

Progress Report
by colleges supported under
DBT Star College Scheme
(2018-19)

Submitted by:
Shri Shivaji Mahavidyalaya Barshi,
Dist: Solapur (MS)



Department of Biotechnology

2018-19

**Proforma for submission of progress reports by
colleges supported under Star College Scheme**

S.No.	Name of the College	:	Shri Shivaji Mahavidyalaya Barshi
1	Name of Departments supported	:	Chemistry, Microbiology, Zoology, Physics, Botany, Electronics
2	Name of Coordinator, designation, address, phone nos.	:	Overall Co-ordinator/Member Secretary : Dr. V. M. Gurame, Assistant Professor, Department of Chemistry, Shri Shivaji Mahavidyalaya Barshi (9767131206) vmgurame@gmail.com
3	No. of regular faculty with Ph.D. in each participating department	:	Chemistry (5), Zoology(4) Microbiology(2) ,Botany(1), Electronics(2), Physics (2)
4	List of courses (B.Sc./M.Sc./PG Diploma, certificate etc) run by different participating departments	:	Chemistry (B. Sc., Ph.D), Microbiology (B. Sc., M.Sc., Ph.D.), Zoology (B. Sc.,Ph.D), Physics (B. Sc.,Ph.D.), Electronics(B. Sc., Ph.D.) Botany(B. Sc.), Certificate Course in soil and water analysis Diploma in food preservation, Diploma in Healthcare
5.	Cut off percentage for admission in different courses in Participating departments, positions in university, Percentage of result in 2017-18 academic session :		54.30 % Number of students admitted to First Year B.Sc. (General), includes Chemistry, Zoology, Microbiology, Physics, Electronics, Botany, Mathematics, Statistics and computer science) Percentage result of participating departments in last examination is 89%

6. List of projects undertaken by students, industrial visits by students, summer training in last one year :

Sr No.	Name of Students	Title of Project
1	Suhas Chikane	Study on total hardness and TDS of Different water sample from Barshi and Around area.
2	Akas Khochale	Study on total hardness and TDS of Different water sample from Barshi and Around area.
3	Swamini Shinde	To study adultration in different milk samples in Barshi Area
4	Muthal Supriya	To study adultration in different milk samples in Barshi Area
5	Snehal Kakade	Poultry breeds and their diseases.
6	Prasad Tale	Poultry breeds and their diseases.



7	Shweta Patil	Economical important freshwater fishes and their parasitic diseases in Barshi Tahsil
8	Neha Jadhav	Economical important freshwater fishes and their parasitic diseases in Barshi Tahsil.
9	Bhadange H.S	Dark Sensor using LDR
10	Deshmukh A.A.	Making Of LASER Show Projector
11	Dhumal K.N.	Smart Street Lighting system
12	Gatkal A.B.	Water Level Indicator
13	Gawali S.S.	Rain Detector Alarm
14	Gore S.S.	Musical Siren
15	Jadhav S.H.	Water Level Indicator
16	Jadhwar P.C.	Touch Sensor
17	Kale A.H.	How To Make Room Heater At Home
18	Kale P.J.	How To Make Room Heater At Home
19	Kanade B.R.	Synthesis Of Bi By Electrodeposition Method
20	Kapse S.S.	Electronic Letter Box
21	Korade M.S.	Touch Sensor
22	Khabale R.M.	Hydromarker
23	Kharat V.V.	Hydromarker
24	Kokate P.S.	Automatic Street Light ON and OFF
25	Kshirsagar R.S.	Electronic Letter Box
26	Lomate P.R.	Rain Detector Alarm
27	Nil A.D.	Making Of LASER Show Projector
28	Nirpal N.B.	Dark Sensor Using LDR
29	Padule S.S.	Musical Siren
30	Patekar P.S.	Touch Sensor
31	Patil A.V.	Rain Detector Alarm



32	Shinde B.S.	Synthesis Of Bi By Electrodeposition Method
33	Shinde P.B.	Automatic LED Street Light Using LDR Sensor
34	Shinde S.D.	Automatic LED Street Light Using LDR Sensor
35	Shingade P.K.	Laser Light Security Alarm
36	Shingade S.R.	Smart Street Lighting system
37	Sutar A.R.	Laser Light Security Alarm
38	Mr. Yadav J.K.	Wireless Security System using PIR Sensors
39	Mr. Rajmane S.S.	Wireless Security System using PIR Sensors
4	Miss. Patil U.U.	A Standard Reference Audio Tone Generator for Indian Classical Musical Instruments
41	Miss. Pawar G.N.	A Standard Reference Audio Tone Generator for Indian Classical Musical Instruments
42	Mr. Chavan S.S.	Water Valve Control Using Mobile Phone
43	Mr. Chipade V.S.	Bluetooth Controlled Home Automation System Using 8051 Microcontroller
44	Mr. Dure J.J.	Bluetooth Controlled Home Automation System Using 8051 Microcontroller
45	Ms. Bagal Namita Pradip	Sub-type diversity and Emergence of drug resistance in HIV -1
46	Ms. Kshirasagar Gitanjali Chandrakant	Microbiology Lab Management
47	Ms. Jadhavar Priyanka	Bacteriophages as remedies for bacterial diseases
48	Ms. Atkare Anuja Babasaheb	Phosphate solubilizing bacteria as biofertilizer and its application
49	Mr. Koli Navnatha Ramdas	Evaluation of various plant extract against the early blight disease of tomato
50	Mr. Surwase Suraj Sudam	Production of fungal consortia as Bio-pesticides.
51	Ms. Kade Amruta Abhiman	Emergency water purifier
52	Mr. Langote Sagar Nagnath	Studies on effect of medicinal plants against multi drug resistance – <i>Klebsiella</i> and <i>Pseudomonas species</i>
53	Ms. Shaikh Tabbu Raheman	Isolation of plastic degrading Bacteria
54	Mr. Waghmare Prutviraj Hanumant	Biocontrol potential of <i>Bacillus thuringiensis</i> isolated from soil sample against mosquito larva
55	Ms. Damare Shradhha Santosh	Antibacterial properties of <i>Adhatoda vasica</i> against multi drug resistance <i>Klebsiella</i> spp



56	Ms. Deshmukh N S	Nanoparticle catalysed photodegradation of Rhodamine B
57	Ms. Munde D S	Extraction of gold using FBIMMT ligand
58	Ms Dhale P C	Synthesis and characterization of Schiff bases
59	Ms Chavan S S	Synthesis of N containing Heterocycles in glycerol medium
60	Ms Dhavan Monika	Determination of caffeine in different tea and coffee samples
61	Ms Ghadage P P	Mixed metal oxide catalyzed photodegradation of Malachite green
62	Barade Suraj Dipak	Study of Medicinal Plants in Barshi Region
63	Barangule Jyoti Somnath	
64	Bhoite Vishal Balassheb	
65	Chavan Sandeep Lahu	
66	Deshmukh Onkar Murari	
67	Fartade Vijay Gopinath	
68	Gadekar Priyanka Rama	
69	Ghadge Shrikant Shivaji	
70	Gunjal Aniket Shrihari	
71	Humbe Tejshree Shirish	
72	Kale Snehal Uttam	
73	Kapase Akshay Pandurang	
74	Lokhande Swapnali Balasaheb	
75	More Puja Bharat	
76	Mote Prajakta Bhimrao	
77	Mundhe Shital Mahadev	
78	Narkhedkar Achyut Ganesh	
79	Patil Mohini Yogiraj	
80	Salunke Akash Ramakant	
81	Shelke Devayani Rajendra	
82	Shinde Pooja Chandrakant	Analysis of Physical, Chemical and Biological Parameters of Drinking water from Barshi city.
83	Vaidya Dhanshri Hanumant	
84	Waghmare Pooja Bhimrao	
85	Zombade Kiran Gulab	
86	Ghadge Diksha Satish	
87	Jodave Ankita	



	Bibhishan		
88	Katmore Swapnali Sharad		
89	Lokhande Vishakha Lakshman		
90	Patil Sujitsing Ram		
91	Savant Sonali Namdev		
92	Barkul Ankita Umesh		Preparation of campus flora
93	Bhosale Rohit Baburao		
94	Bhosale Sneha Dattatraya		
95	Choure Manisha Rameshwar		
96	Dhavane Priyanka Pandurang		
97	Doke Rutuja Bhagvan		
98	Dudhe Amit Ajinath		
99	Fartade Amruta Hanumant		
100	Gholap Shubhangi Parmeshwar		
101	Jadhav Apeksha Ajitkumar		

7. Trainings, Workshops, conferences attended, scholarships received and tours/visits organized

Sr No.	Name of Students	Name of conference, Trainings, Workshops	Organized by
1	*Gavali S. S.	Seminar on Nuclear Energy.	Solapur University, Solapur.
2	*Patil A.V.		
3	Sutar A. R.		
4	Shingade P. K.		
5	*Gore S. S.		
6	*Deshmukh A. A.		
7	*Padule S. S.		
8	*Neel A. D.		
9	*Kokate P. S.		
10	Duchal S.B.	Modern Approaches in Sciences	K.N.Bhise Arts, Commerce & Vinayakrao Patil Science College, Kurduwadi
11	Rajage A.M.		
12	Ambure S.N.		
13	Ghadge R.D.		
14	*Surade A.A.		
15	*Harihar V.G.		
16	Phadtare P.B.		
17	Lawale M.S.	One Day workshop on "Hands on Practice on Automatic PCB Making Machine	Department of Electronics, Shri Shivaji Mahavidyalaya, Barshi
18	Mr. Yadav J.K.		
19	Mr. Rajmane S.S.		
20	Miss. Patil U.U.		
21	Miss. Pawar G.N.		



22	Mr. Chavan S.S.		
23	Mr. Chipade V.S.		
24	Mr. Dure J.J.		
25	Miss. Patil U.U.	Science Exhibition	Polytechnic College Barshi
26	Miss. Pawar G.N.		
27	Mr. Chavan S.S.	Science Exhibition	Polytechnic College Barshi
28	Mr. Chipade V.S.		
29	Ms. Atkare Anuja Babasaheb	International Conference on “Empowering Society with Microbial Technology”	Tuljaram Chaturchand college of Arts, Science & Commerce Baramati
30	Mr. Surwase Suraj Sudam	International Conference on “Empowering Society with Microbial Technology”	Tuljaram Chaturchand college of Arts, Science & Commerce Baramati
31	Ms. Kade Amruta Abhiman	International Conference on “Empowering Society with Microbial Technology”	Tuljaram Chaturchand college of Arts, Science & Commerce Baramati
32	Mr. Andhare Vaibhav Abhimanyu	International Conference on “Empowering Society with Microbial Technology”	Tuljaram Chaturchand college of Arts, Science & Commerce Baramati

- Eleven students were awarded with DST Inspire scholarship and five got LIC golden Jubilee scholarship.
- Nine students of Zoology dept. participated in workshop at Yogeshwari Mahavidyalaya Ambejogai
- Seven Students of the electronics Department participated in workshop on PCB Designing”
- 121 students of chemistry department participated in state level workshop “Chemistry the Mirror of Industry”.
- 17 students of physics department participated in seminar at Kurduwadi and Solapur.
- 121 students of chemistry department participated in state level workshop “Applications of basic science in Forensic Sciences”.
- 240 students of Botany department have participated in Botany festival and Skill development workshop
- Eight students of Botany department have participated in national seminar at D.B.F. Dayanand college of Arts and Science Solapur
- 230 students of zoology department participated in Zoology Festival.
- 620 B SC I, II, III students visited the science exhibition at Polytechnic college Barshi.



Significant scholarships/fellowship received to students of these departments

Sr No	Name of students(class)	Achievement/scholarship
1.	Ms. Jadhav S G	DST Inspire SHE
2.	Ms. Deshmukh A A	DST Inspire SHE
3.	Ms. Gavhane P P	DST Inspire SHE
4.	Ms. Shaikh T R	DST Inspire SHE
5.	Mr Arjune V S	DST Inspire SHE
6.	Ms Aware D S	DST Inspire SHE
7.	Ms Banker D S	DST Inspire SHE
8.	Mr Jogdand G N	DST Inspire SHE
9.	Ms Karale R S	DST Inspire SHE
10.	Mr Londhe P V	DST Inspire SHE
11.	Mr Pandhare S A	DST Inspire SHE
12.	Ms. Gadhave S A	LIC Golden Jubilee Scholarship
13.	Ms. Shinde P. S.	LIC Golden Jubilee Scholarship
14.	Ms Rokade A A	LIC Golden Jubilee Scholarship
15.	Mr Jugdar R D	LIC Golden Jubilee Scholarship

103 students of these departments were awarded with central sector scholarship

Tours/visits Organized

Sr. No.	Locality	Number of Students participating
1	Bhigwan back water of Ujani dam water reservoir	180
2	Alibag : To study marine ecosystem	87
3	Ganesh lake Barshi: To study parameters of water body	8
4	Botanical Excursion for B.Sc. I, III students at Ramling Hills of Balaghat ranges Dist:	239



	Osmanabad	
5	Botanical Excursion for B.Sc. II and III students at Wadawal Nagnath Dist: Latur	123
6	Educational Tour To Hyderabad	23
7	Visit To MSEB	29
8	Visit To Cancer Hospital	12
9	RRS Fertilizers Pvt. Ltd. Barshi	72
10	Rambhai Shah Blood Bank	72
11	Cancer Hospital	25
12	Hydrabad (Usmania University)	25
13	Bhagwant Blood bank	144

7. Training received by faculty from participating departments:

Sr.No.	Name of faculty	Training/conference Name
1	Dr.A.M.Fartade	International conference in Modern Trends in Sciences, Bali, Indonesia.12-16 May2018
2	Dr.S.S.Salunkhe . Dr.A.M.Fartade	1st International conference on "Material and Environmental Science" organized by Shivaji University Kolhapur and Shri Y.P. Science College Solankur. 6-7 December 2018
3	Dr.S.Salunkhe. Dr.A.M.Fartade	106th Indian Science Congress held at Lovely Professional University,Jalandhar,Panjab.3 -7 January 2019
4	Dr.U.V.Gavhane Dr.Chati R.S Mr.N.A.Pawar Mrs.S.S.Jadhav	Advances in pure and applied sciences,Balvant College Vita ,Dist. Sangali.5-6 January 2019
5	Dr.U.V.Gavhane Dr.Chati R.S Mr.N.A.Pawar	National Workshop Changing perspepectives of Inland Fisheries.Yogeshwari Mahavidyalaya,Ambajogai ,Dist.Beed:
6	Dr.U.V.Gavhane Dr.Chati R.S Dr.A.M.Gaikwad	Sericulture and apiculture S.M.D.M.Mahavidyalaya.Kallamb, Dist.Osmanabad.16 Feb 2019
7	Dr.U.V.Gavhane Dr.Chati R.S. Mr.N.A.Pawar	"Biodiversity and its conservation" D.S.Garad Mahavidyalaya, Mohol Dist. Solapur 16 Oct 2018
8	Dr.Chati R.S.	Shining Maharashtra Exhibition, Solapur(26th to 28th sept. 2018).

Sr. No.	Name of Faculty	Training Conference Name
1	Bhise Damaji Shankar	State Level seven days Faculty Development Programme for IQAC Coordinator and Members (24 th to 30 th June 2018)



		Shining Maharashtra Exhibition, Solapur(26th to 28th sept. 2018).
		State Level one day workshop on B.Sc. III (CBCS Pattern) Syllabus Discussion in Botany(22 nd December 2018)
2	Patil Prakash Appasaheb	Workshop on Theory Syllabus of B.Sc. III Botany New Syllabus pattern(9 th January 2019)
3	Dr S P Gaikwad	Swayam mentor training (Ahmadabad)
4	Ms S S Gaikwad	Workshop on E-content Development (Barshi)

Sr No.	Name of Faculty	Name of conference, Trainings, Workshops	Organized by
1	Smt. Kabbur S.M.	1)Seminar on Nuclear Energy. 2)Modern Approaches in Sciences. 3)E-content Development 4)Applications Of basic science In Forensic Sciences	1)Solapur University, Solapur. 2)K.N.Bhise Arts,Commerce & Vinayakrao Patil Science College, Kurduwadi. 3)Shri.Shivaji Mahavidyalay, Barshi. 4) Shri.Shivaji Mahavidyalay, Barshi.
2	Dr. Kothawale R.R.	1) Seminar on Nuclear Energy 2) E-content Development 3) IISF-2018 Lukhnow	1)Solapur University, Solapur. 2)Shri.Shivaji Mahavidyalay, Barshi. 3) DST, DBT, New Delhi
3	Dr. Waghmare S.D.	1) Seminar on Nuclear Energy 2)Modern Approaches in Sciences. 3) E-content Development	1)Solapur University, Solapur. 2)K.N.Bhise Arts,Commerce & Vinayakrao Patil Science College, Kurduwadi. 3) Shri.Shivaji Mahavidyalay, Barshi.
4	Miss. Bhosale S.A.	1) Seminar on Nuclear Energy 2)Modern Approaches in Sciences.	1)Solapur University, Solapur. 2)K.N.Bhise Arts,Commerce & Vinayakrao Patil Science College, Kurduwadi.
5	Miss. Gadhave V. P.	1) Seminar on Nuclear Energy 2)Modern Approaches in Sciences.	1)Solapur University, Solapur. 2)K.N.Bhise Arts,Commerce & Vinayakrao Patil Science College, Kurduwadi.
6	Miss. Patil M. B.	1) Seminar on Nuclear Energy.	1)Solapur University, Solapur.
7	Miss. Kshirsagar P. L.	1) Seminar on Nuclear Energy	1)Solapur University, Solapur.
8	Miss. Nagtilak A. M.	1) Seminar on Nuclear Energy	1)Solapur University, Solapur.
9	Miss. Landage S. I.	1)Modern Approaches in Sciences.	1)K.N.Bhise Arts,Commerce & Vinayakrao Patil Science College, Kurduwadi.

Sr.No.	Name of faculty	Training/conference Name
1	Dr. U.R. Ghodake	One Day Faculty Development Program on "Virtual LABs" Organized by Sangameshwar College, Solapur, IIT, Mumbai and PVG COET, Pune (Regional Center) on Saturday, 19 th Jan. 2019 <ul style="list-style-type: none"> Workshop on E-content Development One Day Faculty Development Program on "Hands on Practice on CNC Automatic PCB Prototype Making Machine", organized by Department of Electronics, Shri Shivaji Mahavidyalaya, Barshi, on 23rd February 2019.



2	Dr. K. P. Deshmukh	One Day Faculty Development Program on "Virtual LABs" Organized by Sangameshwar College, Solapur, IIT, Mumbai and PVG COET, Pune (Regional Center) on Saturday, 19 th Jan. 2019
		<ul style="list-style-type: none"> • Workshop on E-content Development • One Day Faculty Development Program on "Hands on Practice on CNC Automatic PCB Prototype Making Machine", organized by Department of Electronics, Shri Shivaji Mahavidyalaya, Barshi, on 23rd February 2019.

Sr.No.	Name of faculty	Training/conference Name
1	Dr. T N Lokhande	DAE BRNS Symposium at Goa Workshop on Chemistry the Mirror of Industry Workshop on Applications of basic science in Forensic Science Seminar at KN Bhise College Kurduwadi.
2	Prof S G Jadhav	Workshop on e-content development Workshop on Applications of basic science in Forensic Science
3	Dr. A. B. Shaikh	DAE BRNS Symposium at Goa Workshop on Chemistry the Mirror of Industry Workshop on Applications of basic science in Forensic Science
4	Dr S H Gaikwad	DAE BRNS Symposium at Goa Workshop on Chemistry the Mirror of Industry Workshop on Applications of basic science in Forensic Science
5	Mr S H Patil	Workshop on Chemistry the Mirror of Industry Workshop on Applications of basic science in Forensic Science
6	Dr. V M Gurame	IISF 2018 Lughnow Workshop on Chemistry the Mirror of Industry Workshop on Applications of basic science in Forensic Science
7	Mr D K Jamale	Workshop on Chemistry the Mirror of Industry Workshop on Applications of basic science in Forensic Science Short term program at Goa University Goa.
8	Ms R S Jangale	Workshop on Chemistry the Mirror of Industry Workshop on Applications of basic science in Forensic Science

1	Dr P R Thorat	IISF 2018 Lughnow
2	Mrs. Lokhande S. R.	International Conference Tuljaram Chaturchand college of Arts, Science & Commerce Baramati
3	Dr. Karad D.D.	International Conference Tuljaram Chaturchand college of Arts
4	Ms. Shinde M. M.	International Conference Tuljaram Chaturchand college of Arts

• All the teachers of these departments have attended in workshop on e-content development.

8. **List of exhibitions/seminars/training courses conducted by the college :**

- Workshop on Chemistry the Mirror of Industry
- Workshop on Applications of basic science in Forensic Sciences in collaboration with Solapur University
- Workshop on E-content Development in collaboration with Ahmednagar Institute
- Students also participated in Regional research festival, University level and state level Avishkar research festival and five got prizes also.
- Botany festival and Workshop on Flower decoration
- Poster presentation competition was organized by Zoology Department
- Organization of Physica festival
- Organization of Zoo festival



- Organization of One Day workshop on “Hands on Practice on Automatic PCB Making Machine.
9. **Name, designation, host institute of guest faculty invited :**

Sr No.	Name of resource person	Designation/Institute Name
1	Mrs.Mayuri Khaire	M.D of Shivaay Pearl farming and training Centre,Nagpur
2	Shri Sharad Jadhav	Sericulture Development Officer, ,Solapur
3	Shri Katti A.Y.	Senior Technician, Sericulture Department, Solapur
4	Shri Annasaheb Gophane	Assistant Professor, Department of Zoology Shivaji University, Kolhapur.
5	Dr. R. S. Patil	Asso. Prof. & Head, Dept. of Physics, Vivekanand College, Kolhapur
6	Prof. Vaibhav Bachhuwar	School of Physical Sciences, Solapur University, Solapur
7	Dr P P Wadgaokar	NCL Pune
8	Dr. R. R. Kumbhar	Jaysingpur College Jaysingpur
9	Dr. V. M. Gurame	Shri Shivaji Mahavidyalaya Barshi
10	Dr. Mangesh Kaulage	IISc Bangalore
11	Dr. G. S. Rashinkar	Shivaji University Kolhapur
12	Dr. P. V. Anbhule	Shivaji University Kolhapur
13	Shri Vinay Sanghavi	Sanghavi Quality Products Barshi
14	Shri Madan Shinde	Cipla Ltd. Pune
15	Dr. S. I. Patil	Pro-Vice Chancellor, Solapur University, Solapur
16	Dr. S. G. Narwade	Government Institute of Forensic Science, Aurangabad
17	Dr Rajesh Kumar	Government Institute of Forensic Science
18	Dr. D. D. Gaikwad	Government Institute of Forensic Science

10. **Date of Advisory committee meeting:** 31/07/2018



11. List of New Practicals/demonstrations introduced in different departments in last one year :

Chemistry

- Analysis of Commercial talcum powder
- Distribution law
- Glucose estimation by Polarimeter
- Study of Iron salicylate complex by colorimetry
- Dissociation constant of dibasic acid
- Study of chromatography
- Preparation of transition metal complex
- Determination of total hardness of water
- Analysis of Heavy metals ions in Environmental samples and health hazards(Zn)
- To study pH, Conductivity and total solids in soil samples.
- To study different parameters of water samples.
- To determine dissociation constant of weak acid conductometrically
- To verify the Onsager law.

Department has successfully conducted all other practicals by increasing the accessibility and handling of instruments/glasswares.

Botany

- Qualitative and Quantitative estimation of carbohydrate, protein, nucleic acid and fats from plant samples.
- Isolation of DNA from plant material.
- Separation of Amino-acid by chromatography
- Estimation of Vitamin C from different plant samples.
- Separation of Alkaloids
- Tissue culture techniques (Demo)
- Somatic embryogenesis (Demo)
- Micro propagation (Demo)
- Separation of Isozymes using electrophoresis. (Demo)

Zoology

- Parasitology .(methodology of identification of parasites)
- To find out Ph of given sample.
- Estimation of Dissolved oxygen
- Isolation and separation of biomolecules
- To Check the weight of the given material
- Estimation of proteins and Carbohydrates
- Observation and identification given specimens/Slides/materials

Department has successfully conducted all other practicals by increasing the accessibility / handling of instruments/ glasswares. Department has successfully conducted all other Demonstrations about dissection using LCD projector.

Physics

- Use of C.R.O. for measurement of AC, DC voltage and frequency.
- Characteristics of FET.
- Constants of Ballistic Galvanometer
- Impedance of LCR series circuit
- Study of Characteristics of G M tube and determination of its operating voltage, Plate length and slope etc
- Logarithmic decrement to determine viscosity of a given liquid
- Motion of Spring and calculate (a) Spring Constant and (b) Value of G
- Diameter of a thin wire by studying the diffraction produced by it
- Equivalent conductivity of solution at its infinite dilution..
- SCR firing by UJT



- RS and JK flip flop
- FET as VVR
- Seven Segment Display
- Characteristics of SCR
- Estimation of efficiency of GM counter
- Determination of Beta particle range and maximum energy
- Hall effect
- Resistivity of semi conducting material by four probe method.
- Band gap/temperature sensor using semiconductor diode.
- Temperature sensor (PTCR & NTCR)
- Thin film preparation by any chemical method with different preparative parameters.

Electronics

- Kirchoff's Laws
- Thevenin's Theorem
- Superposition Theorem
- Characteristics of Semiconductor Diode
- Characteristics of BJT (CE and CB configurations)
- Characteristics of SCR
- Universal Gates
- Demorgan's Theorem
- Study of Flip Flops (RS, D, JK)
- Study of Counters ($\div 2$, $\div 5$, $\div 10$)
- Study of Multiplexers and Demultiplexers
- Study of Encoders and Decoders
- Study of Amplifiers (CE and CC configurations)
- Study of Oscillators (RC and LC oscillators)
- Study of Multivibrators (Astable, Monostable and Bistable)
- OP-AMP as Inverting and Non-Inverting Amplifier
- OP-AMP as Adder and Subtractor
- OP-AMP as Multivibrator (Astable and Monostable)
- Study of Digital to Analog(D/A) and A/D Converters
- SCR firing by UJT
- Light Dimmer using TRIAC
- Speed Control of DC Motor using SCR
- Study of Amplitude Modulation and Demodulation
- Data Communication using OFC cable (Optical Fiber Communication)
- Study of Instrumentation Amplifier
- Study of Load Cell
- Study of Light Activated Turn-On/ Turn-Off Circuits
- Study of On/Off Temperature Controller
- Study of Programmable Amplifier
- Study of LAN

Microbiology

- Electrophoretic separation of DNA
- Isolation of DNA from Bacteria
- Experiments on bacterial recombination process
- Production of Biofertilizers & Biopesticides.
- Isolation of Bacteriophage & Phage titration
- Estimation of alcohol
- Estimation of available Nitrogen from Soil
- Microbiological analysis of drinking water
- SPC of market Biofertilizers/milk /water /food



- Examination of Milk, i) DMC ii) Quantitative analysis of milk iii) Efficiency of pasteurization
 - Study of Determination of effectiveness of antiseptic agent.
 - Isolation pathogens of clinical samples.
 - Urin analysis, i) Microscopic examination ii) Chemical examination
 - One step growth experiment
 - Effect of environmental factors on Micro organisms
- Department has successfully conducted all other practicals by increasing the accessibility/handling of instruments/glasswares.

**12. Details of equipment purchased in each department from DBT grant.
(item, no., cost, date of order placed, purchase/installation)**

Zoology

Sr.No	Name of the Equipment	Number	Cost	Date of purchase	Remarks
1.	Museum Jar	01	9742	19/11/2018	Purchased & installed
2.	Peak Flowmeter	1	1738	19/11/2018	Purchased & installed
3.	Vermi-composting bed	3	9683	19/11/2018	Purchased & installed
4.	Revolutionary microbench centrifuge	1	51507	19/11/2018	Purchased & installed
5.	Rotor Swing Out head	1	5723	19/11/2018	Purchased & installed
6.	NiKKON Camera	1	37248	19/11/2018	Purchased & installed
7.	Rectangular Jar	4	16482	19/11/2018	Purchased & installed
8.	LCD projector	1	26300	25/11/2018	Purchased & installed
9.	Wall Screen	5	12000	25/11/2018	Purchased & installed
10.	Celling Mount Kit	4	3200	25/11/2018	Purchased & installed

Chemistry

Sr.No	Name of the Equipment	Number	Cost	Date of purchase	Remarks
1	LCD projector	1	26300	25/11/2018	Purchased & installed
2	Wall Screen	2	4800	25/11/2018	Purchased & installed
3	Celling Mount Kit	2	1600	25/11/2018	Purchased & installed

Microbiology

Sr.No	Name of the Equipment	Number	Cost	Date of purchase	Remarks
1	Incubator	01	19824	3/11/2018	Purchased & installed
2	Mini Centrifuge	01	9440	3/11/2018	Purchased & installed
3	Distillation unit	01	28494	5/11/2018	Purchased & installed
4	Monocular Microscope	03	43499	25/11/2018	Purchased & installed



5	LCD Wall screen	01	3800	25/11/2018	Purchased & installed
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Physics

Sr.No	Name of the Equipment	Number	Cost	Date of purchase	Remarks
1	Michelson's Interferometer-with micrometer eye piece	1	57121	16/10/2018	Purchased & installed
2	Planks Constant App. (Photo Cell) Complete set with	1	16549	16/10/2018	Purchased & installed
3	Solar Cell Characteristics with two Digital Meters	1	5667	16/10/2018	Purchased & installed
4	Photo Diode Characteristics with two Digital Meters	1	3861	16/10/2018	Purchased & installed
5	Energy gap of a Semi Conductor with Built in power supply	1	4965	16/10/2018	Purchased & installed
6	Stefan's Radiation Constant app. Leak Proof dome wooden	1	12537	16/10/2018	Purchased & installed
7	Thermocouple – Copper – Constantan	1	351	16/10/2018	Purchased & installed
8	Steam Boiler – Copper spun jointless base with	1	2457	16/10/2018	Purchased & installed
9	Thermometer -10 to 110 1/1 Deg.	2	301	16/10/2018	Purchased & installed
10	Temperature Indicator	1	4263	16/10/2018	Purchased & installed
11	Rubber Tube –Pressure tube. Permt.	3	451	16/10/2018	Purchased & installed
12	Beaker-Borosil 500 ml	1	150	16/10/2018	Purchased & installed
13	'Racer' Digital Stop watch-1/100 seconds	1	878	16/10/2018	Purchased & installed
14	Steam Boiler – Copper spun jointless base with	1	2457	16/10/2018	Purchased & installed
15	Thermometer -10 to 110 1/1 Deg.	2	301	16/10/2018	Purchased & installed
16	Rubber Tube –Pressure tube. Permt.	3	451	16/10/2018	Purchased & installed
17	Beaker-Borosil 500 ml	1	150	16/10/2018	Purchased & installed
18	'Racer' Digital Stop watch-1/100 seconds	1	878	16/10/2018	Purchased & installed
19	Hysteresis curve app	1	13541	16/10/2018	Purchased & installed
20	Stefan's law Black body Radiation Trainer Board	1	9880	16/10/2018	Purchased & installed
21	Maxwell's Bridge with head phones	1	6269	16/10/2018	Purchased & installed



22	Wein's Bridge with head phones	1	6269	16/10/2018	Purchased & installed
23	Inverting & Non Inverting using Op-Amp	1	2608	16/10/2018	Purchased & installed
24	Schmitt Tigger using Op-Amp	1	2608	16/10/2018	Purchased & installed
25	Laser Diode Characteristics board with Three Digital	1	4965	16/10/2018	Purchased & installed
26	Newton's Law of Cooling Apparatus	1	3260	16/10/2018	Purchased & installed
27	Thermometer -10 to 110 1/1 Deg.	2	301	16/10/2018	Purchased & installed
28	Steam Boiler – Copper spun jointless base with	1	2457	16/10/2018	Purchased & installed
29	Rubber Tube –Pressure tube. Permt.	2	301	16/10/2018	Purchased & installed
30	Tripod stand	8	376	16/10/2018	Purchased & installed
31	Z Coil Hot Plate – Heater	1	2758	16/10/2018	Purchased & installed
32	Milikan's Oil drop expt. App: Fitted with short focus	1	31043	16/10/2018	Purchased & installed
33	U J T Characteristics with two Digital meters	1	3761	16/10/2018	Purchased & installed
34	Thermal Conductivity of Rubber tube Apparatus	1	3460	16/10/2018	Purchased & installed
35	Epson EB-541 LCD Projector	1	26300	16/10/2018	Purchased & installed
36	HP 1020 plus Printer	1	10300	16/10/2018	Purchased & installed
37	Wall Screen 4x6	1	2400	16/10/2018	Purchased & installed
38	Celling Mount Kit	3	2400	16/10/2018	Purchased & installed

Botany

Sr.No	Name of the Equipment	Number	Cost	Date of purchase	Remarks
1	Burette auto	1	4450	26/10/2018	Purchased & installed
2	Spirogyra veg.	1	1239	24/10/2018	Purchased & installed
3	Spirogyra conj.	1	1239	24/10/2018	Purchased & installed
4	Albugo conidal	1	1239	24/10/2018	Purchased & installed
5	Riccia veg	1	1239	24/10/2018	Purchased



					& installed
6	Riccia Anth	1	1593	24/10/2018	Purchased & installed
7	Riccia sporophytes	1	1593	24/10/2018	Purchased & installed
8	Selaginella	1	2066	24/10/2018	Purchased & installed
9	Bignonia	1	1770	24/10/2018	Purchased & installed
10	Herbarium, museum and craft microscope cabinet	1	99000	30/10/2018	Purchased & installed
11	Oven	1	14101	22/10/2018	Purchased & installed
12	Water bath	1	8260	22/10/2018	Purchased & installed
13	Pipette Stand	2	236	22/10/2018	Purchased & installed
14	Multi test tube stand	4	519	22/10/2018	Purchased & installed
15	HP 1020 Plus Printer	1	10300	25/11/2018	Purchased & installed
16	LCD Mount Kit	2	1600	25/11/2018	Purchased & installed
17	Wall Screen 6*8	2	7600	25/11/2018	Purchased & installed

Electronics

Sr.No	Name of the Equipment	Number	Cost	Date of purchase	Remarks
1	Voltage Regulator using IC 317	1	2077	10/09/2018	Purchased & installed
2	One-Stage Transistor AF (CB/CE/CC) Amplifier	1	2077	10/09/2018	Purchased & installed
3	FET as an Amplifier	1	2077	10/09/2018	Purchased & installed
4	Emitter follower (I/P & O/P impedances)	1	2077	10/09/2018	Purchased & installed
5	Schmitt Trigger	1	2077	10/09/2018	Purchased & installed
6	Tuned RF/IF Amplifiers	1	2832	10/09/2018	Purchased & installed
7	Phase Shift Oscillator using Transistor	1	2077	10/09/2018	Purchased & installed
8	Colpitt's Oscillator using Transistor	1	2077	10/09/2018	Purchased & installed
9	Crystal Oscillator using Transistor	1	2077	10/09/2018	Purchased & installed



10	Hartely Oscillator using Transistor	1	2077	10/09/2018	Purchased & installed
11	Function (Wave-form) Generator using IC8038	1	2832	10/09/2018	Purchased & installed
12	IC-555 as a Astable Multivibrator	1	2077	10/09/2018	Purchased & installed
13	IC-555 as a Monostable Multivibrator	1	2077	10/09/2018	Purchased & installed
14	Astable Multivibrator using BJT	1	2077	10/09/2018	Purchased & installed
15	Monostable Multivibrator using BJT	1	2077	10/09/2018	Purchased & installed
16	Blstable Multivibrator using BJT	1	2077	10/09/2018	Purchased & installed
17	Schmitt Trigger by using Transistor	1	2077	10/09/2018	Purchased & installed
18	Monsctable IMultivibrator using 74121	1	2077	10/09/2018	Purchased & installed
19	Astable Multivibrator using gates	1	2077	10/09/2018	Purchased & installed
20	OP-AMP as Phase Shift Oscillator	1	2360	10/09/2018	Purchased & installed
21	OP-AMP as Band Pass Filter	1	2077	10/09/2018	Purchased & installed
22	OP-AMP as Square Wave Generator (Multivibrators)	1	2077	10/09/2018	Purchased & installed
23	OP-AMP as Voltage (V) to Current (I) converter (Ammeter)	1	2360	10/09/2018	Purchased & installed
24	OP-AMP as Current (I) to Voltage (V) Converter (Voltmeter)	1	2360	10/09/2018	Purchased & installed
25	Study of Multiplexer using IC 74153	1	2077	10/09/2018	Purchased & installed
26	Study of Demultiplexer using IC 74139/138	1	2077	10/09/2018	Purchased & installed
27	Study of Encoder using IC 74147	1	2077	10/09/2018	Purchased & installed
28	Decoder using IC 7447/7448	1	2077	10/09/2018	Purchased & installed



29	Decoder Counter using IC 7490	1	2077	10/09/2018	Purchased & installed
30	Construction of Half Adder & Full Adder using :Logic Gates	1	2360	10/09/2018	Purchased & installed
31	NAND/NOR as Universal Gate	1	2360	10/09/2018	Purchased & installed
32	Study of R-S.D.J.K Flip-Flop	1	2360	10/09/2018	Purchased & installed
33	BCD to Seven Segment Decoder	1	2077	10/09/2018	Purchased & installed
34	Study of ADC (ICO804)	1	2360	10/09/2018	Purchased & installed
35	Transistor Characteristics in CE/CB Mode	1	2077	10/09/2018	Purchased & installed
36	PWM based DC Moter Controller	1	2360	10/09/2018	Purchased & installed
37	Owon SDS1022 20MHz DSO	2	38586	10/09/2018	Purchased & installed
38	Frequency Generator Function Generator 2Mhz-Model-FG 2M	5	37760	10/09/2018	Purchased & installed
39	Owon SDS1022 20MHz DSO	1	19819	10/09/2018	Purchased & installed
40	Frequency Generator Function Generator 2Mhz-Model-FG2M	1	7552	10/09/2018	Purchased & installed
41	BS2 Patch cord 2mm Red	1	590	10/09/2018	Purchased & installed
42	BS2 Patch cord 2mm Black	1	590	10/09/2018	Purchased & installed
43	Study of Lotic Gate	1	3035	10/09/2018	Purchased & installed
44	Study of Demorgans Theorem	1	2218	10/09/2018	Purchased & installed
45	Study of Flip-Flops	1	3035	10/09/2018	Purchased & installed
46	Digital IC Trainer Model Digitech-3000.27, Make-Digitech	1	12154	10/09/2018	Purchased & installed
47	Analog and Digital Electronics trainer, Model: Digitech. 3000.28 Make-	1	12494	10/09/2018	Purchased & installed



	Gigitech				
48	HP 16 GB Pendrive	1	450	10/09/2018	Purchased & installed
49	Time division multiplexing TDM	1	4720	10/09/2018	Purchased & installed
50	Verification of Kirchhoff's law	1	3304	10/09/2018	Purchased & installed
51	Thevenin's Theorem	1	3304	10/09/2018	Purchased & installed
52	Parallel resonance of LCR circuit	1	3304	10/09/2018	Purchased & installed
53	Maximum power transfer theorem	1	3304	10/09/2018	Purchased & installed
54	Super Position theorem	1	3304	10/09/2018	Purchased & installed
55	Series resonance of LCR circuit	1	3304	10/09/2018	Purchased & installed
56	P-N Junction diodes & Zener diode characteristics	1	3304	10/09/2018	Purchased & installed
57	FET Characteristics	1	3304	10/09/2018	Purchased & installed
58	SCR Characteristics	1	3304	10/09/2018	Purchased & installed
59	UJT Characteristics	1	3304	10/09/2018	Purchased & installed
60	Traic as Light dimmer /Fan regulator	1	3304	10/09/2018	Purchased & installed
61	Two port network Z&Y parameters	1	3304	10/09/2018	Purchased & installed
62	Study of LVDT	1	12272	10/09/2018	Purchased & installed
63	Frequency Modulation	1	5664	10/09/2018	Purchased & installed
64	LCD projector	1	26300	25/11/2018	Purchased & installed
65	Wall Screen	1	2400	25/11/2018	Purchased & installed
66	Celling Mount Kit	1	800	25/11/2018	Purchased & installed
Grand Total				1027102	



13. Details of books & journals subscribed from DBT grant.: Nil

14. Qualitative improvements due to DBT support Please highlight (5 salient lines) :

- Due to this scheme the flow of students towards basic and life science subjects is increased and the high-ranked students are also joining the basic and life science.
- The scheme helped to improve the quality of teaching, to boost interest of students in the subject and motivate them for further studies and research.
- Laboratory is strengthened due to DBT star college scheme
- More hands-on exposure and educational tours to students for better understanding of concepts are arranged.
- Students got opportunity to listen and interact with scientists, academician and researchers
- Involvement of students in the research projects and inter-disciplinary activities in the science departments is enhanced.

15. Problems faced, if any, in implantation of the programme and utilization of DBT grant (in two-three lines) :

Initially in adaption of PFMS, we have faced some problems, but PFMS team Mumbai has guided us to solve these problems. Please release the funds for 2018-19.


Co-Ordinator
DBT-Star College
Shri Shivaji Mahavidyalaya, Barshi


PRINCIPAL
Shri Shivaji Mahavidyalaya,
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