye	Dr.Rupali Patel Dr.Vinita Dhulia	SYBSc	05	Magnetic Stirrer, Muffle Furnace, Electric Oven
2	XRD Data Analysis	Dr.Vinita Dhulia	SYBSc	08	PC & Printer
3	Automation of Street Lights for Smart Cities	Mrs.Pratibha Singh	SYBSc	05	LDR, Multimeter
4	Study of Solar Panels- Principle of Working	Mrs.Presentia Aloysius	SYBSc	05	PC, Internet, Multimeter
5	Analysis of Coronal Mass Ejection(CME)	Dr.Rupali Patel & Dr.Anil Raghav	TYBSc	05	PC,Internet,Printer

Mathematics and Statistics

Applications of Number Theory

1	Tests of Divisibility	Ms S. Karthyaini	FYBSc	04	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
2	ISBN Codes	Ms. Veena B. Kamat	FYBSc	04	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
3	Applications to Linear Diophantine equations	Ms S. Karthyaini	FYBSc	04	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources

4	Pythagorean Triples, Automorphic numbers	Ms. Veena B. Kamat	FYBSc	04	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
5	Applications of Fermat's, Wilson's and Euler's theorem	Ms S. Karthyaini	FYBSc	04	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
6	Named Primes	Ms. Veena B. Kamat	SYBSc	04	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
7	Fermat's and Mersenne Primes	Ms. Veena B. Kamat	FYBSc	04	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
8	Pell's Equation	Ms S. Karthyaini	FYBSc	02	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources

Applications of Differential equations

1	Differential equations of Compartment Model	Ms. Bhakti Velankar	SYBSc	05	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
2	Differential Equations of Simple Pendulum	Dr. Nithya S	SYBSc	06	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
3	Differential Equations of Projectile Motion	Ms. Bhakti Velankar	SYBSc	06	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources
4	Differential Equations and Growth Model	Dr. Nithya S	SYBSc	06	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources

Programming and use of CAS

1	Cryptography with Maple	Ms. Bhakti Velankar	TYBSc	05	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources ▪ Software- MAPLE
2	Linear Algebra with Sage	Dr. Nithya S	TYBSc	05	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources ▪ Software- jdk1.3
3	Logic Using Programming	Ms. Bhakti Velankar	TYBSc	05	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources ▪ Software- MAPLE 2016
4	Graph Theory with MAPLE	Dr. Nithya S	TYBSc	06	<ul style="list-style-type: none"> ▪ Reference Books ▪ Internet Resources ▪ Software- MAPLE 2016

4. EXTENDED AND ADDITIONAL PRACTICALS CONDUCTED DURING THE YEAR

DBT-Star College Scheme has given exciting opportunity to the various departments to conduct extended practical to reinforce learning and to compare different situations. Additional practical has helped to widen the comprehension of various scientific principles prescribed in the syllabus. This scheme has helped in increasing inventory of instruments in every laboratory and enabled the conduct of those practical which were stalled due to lack of certain instruments/ software.

Botany			
No	Title	Class	Resources/EquipmentUsed
1	Microbiology: Sterilization techniques, Media preparation, Plate Pouring technique	FYBSc	Autoclave, Laminar airflow Electronic balance Glassware
2	Absorption Spectrum of Chlorophyll from leaves of Spinach	FYBSc	Spectrophotometer, Centrifuge Electronic balance, Glassware
3	Chlorophyll estimation from Pond water.	FYBSc	Membrane filtration unit, Spectrophotometer, Centrifuge Glassware
4	Epidermal Appendages in plants	FYBSc	Microscope with camera
5	Study of different types of Stomata	FYBSc	Microscope with camera
6	Separation of anthocyanin pigments from fruits	FYBSc	Centrifuge, Colorimeter, Glassware
7	Extraction of Algal pigments from Chlorella/Spirulina	SYBSc	Membrane filtration unit Aerator, centrifuge, Spectrophotometer Glassware
8	Cultivation of Yeast on Nutrient media	SYBSc	Laminar airflow, Autoclave, Electronic balance Glassware

9	Estimation of DNA from coconut, onion and cauliflower	SYBSc	Centrifuge, Spectrophotometer Hot plate, Electronic balance Glassware
10	Carbon Sequestration potential of trees of Ratnam College.	SYBSc	Computer with Internet
11	Separation of DNA by Gel Electrophoresis	SYBSc	Electrophoresis unit, Hot plate, Micropipettes, Centrifuge Glassware
12	Synthesis of Chitosan from Shrimp shells	TYBSc	Hot air Oven, Electronic balance, pH meter Glassware

Zoology

1	Testing for adulterants	SYBSc	Glassware, water bath
2	Activity of salivary amylase	SYBSc	Glassware, water bath
3	Activity of protease on egg white under different conditions.	SYBSc	Incubator, water bath
4	Estimation of amino acid and amino Nitrogen in the sample by titrimetric method	SYBSc	Glassware

Chemistry

1	POGIL activity on chemical kinetics of reaction between Iodine and Acetone(experiment)	FYBSc	Stop watch, Glassware
2	Heat of solution of a salt	FYBSc	Electronic balance, Joules calorimeter, Glassware
3	Organic analysis-Microscale	FYBSc	Micro scale Glassware kit
4	Estimation of amount of weak Acid by Conductometry	SYBSc	Electronic balance, Conductometer
5	Liquid Junction Potential	SYBSc	Electronic balance, Potentiometer
6	Estimation of Fe ²⁺ solution using Ce(IV)ions (Redox titration)	SYBSc	Electronic balance, Potentiometer, Glassware

7	Determination of pH of Phosphate Buffer	SYBSc	pH - meter
8	Chemical Kinetics -Salt effect of a second order reaction	TY.B.Sc	Stop watch, Glassware
9	Preparation of Dyes	T.Y.B.Sc	Glassware
10	Preparation of <i>p</i> -nitroacetanilide	T.Y.B.Sc	Glassware
11	Preparation of <i>fp</i> -nitroaniline	T.Y.B.Sc	Glassware
12	Determination of Ion-exchange Capacity	T.Y.B.Sc	Ion Exchange columns
13	Preparation of TLC plates & Separation of Nitroanilines	T.Y.B.Sc	TLC Plates TLC Column

Physics

1	Measurement of Melting point of solids using thermistor.	F.Y.B.Sc	Electric Oven, Multimeter, Thermistor
2	Introduced to plotting of graph in Excel	F.Y.B.Sc	PC, Printer
3	Application of Newton's Rings to find Young's Modulus of given material	F.Y.B.Sc	Sodium Source, 3D –motion Travelling Microscope, Plano convex lens, material whose Young's Modulus is to be calculated
4	Half wave and full wave rectifier using diodes	F.Y.B.Sc	Diodes, ac source / stepdown transformer, CRO
5	PC Simulation-Vector addition	F.Y.B.Sc	PC, Internet
6	I-V Characteristics of LEDs of different colours	S.Y.B.Sc	Power supply, LEDs of different Colour, Measuring Instruments
7	Measurement and Comparison of the distance between tracks of CD & DVD	S.Y.B.Sc	Laser Source , CDs/DVDs, measuring scale
8	Determination of First & second order	S.Y.B.Sc	Laser source, gratings of

	diffraction angle using gratings of different grating elements		different grating elements, measuring scale
9	Determination of Cauchy's constant using hollow prism-New Experiment(done with Water & Paraffin)	S.Y.B.Sc	White light source, hollow prism, spectrometer
10	Study Hall Effect and determine the mobility of carriers	T.Y.B.Sc	Hall Effect kit
11	Determination of Efficiency of Solar Cell	T.Y.B.Sc	Solar Cell Instrument

Mathematics and Statistics

1	Multiple Integrals and Vector Integration.	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
2	Applications of Eigen Values and Eigen Vectors	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
3	Complete and Compact Metric Spaces	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
4	Applications of Chinese Remainder Theorem	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
5	Complex Integration	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
6	Classification of groups upto order 7	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
7	Continuous and Connected Metric Spaces, Sequences and series of Functions	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
8	Applications of Continued Fractions and Quadratic Reciprocity	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
9	Features of JAVA	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ Reference Books ▪ software- jdk1.3
10	Primary and Foreignkey in Oracle	T.Y.B.Sc	<ul style="list-style-type: none"> ▪ Reference Books ▪ software- jdk1.3
11	Java Applets		<ul style="list-style-type: none"> ▪ Reference Books ▪ software- jdk1.3

12	Introduction to Maple	T.Y.B.Sc	Maple 2016
13	Basic Commands in Sage	T.Y.B.Sc	SAGEMATH
14	Programming in SAGE	T.Y.B.Sc	SAGEMATH
15	Problems in Differential Calculus	S.Y.B.Sc	Maple 2016
16	Application of Integration in one variable	S.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
17	Applications of Linear Transformations	S.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
18	Symmetric groups of plane figures	S.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
19	Permutations, Recurrence Relations and Counting	S.Y.B.Sc	Maple 2016
20	Linear Differential Equations	S.Y.B.Sc	<ul style="list-style-type: none"> ▪ University Practical Manual ▪ Reference Books
21	Introduction to Maple Commands	S.Y.B.Sc	Maple 2016
22	Linear Algebra using Maple	S.Y.B.Sc	Maple 2016
23	Basic Commands in Sage	S.Y.B.Sc	SAGEMATH
24	Programming in SAGE	S.Y.B.Sc	SAGEMATH
25	Symmetric Groups using Maple	S.Y.B.Sc	Maple 2016
26	Introduction to Maple Commands	F.Y.B.Sc	Maple 2016
27	Polynomials using Maple	F.Y.B.Sc	Maple 2016
28	Sketching of 2D /3D graphs using Maple	F.Y.B.Sc	Maple 2016
29	Elementary Number Theory	F.Y.B.Sc	Maple 2016
30	Basic Algebra using Maple	F.Y.B.Sc	Maple 2016

5. INDUSTRIAL VISITS / STUDY TOUR

To achieve the objective of creating awareness of diverse opportunities available to pursue Science at higher levels and to understand the application of scientific principles in developing products and services, students are taken to premier institutes focused on science teaching and industries. To create environmentally conscious students and to develop the comprehension that our planet has been borrowed from posterity, study trips are undertaken to different biological realms.

Sr. No	Place of visit	Class	No. of Students
Botany			
1	20/07/19:ASPEE Agriculture Farm, Tansa	SYBSC & TYBSC	43
2	14/01/20:Blatter Herbarium housed in St. Xavier's College, Fort, Mumbai.	TYBSc	16
3	18/02/20: Sanjay Gandhi National Park, Borivali, Mumbai	FYBSc	42
Zoology			
1	10/02/20: CUBE Lab, Homi Bhabha Centre for Science Education	SYBSc TYBSC	10 12
2	12/02/20: Conservation Education Centre, Bombay Natural History Society, Goregaon	FYBSc TYBSc	26 28
3	15/02/20 & 16/02/20:Bhaja Caves, Mahabaleshwar and Koyna	SYBSc TYBSc	21 12
Chemistry			
1	04/12/19: Effluent Treatment Plant RCF, Chembur	T.Y.B.Sc	37
2	13/01/20: Indian Rubber Manufacturers Research Association (IRMRA),Thane	S.Y.B.Sc	49
3	29/02/20: Tarapur Atomic Power Station, Tarapur	B.Sc & M.Sc	37
Physics			
1	14/09/20: Kokilaben Dhirubai Ambani Hospital, Andheri	TYBSc	12
2	29/02/20: Science Centre & Inter University Centre for Astronomy & Astrophysics(IUCAA),Pune	TYBSc SYBSc	12 26

Mathematics and Statistics			
1	20/01/20: Tarapur Nuclear Power plant , Palghar	S.Y.B.Sc T.Y.B.Sc	21 24
2	04/01/20: Tech Fest	IITB, Powai, Mumbai	T.Y.B.Sc: 21 Staff:01

6.SEMINARS/WORKSHOPS/LECTURE SERIES ORGANISED FOR THE STUDENTS

Botany			
NO	TITLE	RESOURCE PERSONS	BENEFICIARIES
1.	16/08/19: Organic Vegetable Gardening	Mrs.Mamta Yadav (IN-HOUSE FACULTY)	BA,BSc.- 62
2.	30/8/19 : Micrometry	Mr.Shivraj Subramaniam Motic Microscope	SYBSc,: 21 Faculty :3 Ph.D student :1
3.	18/12/19: Terrarium Making	Ms.Shweta Belose (IN-HOUSE FACULTY)	FYBSc:25 SYBSc:20
4.	31/01/20: Jam and Squash Making	Mrs.MamtaYadav Ms Shewata.B (IN-HOUSE FACULTY)	UG Students :45 (SYBSc & FYBSc)
5.	27.01.20 :Short Film Making	Ms.RinkuGaruFaculty, MassMedia, ICLES, Motilal JhunjhunwalaCollege, Vashi.	FYBSC: 15 SYBSc:02
Zoology			
1	20/11/19 & 21/11/19: A two-day Workshop on “Genome editing CRISPR” in association with “Shaastra Fest” (IIT Madras Event).	Dr. Chinmoy Patra, Agharkar Institute, Pune.	FYBSc : 08 SYBSc :11 TYBSc :10

Chemistry

1	05/08/19: 'Microscale Experiments in Volumetric Analysis –Two burette method'-- (An inter collegiate workshop for teachers)	<ul style="list-style-type: none">▪ Dr.Abhijit Chavan Asso. Professor▪ Dr.Latesh Nika. Ass Professor	Teachers:19
2	05/12/19: Preparation of Household Utility Commodities (Nonfood chemicals)	Mrs.Shilpa Nikam Swayam Siddha Creation, Vashi,Navi Mumbai	TYBSc: 70
3	28/01/20: Awareness on food adulteration and hands on training to detect food adulterants	<ul style="list-style-type: none">▪ Mr Amol V. Deshmukh Ass Prof▪ Mr Santosh N.Lohakare Ass Prof	SYBSc: 12

Physics

1	20/12/20: An Interdisciplinary Workshop on "DECISION MAKING BOTS"	In association with PI CODE CLUB	41
2	Power Point Competition was organized for students on 1st February 2020 on the following topics: 1. Dual Nature of Light 2. Nanotechnology & Environment 3. Big Data and its Applications 4. 5G Mobile Technology	In-house	25
3	Training Session for Competitive Examination (JAM) students	Mr. Tushar Parab (Post graduate from IUCAA)	40

Bridge Course in Physics for F.Y.B.Sc (Resource person are In-House Faculty)

1	20/06/19: Thermo Physics, dynamics	Mrs. Presentia Aloysius	62
2	21/06/19: Mathematical Physics	Mrs.Pratibha Singh	62

3	22/06/19: Electronics	Mr.Shivam Yadav	62
4	27/06/19: Nuclear Physics	Dr.Rupali Patel	62
Mathematics and Statistics			
1.	24 /06/19 to 26/06/19: Three day ‘Workshop on 3D Simplified Mathematics with Excel ‘ at ICT, Matunga. In collaboration with ICT, Matunga and DASS Labs Pvt. Ltd, Ahmedabad.	Mr Chanchal Dass, Director, DASS Labs Pvt. Ltd, Ahmedabad.	63
2	24/12/19:Workshop on Origami	Mrs. Anushree Tambe, Dept. of Mathematics, A.P.Shah Institute Technology,Thane	70
3	25/01/20: Workshop On Geogebra	Prof. Inder K. Rana, Emeritus Fellow, IITB-Mumbai	54
4	06/08/19: Live Steam of Online Videos for S.Y.B.Sc ‘Magic Squares’	Mrs Bhakti Velankar (In-house Faculty)	22
5	23/12/19: National Mathematics Day : Screening of the Movie : “ The man who knew Infinity” Biopic of Mathematician Srinivasa Ramanujan	Mrs Veena B. Kamat (In House Faculty),	43
6	24/12/19: Streaming of Popular Talk on “Works of Ramanujan and the lost notebook’	Prof Manjul Bhargava , Fields Medallist,Princeton University	21
Bridge Course in Mathematics for F.Y.B.Sc(Resource person are In-House Faculty)			
7	18/07/19 : Permutations and Combinations	Dr Nithya S	45
8	20/07/19: Complex Number	Mrs. Bhakti Velankar	42
9	17/08/19: Mathematical Logic	Mrs Veena B.Kamat	47
10	28/09/19: Set Theory	Mrs. S.Karthiyaini	39

7. TRAINING PROGRAMME/SUMMER TRAINING FOR THE STUDENTS

Dates	Topic	Resource Person of Institute/ College	Beneficiaries
Botany			
22/08/19	Workshop on Mol. Bio. Techniques	Dr. Rekha Vartak HOD, Bio-Science, HBCSE	SYBSc: 20 Staff : 02
03/11/19 to 07/11/19	Cultivation of <i>Spirulina</i>	C.I.F.E. Campus, University Road, Seven Bunglows, Versova, Mumbai,	SYBSc: 02
Zoology			
23/08/19	Basic Concepts in Research- Scientific approach and attitude	SIES College of Arts, Science and Commerce in collaboration with Dosti House- Your American Space, US Consulate General, Mumbai.	SYBSc: 03
15/05/19 to 16/06/19	Study of regeneration in earth worm <i>Eisenia fetida</i>	HBCSE, Mankhurd	SYBSc :05
10/01/20	Workshop on "Bird Nest Making"	Department of Life Sciences, K.C.College, Churchgate.	SYBSc :03 TYBSc:02
10/02/20	Training on using basic instruments	CUBE lab, Olympiad lab, HBCSE, Mankhurd	SYBSc – 10 TYBSc -12
Chemistry			
18/11/19	Workshop on Green & Sustainable Chemistry'	IIT, Bombay	TYBSc: 04
28/11/19 to 30/11/19	Chromatography & Spectroscopy	SIES College, Nerul	SYBSc: 15
Physics			
03/06/19 to 15/06/19	Theoretical Physics	IAPT at Ramniranjan Jhunjhunwala College, Ghatkopar	TYBSc: 04 SYBSc: 01
Mathematics an Statistics			
13/07/19 & 22/07/19	Introductory Session, Analysis	Mr. Shriprasad Tambe M.Sc –IITB, Mumbai	76

10/08/19 & 17/08/19	Sequences and Series	Mr. Mandar Khasnis M.Sc- Assistant Professor, CHM College, Ulhasnagar 421 005	76
14/07/19 & 21/09/19	Linear Algebra	Ms. Umalakshmi Patne, M.Sc –IITB, Mumbai Assistant Professor, Bandodkar College, Thane	76
07/09/19 & 28/09/19	Linear Algebra	Mrs. Bhakti Velankar. M.Sc-Assistant Professor, (In House Faculty)	76
23/11/2019	Multiple Integrals	Mrs. Saeed Joshi M.Sc –IIT Kanpur Assistant Professor, Ramnarain Ruia College, Mumbai	76
07/12/19 & 21/12/19	Group Theory	Mr. Pranil Waikar, M.Sc-Assistant Professor , Jai Hind College, Mumbai	76
14/12/19 & 04/01/20	Differential Calculus	Ms. Samiksha Mahajan, M.Sc –Assistant Professor , Jai Hind College, Mumbai	76
11/01/20 & 18/01/20	Differential Equations	Mr. Kunalkumar Shelar M.Sc- Assistant Professor VES College Chembur(W).	76
4/11/19 to 9/11/19	Mini MTTS –Mathematics Training Programme	Birla College, Kalyan in collaboration with MTTS Trust.(funded by NBHM)	03

8. GUEST LECTURES ORGANIZED

DATE	TITLE OF THE LECTURE	NAME, DESIGNATION AND HOST INSTITUTE	BENEFICIARIES
24/01/20	Plant Tissue Culture	Ms.Chanda Maurya In-Charge , Green House Management, Ramnarain Ruia Autonomous College	85 FY,SY,TYBSc
13/02/20	Feminine Hygiene	Dr. Shubhada Gupta.	51 students from different faculties
22/11/19	Stereochemistry	Dr.Gail Carneiro Department of Chemistry, Sophia College	FYBSc: 90
10/02/19	Career in Chemistry after Graduation	Mr.Aditya Singh & Mr.Kailash Chavan AdJAM Educational Institute	SYBSc: 65
02/03/20	Our Universe	Mr. Suhas Naik Satam Programme Coordinator(Science),Nehru Planetarium, Nehru Centre	FYBSc: 50 SYBSc: 30
08/02/20	Bernstein Polynomials, Computer Aided Geometric Design and real Algebric Applications	Prof. Marie-Françoise Roy, University of Rennes, France was organized under IWM Visitors Programme together with K.J.Somaiya College (partially sponsored by NBHM)	Under Graduate Students: 78 Teaching Faculty:28 Research Scholars: 04 (15 colleges affiliated to University of Mumbai, IITB, and MPSTME NMIMS University)

9. FACULTY DEVELOPMENT PROGRAMMES / RESEARCH CONVENTION PARTICIPATED FOR ENHANCEMENT OF TEACHING, LEARNING AND RESEARCH

Date	Name of the Staff	Development Programme
15/02/20 & 16/02/20	Dr SunitaChahar (Dept of Botany)	National Workshop on “Mycological Techniques” at Satish Pradhan Dnyanasadhana College, Thane.
27/02/20 to 29/02/20	Dr SunitaChahar & Ms NaliniSingh (Dept of Botany)	National Seminar on ‘Recent Advances in Fungal Diversity, Plant– Microbe Interaction and Disease Management’ RFPIDM-2020, Title of poster : Evaluation of AM Spore Viability treated with Chitosan and Organic Solvents
04/09/19 to 03/12/19	Mrs Chetna Sharma (Dept of Zoology)	Short term course - IYPT 2019 India Programme- online course organized by IARC, centre for United nations
04/09/19 to 03/12/19	Mrs Lakshmi Prasuna (Dept of Chemistry)	Short term course - IYPT 2019 India Programme- online course organized by IARC, centre for United nations
16/09/19	Dr Phebe.K (Dept of Chemistry)	“India in Space & Nuclear Energy: Achievements & Challenges” at Nehru Science Centre, Worli, Mumbai
04/09/19 to 03/12/19		Short term course - IYPT 2019 India Programme- online course organized by IARC, centre for United nations
15/04/19 to 10/06/19	Dr Jayasree (Dept of Chemistry)	Assistant Prof Online course of 8weeks International MOOCs FDP on “Creating Open Source Cloud Based GNOMIO MOODLE of your own subject for OBE
04/09/19 to 03/12/19		Short term course - IYPT 2019 India Programme- online course organized by IARC, centre for United nations
12/12/19 & 13/12/19		“Microscale Technique in Chemistry” at Menon College, Bhandup
07/ 02/20 & 08/ 02/20		E-content development Course at DTSS College, Malad

01/02/20	Dr Kiran.U (Dept of Chemistry)	National Conference on New Dimensions of Chemistry at Wilson College
04/09/19 to 03/12/19		Short term course - IYPT 2019 India Programme- online course organized by IARC, centre for United nation
28/11/19 to 30/11/19	Mr Ramraj.S (Dept of Chemistry)	Workshop on "Chromatography & Spectroscopy" at SIES College, Nerul
04/09/19 to 03/12/19		Short term course - IYPT 2019 India Programme- online course organized by IARC, centre for United nations
28/11/19 to 30/11/19	Mr.Mahesh U (Dept of Chemistry)	Workshop on "Chromatography & Spectroscopy" at SIES College, Nerul
26/9/2019 to 28/9/2019	Dr.Vinita Dhulia (Dept of Physics)	Continuing Education & Quality Improvement Programme (CEP) course on 'Theory and Technology of Silicon Solar Cells' IIT Bombay
04/09/19 to 03/12/19		Short term course - IYPT 2019 India Programme- online course organized by IARC, centre for United nations
6/11/19 to 19/11/19	Dr.Rupali Patel (Dept of Physics)	Refresher Course in Characterization Techniques in Applied Physics" by UGC-HRDC at Department of Physics, University of Mumbai
19/8/19	Mrs. Pratibha Singh (Dept of Physics)	Workshop on "Uncertainty Analysis in Physics Experiments" at R. Jhunjhunwala College
10/06/19 to 12/06/19	Mrs.Veena B. Kamat (Dept of Maths & Stats)	National Conference IWM 2019 organised by IITB, Mumbai, funded by NBHM- National Board of Higher Mathematics
14/12/19 to 16/12/19	Mrs. S. Karthiyaini (Dept of Maths & Stats)	International Conference on "Mathematical Analysis & its applications" organized by South Asian University, New Delhi.

10. INTERDEPARTMENTAL / INTERCOLLEGIATE ACTIVITIES

Research Convention on “Nurturing UG and PG Research in Biological Sciences Organized by Departments of Botany and Zoology on 09th December 2019

The convention was held to provide a platform to students of UG and PG to showcase the depth of their knowledge regarding scientific method and their skill of carrying out research work and dissemination of result through poster and oral presentations.

Keynote Speaker: Dr. M.C.Arunan, Kishore Bharati Fellow & Visiting Scientist, CUBE, HBCSE, TIFR

Members of jury

Dr. Sashirekha S, Associate Professor, Department of Botany, Mithibai College

Dr. Aruna Rai, Head of Department of Botany, CHM College

Dr. Sachin Gosavi, Assistant Professor, Department of Zoology, Maharashtra College

Dr. Vanita Kamat, Assistant Professor in Zoology, Kirti College

Post Graduate Poster Presentation

There were **03** posters under PG category. Participants were from St. Xavier's, V.G. Vaze and G.M. Momin Women's College.

Under Graduate Poster Presentation

In the UG section there were **26** posters and participants were from St. Xavier's, Fort, V.G. Vaze, Mulund, G.M. Momin Women's College, Bhiwandi, SIES College, Sion, R.J. College, Ghatkopar, Bhavan's College, Andheri, Patkar College, Goregaon, Birla College, Kalyan and NES Ratnam College.

Post Graduate Oral Presentation

In PG category there were **05** Oral presentations by participants from R.J. College, Ghatkopar, Ruia College, Matunga and SIES College, Sion.

Under Graduate Oral Presentation

In UG Category **17** oral presentations from students of St. Xavier's, V.G. Vaze, G.M. Momin Women's College, SIES College, R.J. College, Bhavan's College, Patkar College, M.D. College and NES Ratnam College.

Total participation : **102** students of which **53** participants were from other colleges affiliated to Mumbai University and **49** of them were inhouse.

10 colleges from across Mumbai participated in the Convention. Teaching staff from Patkar College, SIES College and Bhavan,s College also attended the Convention.

SCI-TREK 2020(Intercollegiate & Intra-collegiate Science fest)

SCI-TREK is an annual feature of the Science faculty of the College. There are two events conducted

➤ **SCI-TREK 2020 — Dr.Abdul Kalam Memorial lecture series (Intercollegiate):**

It is an occasion when students get an opportunity to interact with eminent scientists who inspire them to strive for higher academic excellence. As part of ‘Dr.A P J Abdul Kalam Memorial Lecture Series’ a guest lecture was organized by all Science Departments collectively under DBT Star College Scheme. The resource person was Dr.Pushkar Ganesh Vaidya (Scientist & Philosopher, Head, Indian Astrobiology Research Centre & Centre for Science & Culture, United Nations). The topic was ‘Life in the Universe’.

The lecture focused on some main points like inclusiveness of Science subject where compartmentalization of it to various parts as maths, physics, chemistry, biology becomes immaterial. The mind power of the human being was shown to the students through a video.

420 students from all science Departments (FY/SY/TY/Msc-I/Msc-II) attended this session from our college, 18 students from five other colleges which are JVM Mehta, VPM, VKK Menon, Vaze Kelkar and RJ College.

➤ **SCI-TREK 2020 — Intra-Collegiate Academic fest:**

Intra-Collegiate Academic fest had varied competitions and displays. It involved exhibitions, model making, quizzes, games and other activities. These events enhanced students’ analytical, logical and realistic learning skills. It was conducted on 17th January 2020.

Students from all Science Departments showcased their talents in various events namely ‘Science Drama’, ‘Knowledge Corner’ and ‘Get the Best of Your Talent’. There were 12 groups (of 10 participants each) of skit from all Science Departments together – ie the Science Drama. It was a very good dramatic projection of various science facts, life history of scientists, science making life beautiful and even the misuse of certain scientific inventions.

Mathematics Department celebrated this day in memory of Dr. Ramanujam. they made participants, teaching and non-teaching staff play mental games as part of their 'Knowledge Corner'. There was a good response from the students, where they exhibited models, posters, research projects, new experimental designs – 32 exhibits were put up each with multiple entries On total 126 students participated. This made the event highly vibrant and enjoyable.

'Get the Best of Your Talent' was the third category where students participated enthusiastically in singing songs and rap, advertised products, narrated poems all on science. 22 students participated in this category.

11. OUTREACH ACTIVITIES

I) VigyanTarang - Teaching science through model making for Class VI to Class IX students on 26/02/20 to 28/02/20

National Science Day was celebrated on 28th February 2020 by organizing VigyanTarang - outreach activity for schools by NES Ratnam College of Arts, Science & Commerce under DBT (Department of Biotechnology) Star College Scheme in collaboration with NGO – Pratham by providing mentors/ experts in this field and NGO – Happie foundation.

The department of Mathematics took an initiative to collaborate with Pratham Education Foundation through Mr. Vikas Varma, alumni of the department. Mr Vikas Varma is working with PRATHAM as Math Educator, International Collaborations, since 2012.

The activity was teaching science through model making for Class VI to Class IX students. Eleven Schools in and around Bhandup participated were

1. SVB Oxford School
2. NES Deaf School
3. Br NathPaiVidyalaya
4. Yashwant ChandjiSawantVidyamandir
5. GayatriVidyamandir
6. PragatikVidyalaya
7. ParagVidyalaya
8. BPES High School
9. Smt . R.S. Singh Vidyamandir
10. Dr.DattaSamantMadhyamikVidyalaya , Kanjurmarg(W)
11. NES National High School

37 students and 8 teachers were the immediate beneficiaries. Around 500 students visited the Science fair on 28th February 2020.

The two day workshop on model making (26th and 27th February) culminated in a Science Fair (on 28th February), where all the models were displayed and students from neighboring schools were invited to see these models.

The models made were microscope from matchbox, maglev Train, Infinite path, Periscope, Images formed by two mirrors, Eyes, Ear, Skeleton system and Brain Cap, Lemon battery, Potato battery, Animal cell, Plant cell, Newtons cradle, Day and night model, PI model, Number wheel.

Some ready models items were shown like Telescope, Double cone, Inertia, Globe, Tower of Pisa, Dynamo, Microscope. Students and teachers were given participation certificate and they expressed their gratitude and acknowledged satisfaction.

II) UNMESH FEST– NON TEACHING STAFF (Inter-collegiate) on 06.03.2020

Three talks were arranged for the benefit of non-teaching staff. There was participation from 16 Colleges and 31 non-teaching staff attended the program.

➤ ROLE OF TIME MANAGEMENT IN PERFORMANCE

Resource Person: Mr. Raghunath Medge, President of Mumbai's Dabbavala Association .

Mr Raghunath Medge described the working system of Mumbai Dabbawalas and how they complete the task within stipulated time. The session gave an insight to the participants about effective time management.

➤ WORKSHOP ON TIMELY DATA COLLECTION

Resource Person: Mr. Asif K. Rampurwala Vice Principal of Vidyalankar School of Information Technology. He made the participants aware about the importance of saving the data in the drive from NAAC point of view.

➤ WORKSHOP ON YOGA FOR STRESS FREE LIFE

Resource Person : Ms. Rita Vazirani,, Executive Administrator of Swami Vivekanand College Chembur She enlightened participants about the importance of Yoga in leading a stress free life. With the help of one of her students, she demonstrated how 'Yoga Asanas' and 'Pranayam' could be performed while sitting in the office chair which will help in having a positive physical and mental health.

12. AWARDS RECEIVED BY STAFF

Staff	Designation	Award
Dr.Sunita Chahar & Ms Nalini Singh	Associate Professor Dept. of Botany Ph.D student	First Prize in the Poster Presentation titled “Evaluation of AM Spore Viability treated with Chitosan and Organic Solvents” in the National Seminar on ‘Recent Advances in Fungal Diversity, Plant– Microbe Interaction and Disease Management’ RFPIDM-2020, Banaras Hindu University from 27/02/20 to 29/02/20
Mrs. Mamta Yadav	Assistant Professor Dept of Botany	Participated in the poster competition in 14 th Maharashtra State Inter-University Research Convention, Avishkar 2019-20, Mumbai University
Dr. Jayasree Sasangan	Associate Professor Dept. of Zoology	Central University of Finance and Economics in Beijing, China and presented a paper on “Recent Developments in Biological Sciences and Prospects for Cooperation between India and China.”
Dr. Meenakshi Kumaraguru	Associate Professor Dept. of Zoology	DD Kosambi Teacher Mentor Award 2019 has been conferred under “Collaboratively Understanding Biology Education”, A Stemgames.metastudio.org. Initiative, Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research (TIFR), for her exemplary contribution to collaborative biology research
Dr Kiran Upar	Assistant Professor Dept. of Chemistry	<ul style="list-style-type: none"> ➤ Certificate of excellence awarded for successfully completing the role and responsibility as IYPT 2019 program Coordinator ➤ Certificate of achievement was awarded to NES Ratnam College of Arts, Science & Commerce for successfully implementing the IYPT 2019 program International Short-Term Certification course on Campus

13. AWARDS RECEIVED BY STUDENTS

1. Kosambi D.D “Young Scientist” CUBE Award 2019 has been given to Aakanksha Sunilkumar of SYBSc, under “Collaboratively Understanding Biology Education”, A Stemgames.metastudio.org. Initiative, Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research (TIFR) for her exemplary contribution to collaborative research.
2. Kosambi D.D CUBE Award 2019 has been conferred on Kunal Kadam of SYBSc, under “Collaboratively Understanding Biology Education”, A Stemgames.metastudio.org. Initiative, Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research (TIFR), for his exemplary contribution to collaborative research and active engagement in scientific endeavor.
3. CUBE Movie Makers’ Club Award 2019 has been conferred on Kunal Kadam, Omkar Badnale and Anshu Kadam of SYBSc, under “Collaboratively Understanding Biology Education”, A Stemgames.metastudio.org. Initiative, Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research (TIFR), for their exemplary contribution to short and crisp movies of their research work in model organisms.
4. 13th November 2019 – Ms. Mahalaxmi Pillai (Alumna – 2017-18) has interned with STEAM Academy as Science Educator for science program at Billabong High International School, Santa Cruz, Mumbai. She explained the Concept of Evolution to school students. The president of STEAM Academy is Dr. A.P.Jayaraman.
5. IIT JAM-2020 : 24 Students of Dept of Mathematics appeared and 15 of them cleared, 17 students from department of Chemistry appeared and one student cleared with a rank of 407 and 5 students appeared from Department of Physics
6. Ms. Tulika Sinha & Mr. Deepak Singh – Received Consolation Prize for ‘Effect of Annealing Parameter of Chemically Routed TiO₂ nanoparticles on Photo degradation of Methyl Orange’ at National Seminar on Advanced Materials organized by The Institute of Science, Dr.Homi Bhabha State University, Mumbai on 3.3.2020 & 4.3.2020

7. Mr.Kunal Dynandeo Kadam and Ms.Anshu Kadam received first prize for their paper titled "*To find Caenorhabditis elegans in Indian native soil*" in the Inter collegiate Research Convention on "Nurturing UG and PG Research in Biological Sciences organized by Departments of Botany and Zoology of N.E.S.Ratnam College on 09th December 2019
8. Ms.Siddhi panchal and Ms.Preeti Gupta received second prize for their paper titled "*Biomass production of Spirulina in laboratory setup*" in the Inter collegiate Research Convention on "Nurturing UG and PG Research in Biological Sciences organized by Departments of Botany and Zoology of N.E.S.Ratnam College on 09th December 2019
9. Ms.Shivani Singh, Ms.SimranWaikar, Ms.Ashwini Kodag received third prize for their paper titled "*Carbon Sequestration potential by trees of NES Complex, Bhandup, Mumbai.*" in the Inter collegiate Research Convention on "Nurturing UG and PG Research in Biological Sciences organized by Departments of Botany and Zoology of N.E.S.Ratnam College on 09th December 2019
10. Ms.Sonal Maharana received second prize in the Intercollegiate Powerpoint competition, organised by Science Association, GM Momin's College, Bhiwandi.on 09th December2019 for the topic Pharmacological Mafia.
11. Mr.Kunal Kadam, Ms,Anshu Kadam & Mr.Omkar Badnale received third prize in the program "Primers 2020" on 09th January 2020 organised by Dept. of Biotechnology, Elphinstone College, Mumbai for their project Questioning the Standard in Petri-Art.
12. Ms.Anshu Kadam & Mr.Kunal Kadam of S.Y.B.Sc class participated in SCI-TECH FEST at JVM'S Mehta College, Airoli and won first Prize in Poster competition on 18/12/2019

➤ **Students participation in the “Inter-University – Avishkar Research Convention- 2020”**

1. Ms.Siddhi Panchal and Ms.Preeti Gupta presented their paper titled “Biomass production of Spirulina in laboratory setup”.
2. Ms.Shivani Singh, Ms.SimranWaikar, Ms.Ashwini Kodag presented their paper titled “Carbon Sequestration potential by trees of NES Complex, Bhandup, Mumbai”.
3. Mr.Mangesh Patkar and Ms.Neha Chauhan presented their paper titled“Some hydrological parameters of Shivaji Talao, pre and post Ganpathi Visarjan: A Case Study”.
4. Mr. Kunal Kadam and Ms.Anshu Kadam presented their paper “To find *Caenorhabditis elegans* in Indian native soil”

14. BOOKS PURCHASED FOR THE YEAR 2019-20

No	TITLE	Author	No. of copies
Department of Mathematics and Statistics			
1	Famous Puzzles of Great Mathematicians	Miodrag S. Petkovic	1
2	The Math Problems Notebook	ValentinBoiu, Louis Funar	1
3	Mathematical Vistas	Peter Hilton, Derek Holton Jean Pedersen	1
4	Higher Arithmetic	Harold M. Edwards	1
5	Thirty-three Miniatures	Jiri Matousek	1
6	The Joy of Factoring	Samuel S. Wagstaff	1
7	Mathematical Ciphers	Anne L. Young	1
8	Elementary Number Theory	David M. Burton	1
9	Linear Algebra and Matrices	Helene Shapiro	1
10	Game Theory Alive	Anna R. Karlin ,Yuval Peres	1
11	The Mathematics of Finance	Victor Goodman, Joseph Stampfli	1
12	An Introduction to the History of Algebra	Jacques Sesiano	1

13	A Moscow Math Circle	Sergey Dorichenko	1
14	Dr. Euler's Fabulous Formula	Paul J. Nahin	1
15	Elementary Number Theory	David M. Burton	1
16	Mathematics Magic and Mystery	Martin Gardner	1
17	Basic Number Theory 2/e	S B Malik	1
18	The Joy of x	Steven Strogatz	1
19	Infinite Powers	Steven Strogatz	1
20	Euclid's Window	Leonard Mlodinow	1
21	Mathematical Puzzles Sam Loyd	Martin Gardner	1
Department of Botany			
22	Methods & Techniques in Plant Nematology	N.G.Ravichandra	1
23	SYBSc Text Book	Vikas. G, Behnaz.P, Neeraja. T, Rachana. B	2

15. QUALITATIVE IMPROVEMENTS DUE TO DBT SUPPORT

The benefits of the Star DBT scheme for the college are as follows:

- ✓ Procurement of new equipment's has aided in upgrading existing teaching resources
- ✓ Hands on training for the students enhanced the quality of experiential learning of the students
- ✓ It has enriched each departmental library with reference books
- ✓ Its support has made it possible to organize industrial visits to industries and scientific research institutes reinforcing theoretical knowledge gained in classroom.
- ✓ Guest lectures organized for students benefit provided expertise in a topic added credibility to the curriculum content
- ✓ The improvement of IT facilities has motivated students to browse the latest research in science and choose projects which are application related.
- ✓ Students have successfully presented their research based projects in national Seminars and in Inter University Avishkar Research Convention.

16. PROBLEMS FACED IN IMPLEMENTATION: Nil