STAR COLLEGE ACTIVITY REPORT 2019 -22

DEPARTMENT OF PHYSICS

1. DEPARTMENT PROFILE:

(i)	No. of Teachers	-	07
(ii)	No. of Core Students	-	91
(iii)	Name of Departmental Coordinator	-	Dr. Lalhriatzuala

2. LIST OF EQUIPMENTS PROCURED FROM THE SCHEME

SI. No.	Item/ Equipment	Price (Rs.)	Qty	Amount (Rs.)
1	SMILEDRIVE Portable Air Quality Pollution Meter with Color Graphic Display-Check PM 2.5/10, TVOC & HCHO Levels for Indoor Outdoor Use |B0774YF8K1 (MIS915|1197CH1704) HSN:9027	6949.00	01	6949.00
2	GQ electronics GMC-300E-Plus Digital Geiger Counter Nuclear Radiation Detector Monitor Meter | B00IN8TJYY (1 cirpsusausa345) HSN:9018	9719.00	01	9719.00
3	HTC Instrument SL-1352 Professional Sound Level Meter with Data Logger | B0144AUVWS (P6-IXAJ-VKRF)	7500.00	01	7500.00
4	Solar Cell Characterization Apparatus (IV Characteristics) Model No: HO-ED-SC-01, PO No: PUC/Phy/SCS/2019-02	41145.00	01	41145.00
5	High Bright LED with Variable Power Supply Model No: HO-HBL-XY, PO No:	17555.00	01	17555.00

	PUC/Phy/SCS/2019-03			
6	Detector Output Measurement Unit Model No: PS-D-LK, PO No: PUC/Phy/SCS/2019-04	8778.00	01	8778.00
7	5mW Red Diode Laser Model No: DL-R-5, PO No: PUC/Phys/SCS/2019-05	8229.00	01	8229.00
8	Screen Base Apparatus for Diffraction Experiments Model No: HO-ED-D-01, PO No: PUC/Phy/SCS/2019-06	40926.00	01	40926.00
9	Optical Fibre Characterisation Apparatus (Breadboard Based) Model No: HO-ED-F-03, PO No: PUC/Phy/SCS/2019-07	84923.00	01	84923.00
10	LED, Laser Diode and Photodiode Characterisation Apparatus Model No: HO-ED-LOE-06, PO No: PUC/Phy/SCS/2019-08	61992.00	01	61992.00
11	Apparatus for the study of Polarization by Wave Plates Model No: HO-ED-P-07, PO No: PUC/Phy/SCS/2019-09	88873.00	01	88873.00
12	Apparatus for the Study of Photo Electric Effect (Plancks Constant) Model No: HO-ED-EM-02, PO No: PUC/Phy/SCS/2019-10	97651.00	01	97651.00
13	Corning Digital Stirring Hot Plates Model No: 6796-420D **# Purchase order has been given, it is under process.**	60017.00	01	60017.00
14	Michelson Interferometer Holmarc	127530.00	01	127530.00

	# Purchase order has been given, it is under process.			
15	Magnetic Susceptibility – Guoy's Method (HO-ED-EM-08) **# Purchase order has been given, it is under process.**	224213.00	01	224213.00
16	Faraday Effect Apparatus (HO-ED-P-04) **# Purchase order has been given, it is under process.**	129710.00	01	129710.00

3. ACTIVITIES UNDER THE SCHEME:

(i) 1st POPULAR LECTURE FUNDED UNDER THE SCHEME:

Date - 20.09.2019, 2:00 PM

Venue - Science Lecture Hall 2

Resource Person - (a) Dr. Lalruatfela Renthlei, Project Scientist, DST, Govt. of Mizoram
(b) Dr. Lalrinthara Pachuau, Asst. Prof., Department of Physics, PUC

The program was chaired by Dr. Lalhriatzuala, Star College Scheme Departmental Coordinator as Convener of the Popular Lecture series. Dr. Lalruatfela Renthlei, Project Scientist, Directorate of Science and Technology, Government of Mizoram was invited as speaker from outside the department. Dr. Lalrinthara Pachuau, one of the faculty members of the department was also allotted one lecture in the program. Dr. Lalruatfela Renthlei spoke on the theme of the 1st Day of Popular Lecture series. His topic was, "Electromagnetic Wave and Its Application". Dr. Lalrinthara Pachuau on the other hand spoke on the topic titled "Black hole and Universe". All physics students including 1st semester, 3rd semester and 5th semester students attended the program. CCA attendance was recorded. A sum of Rs. 1000 was given to speaker from outside the department and refreshment was served for the gathering. The following is the expenditure statement.

S. No.	Item	Amount (Rs.)
1	Banner 10 x 4 ft	1400.00
2	Citation/ Certificate for two speakers	60.00
3	External Resource Person Remuneration	1000.00
4	Coffee participants and resource person (100 cups)	1000.00
5	Jam cookies and golden goodies	1300.00
	TOTAL	4760.00

(ii) 2nd POPULAR LECTURE FUNDED UNDER THE SCHEME:

Date - 13.12.2019, 3:00 PM

Venue - Seminar Hall, PUC

Resource Person - Dr. Asish Pal, Scientist E,
Institute of Nanoscience and Technology
(INST), Mohali, Punjab

The program was chaired by Dr. Lalhriatzuala, Star College Scheme Departmental Coordinator as Convener of the Popular Lecture series. The resource person for the 2nd Popular Lecture Series was Dr. Asish Pal, Scientist E, Institute of Nanoscience and Technology (INST), Mohali, Punjab. The resource person who happened to visit Mizoram

under their Outreach Programme was fortunately available on the evening and agreed to speak on the topic, "*Wonderful Nanoworld: nanoscience and its various applications to mitigate the challenges faced by today's world*". Since, there was already an ongoing programme of Winter School conducted by the Department of Chemistry under Star College Scheme, which was scheduled to be over at 3:00 PM. The Physics Departmental Coordinator invited the participants of the Winter School and the Vth Semester Students of Physics Department as an audience and to have an opportunity to learn novel and interesting ideas in the application of nanotechnology in addressing the needs of the people. Teaching faculty from Physics, Chemistry and Geology also attended the programme. The chairman of the programme, after delivering welcome speech introduced the speaker and then the resource person spent about 1:00 hour to deliver the talk. After the talk, discussion was open for the audience. During such time, some of the students responded and raised interesting queries about the topics. Refreshment was served and the expenditure for the programme is as follows:

S. No.	Item	Amount (Rs.)
1	Canteen Bill for Refreshment	1200.00
	TOTAL	1200.00

Photographs of the program:

(iii) DEPARTMENTAL INDUSTRIAL VISIT:

Date	-	16 – 17.12.2020
Place Visit	-	Serlui B Hydroelectric Power Plant
Tour Teacher i/c	-	Dr. Lalhriatzuala

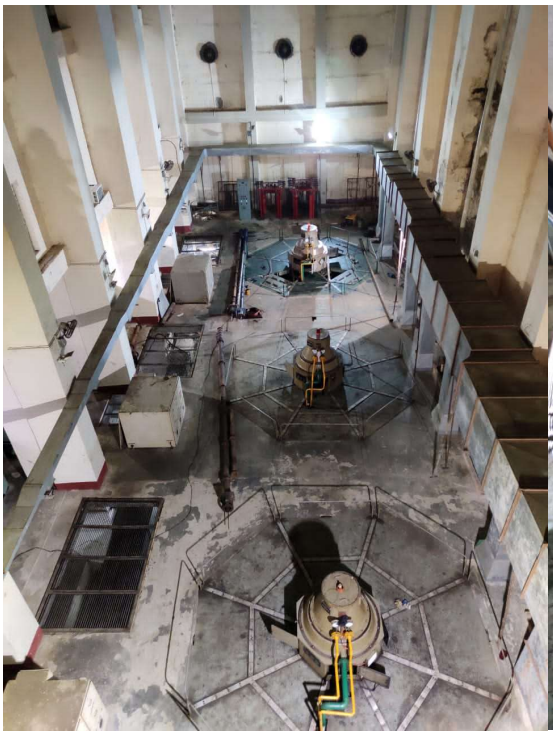
As a part of Student's learning enhancement process under the Star College Scheme umbrella, the department took up Educational tour to visit one of the largest Hydroelectric Power Plant in Mizoram, which is located at Serlui. Serlui B Hydroelectric Power Plant is located at the northern corner of Mizoram, near its border with Assam. From Aizawl City, where the college is located, the Power Plant is about 117 Km. Since, the tour is conducted during Winter vacation, some of the students from villages could not participate in the

programme, only 19 students out of 29 fifth semester students turned up. The tour programme was headed by Dr. Lalhriatzuala, Star College Scheme Departmental Coordinator. College bus was provided by the principal for the to and fro journey between the college and the Power Plant. Along with two staff – driver and handyman, the tour team in total consists of 22 persons. The team started their journey from college at 9:00 AM and reached Serlui B ion the evening on the same date at around 4:00 PM. The officers of hydroelectric power plant – SDO, JE and their staff received them and provided a supervised tour of the Serlui B Power House. The staff deputed for the team showed them the three turbines which are in operation at the Power House and explained their function. The staff also explained illustratively the function of various sections of the Power House. During this visit the students got exposure to how the fundamental concepts in physics are implemented for generation of hydroelectric power. The teacher in charge Dr. Lalhriatzuala also took this opportunity to further explain the mechanism of turbine operation and power generation. The team stayed for the night at Tourists Lodge located near the Power House. Then in the next morning, the team took part in touring the Serlui B river by hiring a boat through Tourist Lodge at Serlui B. After the river tour, the team then headed back to Aizawl and reached late in the evening at around 6:00 PM. The following is the expenditure statement.

S. No.	Item	Amount (Rs.)
1	Bill for Accommodation and food at Tourists Lodge	12240.00
2	Rent for boat	2000.00
3	Coffee & Biscuits during onwards and return journey	640.00
	TOTAL	14880.00

(Rupees Fourteen Thousand Eight Hundred and Forty Only)

Photographs of the program:

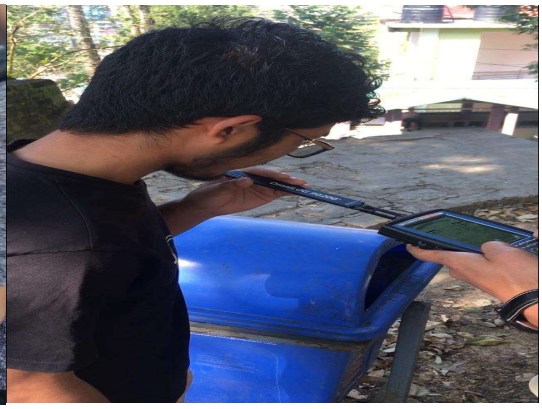


(iv) STUDENTS PROJECT: Under the Star College Scheme, Student's Project was conducted for 6th Semester Students. Utilizing equipments purchased from the scheme, the following project works were carried out.

SI. No.	Project Guide	List of Students	Title of Projects
1	Dr. Shivraj Gurung	1.Joseph Lalngaihawma Roll No.: 1701BS179 2.Lalduhawma Roll No.: 1701BS182	To study refractive index change in air under different pressures and determination of refractive index of air using Michelson interferometer.
2	Dr. Shivraj Gurung	1.Laltlankima Roll No.: 1701BS186 2.B. Vanlalhmangaihchhungi Roll No.: 1701BS194	To determine wavelength of laser beam and refractive index of a transparent material using Michelson interferometer
3	Dr. Lalhriatzuala	1.Vansangkimi Roll No.: 1701BS195 2.Lalhumhima Roll No.:1701BS183	To measure numerical aperture of multi-mode fiber and to determine refractive index of a transparent solids using diode laser and detector output measurement
4	Dr. Lalhriatzuala	1.Ramherliana Roll No.: 1701BS192 2.Lalrosanga Roll No.: 1701BS185 3.Lalruatsanga Roll No.: 1701BS201	To measure bending loss in multi-mode fiber
5	Dr. Y. Rangeela Devi	1.Chanchal Kumari Roll No.: 1701BS187 2.C.Remsangpuii Roll No.: 1701BS207	To measure V-I and P-I characteristics of Laser Diode and LED
6	Dr. Y. Rangeela Devi	1.H.Lalchhandami Roll No.: 1701BS188 2.Malsawmdawngi Roll No.: 1701BS189	To study V-I and response characteristics of photo diode
7	Dr. Lalrinthara Pachuau	1.Lalvenkimi Boitlung Roll No.: 1701BS208 2.H. Lalrinfela Roll No.: 1701BS198	Investigation of auditorium acoustics using decibel meter and reverberation software
8	Dr. Lalrinthara Pachuau	1.C.Lallianzela Roll No.: 1701BS177 2.Sougaijam Thasana Chanu Roll No.: 1701BS209	Investigation of mobile tower radiation level and its health effect
9	Dr. N. S. Singh	1.Vanlalhriatrengi Roll No.: 1701BS190 2.Laldinthara Roll No.: 1701BS181	To study basic principles of solar cell and to characterize solar cell

		3.Alan Hmangaihsanga Roll No.:1701BS175 4.Vanlalruata Chhangte Roll No.:1701BS193	
10	Dr. Lalmuanpuia Vanchhawng	1.Vanlalchamia Roll No.: 1701BS210 2.Vanlalnunpuia Roll No.: 1701BS184	Mapping of radiation density in selected locations across Aizawl city
11	Dr. Lalmuanpuia Vanchhawng	1.P.C. Lalrammawia Roll No.: 1701BS202 2.David Lalramchhana Roll No.” 1701BS178	Mapping of air quality pattern within Aizawl
12	Dr. Dibya Prakash Rai	1.David Paul Thanga Roll No.: 1701BS068 2.Angela Lallawmzuali Roll No.: 1701BS206 3.R.Lalchhuanawma Roll No.: 1701BS203 4.C.Lalnunhluzuala Roll No.:1701BS197	Calculation of electronic band structure of crystalline silicon

Photograph:



STAR COLLEGE REPORT FORMAT

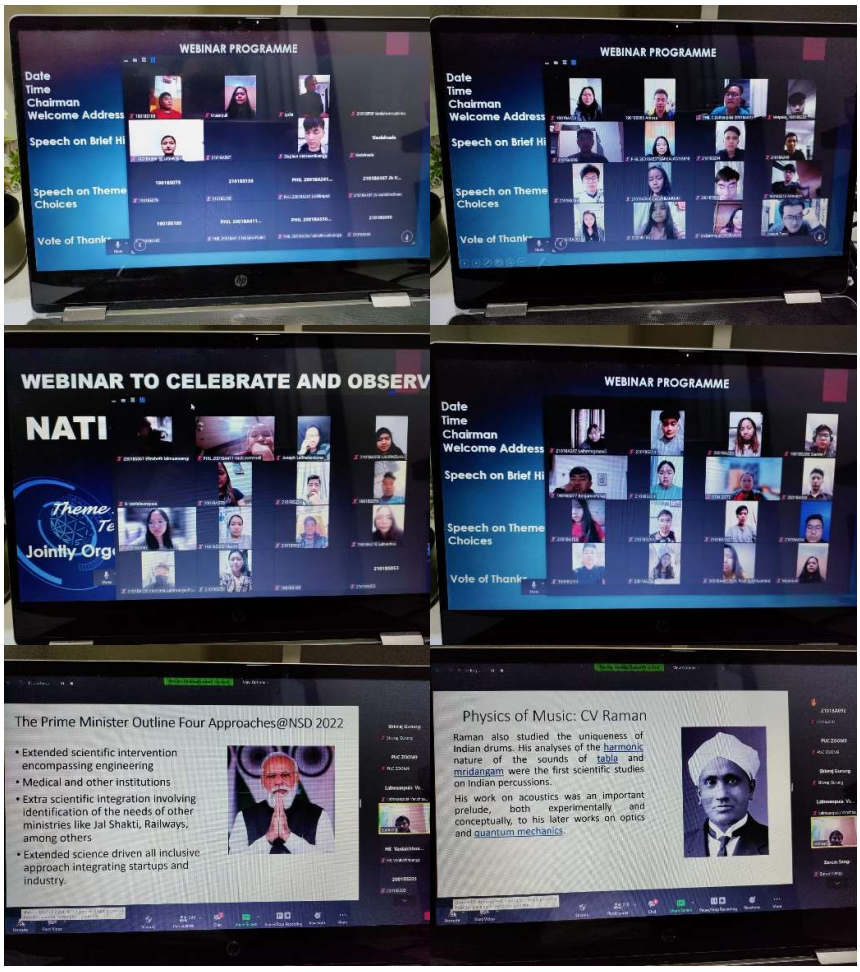
2020-21 and 2021-22 sessions

1. List of projects undertaken by students: During the period no project was conducted for students.
2. Industrial visits by students, summer training in last one year: Not conducted in the last one year. It was conducted only during the first year 2019 – 20.
3. Projects undertaken by Department:
4. Summer/winter school organized: Not organized due to severe pandemic situation in the state.
5. Training received by faculty from participating departments: No faculty participated in training under DBT Star College Scheme fund

6. List of exhibitions/seminars/training courses conducted:

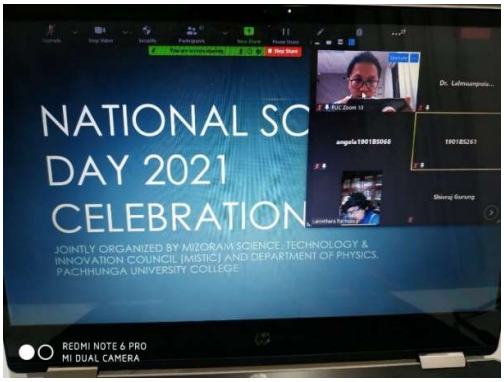
(i) Alumni Talk Funded by DBT Star College Scheme: On 1st July, 2022, two alumni of the department – Dr. Zodinmawia, Assistant Professor, Dept. of Physics, Mizoram University (1st rank in MZU, 2007) and Ms. P.C. Lalremruati, PhD Scholar, Department of Physics, Guwahati University (2nd rank in MZU, 2014) were invited to deliver motivational talk and share their experience among 5th semester students. The programme was convened by Dr. Shivraj Gurung, HoD, Dept. of Physics. Dr. Zodinmawia shared his experience as a student of Integrated PhD in IIT Bombay. He mentioned their work culture during their course work and also shared his experience in collaborating with renowned professor from Japan. He also shared his experience as Post-Doctoral fellow at IIT Kanpur and Chennai. Ms. PC Lalremruati also shared her experience during her M.Sc. course in Delhi University and also her experience as a research scholar at Guwahati University. As she has submitted her thesis on Astrophysics, she also shared her research work. Later, after their talk, interaction session was open. Many students actively participated in the interaction and the programme was very successful.

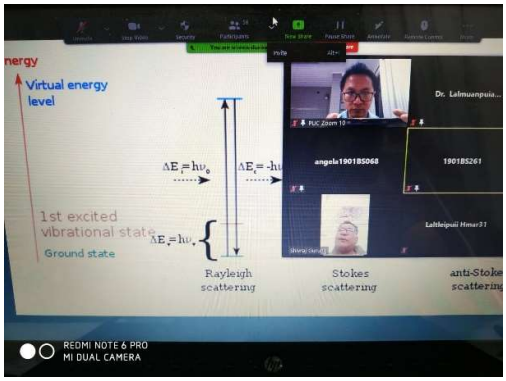
(ii) Observation of National Science Day Seminar 2022: Webinar was organized to commemorate National Science Day 2022 on 2nd March 2022, between 8:00 PM – 9:40 PM. The meeting was hosted by Dr. Lalhriatzuala, Departmental Coordinator, DBT Star College Scheme and chaired by Dr. Shivraj Gurung, HoD, Dept. of Physics, PUC. Dr. Lalmuanpuia Vanchhawng, Asst. Professor, Dept. of Physics, PUC delivered a talk on 'Brief History of National Science Day'. The theme talk of National Science Day 2022 – Integrated Approach in Science & Technology for Sustainable Future was delivered by Mr. Samuel S. Vaiphei, IRS (Custom), Deputy Director, Directorate of Revenue Intelligence Aizawl Regional Unit, Aizawl. In this DBT Star College funded programme students from Economics, Philosophy and M.Sc. Geophysics were also invited. Including these students along with UG Students of Physics Department, in total 252 students participated in the webinar.



(iii) Observation of National Science Day Seminar 2021: Webinar to commemorate National Science Day 2021 was organized with the funding from DBT Star College Scheme on 2nd

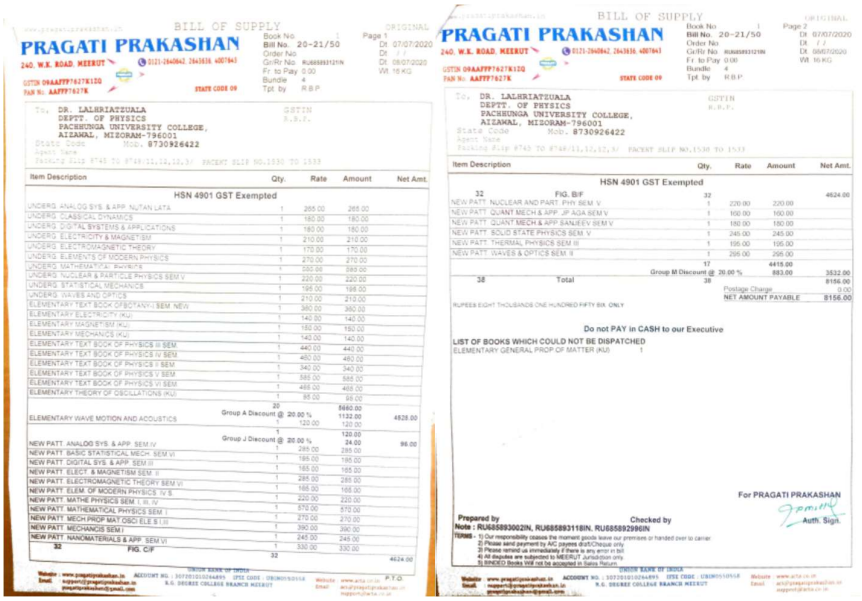
March, 2021 between 8:15 PM – 9:30 PM. Dr. Lalhriatzuala, Departmental Coordinator, DBT Star College Scheme hosted the webinar. Dr. Shivraj Gurung, HoD, Dr. Lalrinthara Pachuau, Asst. Prof. and Dr. Lalmuanpuia Vanchhawng, Asst. Prof., Physics Dept., PUC delivered talks on various topics such as – (a) Discovery of Raman Effect, (b) Scientific Ideas in the development of Classical & Quantum Mechanics and (c) Innovative Approach in Science. Only UG students of the department participated in the programme and they were 73 in number.





7. Name, designation, host institute of guest faculty invited: List of resource persons who delivered lecture under DBT Star College Scheme
   (i) Dr. Zodinmawia, Asst. Professor, Dept. of Physics, Mizoram University
   (ii) Dr. Somen Debnath, Asst. Professor, Dept. of Information Technology, Mizoram University
   (iii) Ms. P.C. Lalremruati, Research Scholar, Dept. of Physics, Guwahati University
   (iv) Dr. Lalruatfela Renthlei, Project Scientist, DST, Govt. of Mizoram
   (v) Dr. Asish Pal, Scientist E, Institute of Nanoscience and Technology (INST), Mohali, Punjab
   (vi) Mr. Samuel S. Vaiphei, IRS (Custom), Deputy Director, Directorate of Revenue Intelligence Aizawl Regional Unit, Aizawl
8. Date of Department committee meeting:
   26th June, 2020 - Agenda: Purchase of Books under DBT Star College Scheme
   30th August, 2019 – Agenda: Purchase of Equipments under Non-Recurring Fund of DBT Star College Scheme
   6th September, 2019 – Agenda: Popular lecture series under DBT Star College Scheme
   2nd December, 2019 – Agenda: 2nd Popular lecture series under DBT Star College Scheme
   4th December, 2020 – Agenda: Industrial Visit to Serlui Hydro Power Plant
   25th February, 2022 – Agenda: Observation of National Science Day 2022
9. List of New Practicals/demonstrations introduced in different departments in last one year

10. Details of books & journals subscribed from DBT grant: With the recurring fund received in the first year of DBT Star College Scheme, several books based on Choice Based Credit System patterns have been purchased and kept in the department library. These updated books are utilized by both teachers and students of the department. List of books purchased under DBT Star College Scheme for department library are as listed in the vouchers below –



BILL OF SUPPLY

PRAGATI PRAKASHAN

240, W.K. ROAD, MEERUT

Book No. 20-21/50

To, DR. LALSHIATSUALA
DEPTT. OF PHYSICS
PACHHUNGA UNIVERSITY COLLEGE,
AIZAWAL, MIZORAM-796001
Mob. 8730926422

HSN 4901 GST Exempted

Item Description	Qty.	Rate	Amount	Net Amt.
UNDERG. ANALOG SYS. & APP. NUTAN LATA	1	265.00	265.00	
UNDERG. CLASSICAL DYNAMICS	1	180.00	180.00	
UNDERG. DIGITAL SYSTEMS & APPLICATIONS	1	180.00	180.00	
UNDERG. ELECTRICITY & MAGNETISM	1	210.00	210.00	
UNDERG. ELECTRODYNAMETIC THEORY	1	170.00	170.00	
UNDERG. ELEMENTS OF MODERN PHYSICS	1	270.00	270.00	
UNDERG. MATHEMATICAL PHYSICS	1	280.00	280.00	
UNDERG. NUCLEAR & PARTICLE PHYSICS SEM V	1	220.00	220.00	
UNDERG. STATISTICAL MECHANICS	1	198.00	198.00	
UNDERG. WAVES AND OPTICS	1	210.00	210.00	
ELEMENTARY TEXT BOOK OF BOTANY-I SEM. NEW	1	380.00	380.00	
ELEMENTARY ELECTRICITY (KU)	1	140.00	140.00	
ELEMENTARY MAGNETISM (KU)	1	150.00	150.00	
ELEMENTARY MECHANICS (KU)	1	140.00	140.00	
ELEMENTARY TEXT BOOK OF PHYSICS III SEM.	1	440.00	440.00	
ELEMENTARY TEXT BOOK OF PHYSICS IV SEM.	1	460.00	460.00	
ELEMENTARY TEXT BOOK OF PHYSICS I SEM.	1	340.00	340.00	
ELEMENTARY TEXT BOOK OF PHYSICS V SEM.	1	580.00	580.00	
ELEMENTARY TEXT BOOK OF PHYSICS VI SEM.	1	488.00	488.00	
ELEMENTARY THEORY OF OSCILLATIONS (KU)	1	95.00	95.00	
	20		5660.00	
ELEMENTARY WAVE MOTION AND ACOUSTICS	Group A Discount @ 20.00 %		1132.00	4528.00
	1		120.00	
	Group J Discount @ 20.00 %		24.00	96.00
NEW PATT. ANALOG SYS. & APP. SEM IV	1	265.00	265.00	
NEW PATT. BASIC STATISTICAL MECH. SEM VI	1	195.00	195.00	
NEW PATT. DIGITAL SYS. & APP. SEM III	1	165.00	165.00	
NEW PATT. ELECT. & MAGNETISM SEM II	1	265.00	265.00	
NEW PATT. ELECTROMAGNETIC THEORY SEM VI	1	165.00	165.00	
NEW PATT. ELEM. OF MODERN PHYSICS IV S	1	220.00	220.00	
NEW PATT. MATHE PHYSICS SEM I, III, IV	1	570.00	570.00	
NEW PATT. MATHEMATICAL PHYSICS SEM I	1	270.00	270.00	
NEW PATT. MECH PROP MAT OSCI ELE S I,II	1	390.00	390.00	
NEW PATT. MECHANICS SEM I	1	245.00	245.00	
NEW PATT. NANOMATERIALS & APP. SEM VI	1	330.00	330.00	
	32			
	FIG. C/F			4624.00

BILL OF SUPPLY

PRAGATI PRAKASHAN

240, W.K. ROAD, MEERUT

Book No. 20-21/50

To, DR. LALSHIATSUALA
DEPTT. OF PHYSICS
PACHHUNGA UNIVERSITY COLLEGE,
AIZAWAL, MIZORAM-796001
Mob. 8730926422

HSN 4901 GST Exempted

Item Description	Qty.	Rate	Amount	Net Amt.
	32			4624.00
FIG. B/F				
NEW PATT. NUCLEAR AND PART. PHY SEM V	1	220.00	220.00	
NEW PATT. QUANT MECH & APP. JP AGA SEM V	1	160.00	160.00	
NEW PATT. QUANT MECH & APP SANJEEV SEM V	1	180.00	180.00	
NEW PATT. SOLID STATE PHYSICS SEM V	1	245.00	245.00	
NEW PATT. THERMAL PHYSICS SEM III	1	195.00	195.00	
NEW PATT. WAVES & OPTICS SEM II	1	295.00	295.00	
	17		4415.00	
	Group M Discount @ 20.00 %		883.00	3532.00
Total	38			8156.00
			Postage Charge	0.00
			NET AMOUNT PAYABLE	8156.00

RUPEES EIGHT THOUSAND ONE HUNDRED FIFTY SIX ONLY

Do not PAY in CASH to our Executive

LIST OF BOOKS WHICH COULD NOT BE DISPATCHED
ELEMENTARY GENERAL PROP OF MATTER (KU) 1

For PRAGATI PRAKASHAN

Auth. Sign.

Prepared by

Checked by

Note : RU685893002IN, RU685893118IN, RU685892996IN

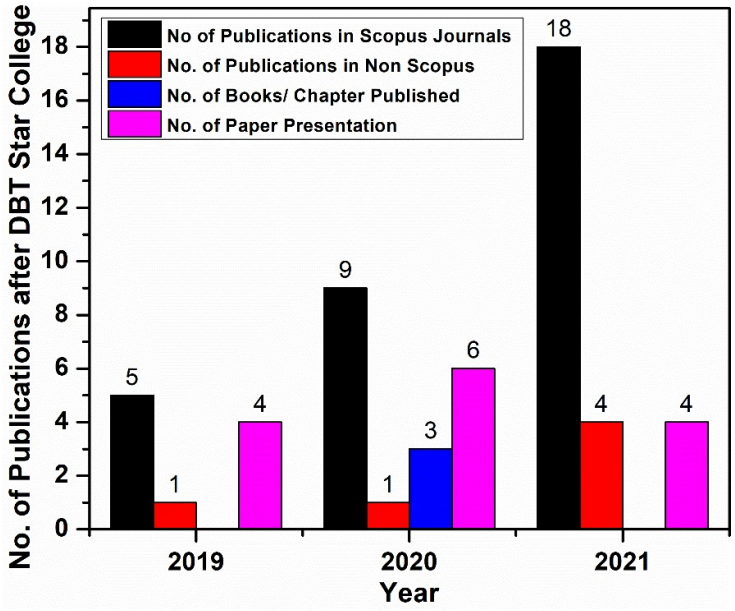
Terms : 1) Our responsibility ceases the moment goods leave our premises or handed over to carrier.
2) Please send payment by A/C payees draft/Cheque only.
3) Please remind us immediately if there is any error in bill.
4) All disputes are subjected to MEERUT Jurisdiction only.
5) BINDED Books Will not be accepted in Sales Return.

11. Qualitative improvements due to DBT support

(i) With the support of DBT Star College Scheme, the department is equipped with much needed instruments and facilities for providing better teaching and also for giving motivation to students. Activities carried out over the past three years have been fruitful. Not only these activities enhance students' interest and

understanding, the university exam results also tremendously improved as given in the chart provided in point no 13.

(ii) Teachers of the department also finds motivation in actively pursuing research. Research and book publications have also seen improvement as well.



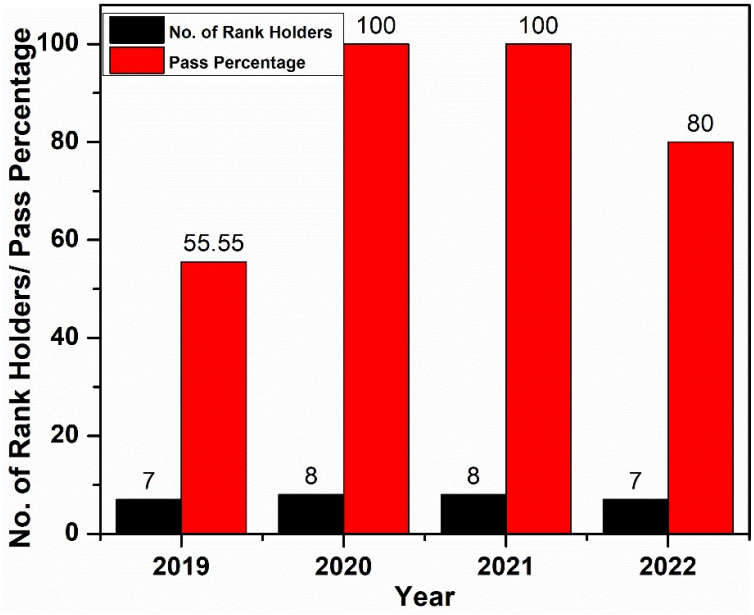
(iii) Procurement of new updated books based on CBCS pattern under DBT Star College Scheme have enriched the department library and provides valuable resource for teachers and students.

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

Due to Covid – 19 pandemic nation-wide total lockdown and strict implementation and extension of total lockdown by the state government for about 1 year duration hampers many activities that can be carried out under Star College Scheme. Students were not allowed to visit college and also all the transport services were inactive for a long time, which cause delay in procurement of items purchased under DBT Star College Scheme

13. Result three years comparison for overall report. (Pass percentage and rank holders' number, gold medalist name if available.)

Last three years result of the Department of Physics, after implementation of DBT Star College Scheme



14. Students' progression and employment status of the years 2019-2022: