

# GOA UNIVERSITY

Scheme:- Pradhan Mantri Uchchar Shiksha Abhiyan (PM-USHA)

Component:- Multi-Disciplinary Education and Research University (MERU)

Subject:- Detailed Project Report (DPR) of MERU project under PM-USHA

Goa University was established under the Goa University Act of 1984 (Act No. 7 of 1984) and commenced operations on 1 June 1985. The University, on its campus, has 10 schools. The formation of schools has been done in the academic year 2019-20 with amalgamation of traditional departments to allow organic evolution of new courses. The schools offer programmes leading to Undergraduate degree (3), Masters degree (35) and Ph.D. degree (25) in various disciplines. The University has made a significant impact at the National level in various areas of specialization and draws students in select disciplines from across the country.

With the vision of transforming Goa University into Multidisciplinary Education and Research University (MERU), the University had applied for MERU Scheme of PM-USHA on 04/11/2023 for the total grant of Rs.99,99,20,109/-. The University was selected to present the proposal to High Powered Project Approving Committee of Ministry of Education, Govt of India. The University defended the same in presence of Education Secretary, Govt. of Goa on 17 January 2024. On 18<sup>th</sup> Feb 2024, Goa University has been awarded a grant of Rs.99,99,20,109/- under the prestigious MERU scheme of PM-USHA (Pradhan Mantri Uchchar Shiksha Abhiyan).

Under the MERU project, the list of items which were sanctioned earlier under different categories is now revised due to increase in prices of some of the items and the revised proposal for Rs. 99,99,17,585.00/- was resubmitted on 14<sup>th</sup> June 2024. The new proposal now contains the following items under different categories.

1) Category I:- New Infrastructure for: School of Earth, Ocean & Atmospheric Sciences (SEOAS), School of Chemical Sciences (Biochemistry building), School of Chemical Sciences (Faculty Research Labs, FRL), FUTSAL Court, and three Hostels (Girls, Boys and International Students) all amounting to Rs. 77,33,97,917.00

2) Category II:- Renovation: MPS auditorium at an amount of Rs. 10,00,00,000.00

3) Category III:- Equipment:- University is procuring high end equipment like ICP-MS, Hyperspectral camera, Atomic Force Microscope (AFM), Florescence Activated cell sorter (FACS) and Nanoparticle Analyser using DLS amounting to Rs. 6,38,42,230.00.

4) Category IV:- Soft Component:- Audio/Video & Multimedia Language Laboratory, Smart Boards, Desktop Computers, High performance computing (HCP) facility, RFID tags (for Library) and items for Green Initiatives all worth Rs. 6,26,77,438.00.

For implementation of MERU project, the University has constituted a High Level Committee headed by Vice-Chancellor to monitor the progress of various activities under MERU. This committee had its first meeting on 23<sup>rd</sup> April 2024 wherein the construction and renovation of all the buildings sanctioned under MERU were discussed and recommended for the approval

of Executive Council of Goa University. The minutes of this meeting were then approved by the X<sup>th</sup> Executive Council (EC) of Goa University in its Twenty Ninth meeting held on 26<sup>th</sup> April 2024. Besides this a committee is also constituted as Project Monitoring Unit (PMU). To assist this committee many sub-committees are made, category/item wise, which have a mandate of looking after day-to-day activities. The executing agency of the MERU project is Goa University.

The revised details of new construction, renovation, purchase of equipment and soft components along with timeline for physical and financial targets and the amount required for FY 2024-25 for completing 30% of the infrastructure work and for purchase of 100 % equipment in FY 2024-25 are submitted below.

The detailed timeline for MERU project implementation under PM-USHA during April 2024-March 2026 is given below.

Phase	Items	Whether new construction or renovation or Equipment or soft component	Percentage of completion in the relevant phase	Physical Target		Financial Target	
				Start Date	End Date	Start Date	End Date
I	School of Earth,	New Construction	30	15/04/2024	31/03/2025	1/07/2024	31/03/2025
II	Ocean and Atmospheric Science (SEOAS) Building		70	01/04/2025	31/03/2026	1/04/2025	31/03/2026
I	School of Physical and Applied Sciences (SPAS)	Electrical substation 33 kvA with room, GENSET, Cabling, LT panel	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Faculty Research Labs for School of Chemical Sciences (SCS)	New Construction	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Biochemistry Building	New Construction	40	15/04/2024	31/03/2025	1/07/2024	31/03/2025
II			60	1/04/2025	31/03/2026	1/04/2025	31/03/2026

Phase	Items	Whether new construction or renovation or Equipment or soft component	Percentage of completion in the relevant phase	Physical Target		Financial Target	
				Start Date	End Date	Start Date	End Date
I	<ul style="list-style-type: none"> <li>Hostel for Boys</li> <li>Hostel for Girls</li> <li>International students' Hostel</li> </ul>	New Construction	30	15/04/2024	31/03/2025	1/07/2024	31/03/2025
II			70	1/04/2025	31/03/2026	1/04/2025	31/03/2026
I	Sports Facility (Futsal Court)	New Construction	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Auditorium (in MPS Building)	Renovation	40	15/04/2024	31/03/2025	1/07/2024	31/03/2025
II			60	1/04/2025	31/03/2026	1/04/2025	31/03/2026
I	Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)	Equipment	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Hyperspectral Camera (Visible, NIR with UAV)	Equipment	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Atomic Force Microscope (AFM)	Equipment	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Fluorescence Activated Cell Sorter (FACS)	Equipment	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025

Phase	Items	Whether new construction or renovation or Equipment or soft component	Percentage of completion in the relevant phase	Physical Target		Financial Target	
				Start Date	End Date	Start Date	End Date
I	Nanoparticle Analysis using DLS	Equipment	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	HPC	Soft Component	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Audio/Video and Multimedia Lab	Soft Component	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Smart Boards	Soft Component	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Computers	Soft Component	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	RFID System for Library	Soft Component	100	15/04/2024	31/03/2025	1/07/2024	31/03/2025
I	Green Initiative	Soft Component	50	15/04/2024	31/03/2025	1/07/2024	31/03/2025
II			50	1/04/2025	31/03/2026	1/04/2025	31/03/2026

The revised item-wise proposed fund allocation submitted on 14<sup>th</sup> June 2024 for consideration is shown in the table below.

**1) New Construction:-**

Sr. No	Description of Infrastructure	Purpose of Infrastructure	Total amount allocated under PM-USHA	Revised allocation
1	Sports	Futsal Court	1,08,03,040.00	1,22,76,236.00
2	School of Earth Ocean and Atmospheric	New Building	9,99,71,190.00	20,32,57,997.00
3	School of Chemical Sciences (SCS)	New building for Biochemistry	8,12,53,172.00	13,19,71,576.00

4	School of Chemical Sciences (SCS)	Faculty Research Labs (FRL) in the existing space	4,09,70,664.00	2,87,68,165.00
5	Hostels: A. Boys B. Girls C. International student	New hostels to accommodate increasing number of students	28,72,78,695.00	35,91,23,221.00
6	School of Physical and Applied Sciences (SPAS)	Electrical Sub-station 33Kv and approach roads and paving	6,36,40,950.00	3,80,00,722.00
			Total Rs.	77,33,97,917.00

## 2. Renovation:-

Sr. No	Description of Infrastructure	Purpose of Infrastructure	Total amount allocated under PM-USHA	Revised allocation
1	MPS Auditorium	Renovation of MPS Auditorium	5,00,00,000.00	10,00,00,000.00

## 3. Equipment:-

Sr. No	Equipment	Total amount allocated under PM-USHA	Revised allocation
1	ICP-MS (Inductively Coupled Plasma – Mass Spectrometry)	2,50,00,000	Euro 265500 @ 89.81 ~Rs.2,38,44,675.00
2	Hyperspectral Camera (Visible, NIR) with UAV	90,00,000.00	1,32,68,000.00
3	Atomic Force Microscope (AFM)	75,00,000.00	USD 107500 Rs. 89,81,555
4	Fluorescence Activated Cell Sorter (FACS)	80,00,000.00	Rs. 1,35,00,000
5	Nanoparticle Analyser using DLS	30,00,000.00	Rs. 42,48,000,00
		Total Rs.	6,38,42,230

## 4) Soft Component & Green Initiative

Sr. No	Items	Total amount allocated under PM-USHA	Revised allocation
1	RFID system for Library	1,25,00,000.00	38,88,100.00
2	Audio/Video and Multimedia Language Lab	65,00,000.00	61,36,000.00
3	HPC	2,00,00,000.00	2,00,00,000.00
4	Smart Boards (100 Nos.)	1,00,00,000.00	1,00,00,000.00
5	100 Computers (For common computer labs)	50,00,000.00	50,00,000.00
6	Green Initiative	2,00,00,000.00	1,76,53,338.00
		Total Rs.	6,26,77,438.00

**Final Total Rs. 99,99,17,585.00**

The details of items under Green Initiative is given below in the table:-

Sr. No.	Name of the Item under Green Initiatives	Per Unit Cost (Rs.)	No. of Units	Amount (Rs.)
	<b>Water Harvesting &amp; Ecosystem Protection</b>			
1	Rain water harvesting (for MPS)	4,95,600.00	1	495600
2	Rain water harvesting (for SPAS)	6,49,000.00	1	649000
3	Excavation of laterite around existing water body inside the campus	650.00 per Cubic meter	20x2x20 Cubic meter	520000
4	Atmospheric water generation unit (100 Lts/24 Hrs)	2,83,200.00	7	1982400
5	Sewage Treatment Plant for Girls's Hostel	20,00,000.00	1	2000000
6	2 Mts pathway with laterite stone masonry on either side with filling and levelling with soil and 20 cms thick rubble packing	3,009.00 per Mt	803	2416227
	<b>Energy generation and optimisation</b>			
7	Solar Roof-top Power System (60 KW)	35,50,560.00	1	3550560
8	Biogas plants for canteens and hostels	1,28,960.00	6	773760
9	12 Watt LED bulb with motion sensor	431	105	45255
	<b>Electric Vehicles</b>			
10	23 Seater electric bus (closed model)	23,94,100.00	1	2394100
11	14 Seater electric bus (closed model)	15,01,500.00	1	1501500
12	8 Electric Scooter	1,65,617.00	8	1324936
			Total Rs.	17653338

The detailed project report (DPR) of New infrastructure, Renovation, Equipment and soft components is given below in detail along with the land map, land title, executing agency permission, cost estimate, architectural blueprint, technical sanction, brochures with

specifications and photos of the site before the work starts, whichever applicable, is attached as Annexures.

**1) Category I:- New Infrastructure:** SEOAS, Biochemistry, Faculty Research Labs for Chemistry (SCS), FUTSAL Court, Electric sub-station for SPAS and three Hostels amounting to Rs. 77,34,00,000. 00.

**i) Futsal Court:**

University is developing a Futsal court of area 1691.00 m<sup>2</sup> with estimated amount of Rs.1,22,76,236.00/-. M/s UCJ Architecture and Environment have been appointed as consultant architect for this project. The Futsal Court playing field will have dimensions of 25mtr x 45 mtr including 2.50 metre service area along the periphery and is proposed to be aligned in the north south direction. The playing surface will be of 50mm thick artificial turf, FIFA specifications. Periphery of the court will be provided with 8-metre-high fencing with braided net made from HDPE Twine of size 50 mm x 50mm, 2.5 mm thick and top will be also covered with HDPE Twine 50mm x 50 mm mesh, 2.5 mm thick supported on SS304 grade 10mm thick tensile cable. The Futsal Court will be equipped with 155 W integrated LED floodlights. The court will be suitable for playing day and night games and can be used for playing two sports, Futsal and Volleyball. The details pertaining to the building is given in [Annexure C-1](#) as per SOP under MERU which includes a) Land map & land title, b) Executing agency permission / technical sanction, c) Cost estimate, d) Architectural blueprint and Photos of the site before the start of the work.

**ii) Building of School of Earth, Ocean and Atmospheric Sciences (SEOAS):**

The work of construction of building for “School of Earth, Ocean and Atmospheric Sciences” (SEOAS) will be undertaken under PM-USHA funding. Ar. Jose Noronha has been appointed as a consultant Architect for the project. The said building will be located near the existing MMTTC building on the opposite side of the approach road.

The SEOAS building is comprising of two floors with a total build up area of approximately 3749.37 m<sup>2</sup>. The estimated cost is approximately Rs. 20,32,57,997.00. The details pertaining to the building is given in [Annexure C-2](#) as per SOP under MERU.

**iii) SPAS Building (Electrical Sub-station & service road):-**

Presently SPAS building is built using internal resources. The total estimate to electrical infrastructure, such as 33 kA Electrical substation (with single storey RCC structure for housing the same), GENSET, Cabling, LT panel with service road amounts to Rs.3,80,00,722.00. The total built up area will be 510.48 m<sup>2</sup>. The scope of the work includes construction of a single storey RCC structure for the 33 KV sub-station. There is provision of a 3 phase, 11/0.44KV outdoor type hermitically sealed transformer of 1000 KVA capacity with OLTC. Provision of main LT panel with 1 incomer for 1000KVA transformer equipped with 2000A EDO ACB and 1 incomer for 500 KVA DG. Provision of Light, ceiling fans, exhausts fans for the substation building. Erection of fencing with wire mesh (jali) for the outdoor transformers with stone metal 25 mm size. Supply, laying and termination of LT cables of 3.5 x 300 Sq.mm from LT panel in the substation to the LT panels in the SPAS building. Provision of required earthing for transformer body, neutral, fencing, panels, etc. Provision of safety equipment such as fire

extinguishers, safety gloves, first aid box, etc. Provision of 500KVA diesel generator set, MS support for DG set exhaust pipe and 999 Litres diesel tank.

The scope of work for Erection of 11/0.44KV 1500KVA transformer and switchgears at Faculty E shall include Provision of a 3 phase, 11/0.44KV outdoor type hermetically sealed transformer of 1500 KVA capacity with OLTC. Erection of fencing with wire mesh (jali) for the outdoor transformer with stone metal 25 mm size. Supply, laying and termination of LT cables of 3.5 x 400 Sq.mm from LT panel in the substation to the LT panels in the Faculty E building. Provision of required earthing for transformer body, neutral, fencing, panels, etc. Provision of safety equipment such as fire extinguishers, safety gloves, first aid box, etc.

The details pertaining to the building is given in [Annexure C-3](#) as per SOP under MERU.

#### **iv) New Building for Biochemistry:-**

New Biochemistry infrastructure will be built as G+1 structure with total area of 2435.00 m<sup>2</sup> and estimated cost of same is Rs. 13,19,71,576.00. M/s Wagle and Associates have been appointed as consultant architect for the aforesaid project. The building has been designed after incorporating inputs from the stakeholders which includes lab designs, number of labs and their locations, electrical points, LPG gas points, location of fume hoods etc. It will have 02 M.Sc. laboratories on the ground floor and 09 research laboratories on the first floor. The building is proposed to be located behind the existing Faculty E building. The building will also house a cold room, tissue culture room, balance room and mini store room. The details pertaining to the building is given in [Annexure C-4](#) as per SOP under MERU.

#### **v) Faculty Research Labs for Chemistry:-**

Faculty Research Labs (FRL) will be constructed with total area of 573.77 m<sup>2</sup> and estimated cost of Rs. 2,87,68,165.00. The University has allocated rooms in the basement of faculty block- E for Biochemistry research lab & Analytical chemistry research lab. Two rooms are allocated for the Analytical Chemistry instrumentation lab on the ground floor of the same building. The electrical estimate including fire alarm system, data connection and HVAC is prepared by the University electrical consultant Shri R. D. Bhide. The lab furniture, exhaust, ducting and plumbing estimate is prepared based on the market rates and in consultation with the end users of the laboratories. The details pertaining to the building is given in [Annexure C-5](#) as per SOP under MERU.

#### **vi) Hostels: For domestic and International Students**

The Goa University is poised to increase its on-campus students population both National and International, in coming years. In order to make available housing for the students from remote towns and villages, Girls and Boys hostels are planned. There is a need for the International students hostel as number of foreign students are increasing every year. The building for Men's hostel with 44 rooms and International student hostel with 32 rooms will be together (with total built up area 3518 m<sup>2</sup>) while Girls hostel will be a separate building (with total built up area 3876 m<sup>2</sup>). The estimated cost of construction will be Rs. 35,91,23,221.00. M/s UCJ Architecture and Environment have been appointed as consultant architects for this project. The details pertaining to the buildings is given in [Annexure C-6](#) as per SOP under MERU.

#### **Category II:- Renovation of MPS auditorium**

The Manohar Parrikar School of law and public administration has a newly constructed unfurnished grey structure of the auditorium having built up area of 978 m<sup>2</sup> and the works like



acoustics, audio visual, lighting, stage craft, stage lighting, HVAC, furnishing, power supply, etc are to be completed to make 500 seated AC Auditorium fully functional. The Interior and Allied works for furnishing and commissioning of the Auditorium will be undertaken under PM-USHA. The M/s UCJ Architecture and Environment has been appointed as a consulting architect for the said project. The estimated cost of the project is Rs.10,00,00,000.00. The details pertaining to the renovation is given in [Annexure R-1](#) as per SOP under MERU.

### **Category III:- Equipment:-**

University will procuring high end equipment like ICP-MS, Hyperspectral camera, Atomic Force Microscope (AFM), Florescence Activated cell sorter (FACS) and Nano Analyser amounting to Rs. 6,38,42,230.00 through MERU grant. The budgetary Quote for equipment along with the detailed specification are given below item wise.

#### **a) Inductively Coupled Plasma – Mass Spectrometry (ICP-MS)**

The ICP-MS equipment will cater to the wider section of faculty and researchers from science schools. The proposed amount for the procurement of ICP-MS is Rs.2,38,44,675/-. The details pertaining to the equipment is given in [Annexure E-1](#) as per SOP.

#### **b) Atomic Force Microscope (AFM)**

AFM enables the imaging of almost any type of surface including polymers, ceramics, composites, glass and biological samples. It offers qualitative and quantitative information of many physical properties including size, surface texture and roughness, morphology, surface area, volume distribution etc. AFM therefore will be useful for physical, chemical biological and earth science researchers. The proposed amount for the procurement of AFM is Rs. 89,81,555/-. The details pertaining to the equipment is given in [Annexure E-2](#) as per SOP under MERU.

#### **c) Hyperspectral Camera (Visible, NIR) with UAV**

This system will enable researchers in electronics science, biological sciences, marine and geological sciences to carry out their research. It can be used to study vegetation index and carbon sequestration which is used in wildlife-related studies in both Zoology and Botany disciplines. The present research focus of the Electronics disciple is on Machine Learning for Biomedical and Agro-Electronics and having a Hyperspectral system will enable to carry out research in agriculture to identify weeds, monitor plant health, and evaluate the ripeness of fruits, food adulteration detection. The amount require for the procurement of Hyperspectral Camera (Visible, NIR) with UAV is Rs.1,32,68,000.00/-. The details pertaining to the equipment is given in [Annexure E-3](#) as per SOP under MERU.

#### **d) Fluorescence Activated Cell Sorter (FACS)**

FACS is required for Marine biology and ecology studies as well as for fish cell separation, virus research, plankton research, and fish and invertebrate hematological studies. It will help augmenting research capabilities in marine microbiology, marine biotechnology as well as other life science branches like biochemistry. The estimated amount for the procurement of FACS is Rs.1,35,00,000.00/-. The details pertaining to the equipment is given in [Annexure E-4](#) as per SOP under MERU.

### **e) Nanoparticle Analyser using DLS**

This is a vital instrument to characterize nanomaterials and nanoparticles. Using this instrument, it is possible to obtain the size information from 1 nm to 10 micrometers. It is also possible to get the zeta potential values of nanoparticles. The amount required for the procurement of Nanoparticle Analyser using DLS is Rs. 42,48,000.00/-. The details pertaining to the equipment is given in [Annexure E-5](#) as per SOP under MERU.

## **Category IV: Soft Component and Green Initiatives:-**

### **a) Audio/Video & Multimedia Language Laboratory**

This laboratory is planned for the researches in languages. The amount required for the setting up of Audio/Video & Multimedia Language Laboratory is Rs. 61,36,000.00/-. The details pertaining to the Language laboratory is given in [Annexure S-1](#) as per SOP under MERU.

### **b) SMART Boards**

It is planned to equip every classroom in the University with smart boards to provide a higher level of teaching-learning experience to our students. The estimated amount for the procurement of 100 smart boards is Rs.1,00,00,000.00/-. The details pertaining to the smart boards is given in [Annexure S-2](#) as per SOP under MERU.

### **c) RFID Tag:-**

It has been decided to equip the University library with the RFID tags. The amount that will be used for the procurement of RFID Tags for Goa University Library is Rs.38,88,100.00/-. The details pertaining to the RFID tags is given in [Annexure S-3](#).

### **d) High Performance Computing (HPC)**

HPC will be used by researchers and students of computer science, computational physics, electronics, theoretical chemistry, atmospheric science, economics, data science, and financial management, as well as several disciplines of social sciences. It is expected to enable faculty members and students to take up advanced computational problems related to Big data analysis, Natural Language Translations, Microeconomics, Remote sensing, and Hyperspectral imaging in all areas of sciences and social sciences. The estimated amount for the procurement of High Performance Computing is Rs.2,00,00,000.00/-. The details pertaining to the equipment is given in [Annexure S-4](#) as per SOP under MERU.

### **e) Desktop Computers**

Proposed amount for the procurement of 100 Nos. Desktop computers is Rs. 50,00,000.00. The details pertaining to the building is given in [Annexure S-5](#) as per SOP under MERU.

### **f) GREEN INITIATIVES:**

Total amount required for purchase of items (Biomass setup, Electric Vehicles, Solar power plant, Rain water harvesting – Ground recharge, Sensor based LED Lamps, Solar street lights, Atmospheric Water Generator Machine) under green initiative is Rs.1,76,53,338.00

### **i) Biogas plants:-**

Proposed amount for setting up of Biogas plant at six locations @ of Rs.1,28,960.00 per plant amounting to Rs. 7,73,760.00/-. The details pertaining to the biogas plants is given in [Annexure S-6](#) as per SOP under MERU.

#### **ii) Rain water harvesting – Ground recharge**

Proposed amount for setting up of Rain water harvesting – Ground recharge facility at two locations namely Manohar Parrikar School and School of Physics and Applied Sciences, amounting to Rs. 4,95,600.00 and Rs. 6,49,000.00, respectively. The details pertaining to the Rain Water Harvesting set-ups is given in [Annexure S-7](#) as per SOP under MERU.

#### **iii) Solar power plant:-**

Proposed to install 60 kW roof-top Solar power plant amounting to 35,50,560.00. The Solar power plants will be installed above the newly proposed buildings under MERU. The details pertaining to the solar power plant set-ups is given in [Annexure S-8](#) as per SOP under MERU.

#### **iv) Electric Vehicles:-**

a) 8 electric bikes @ Rs.1,65,617.00 each amounting to Rs.13,24,936.00 are proposed to be purchased for giving one each to all the Schools in the University.

b) One 23 seater electric closed bus amounting to Rs. 23,94,100.00 is proposed to be purchased for transportation of students from girls' hostel to the different schools.

c) One 14 seater electric closed bus amounting to Rs. 15,01,500.00 is proposed to be purchased for transportation of students from girls' hostel to the different schools.

The details pertaining to the electric vehicles is given in [Annexure S-9](#) as per SOP under MERU.

#### **v) Atmospheric Water Generator Machine**

Proposed to install seven number “Atmospheric Water Generator Machine” with 100 Ltr generation capacity per day from the atmosphere @ Rs. 2,83,200.00 per unit amounting to Rs. 19,82,400.00. The equipment is proposed to be installed in campus canteens, guest house and hostels. The details pertaining to the Rain Water Harvesting generator is given in [Annexure S-10](#) as per SOP under MERU.

#### **vi) Sensor based LED Lamps**

It is proposed to purchase 105 number sensor-based bulb @Rs. 431.00 amounting to Rs. 45,255.00. The details pertaining to the sensor based LED lamps is given in [Annexure S-11](#) as per SOP under MERU.

#### **vii) Sewage Treatment Plant for Girls Hostel:-**

It is proposed to install the Sewage Treatment Plant for Girls' Hostel. The treated water will be used for planting trees. The estimated cost of the same is Rs. 20,00,000.00. The details pertaining to the Sewage Treatment Plant installation is given in [Annexure S-12](#) as per SOP under MERU.

#### **viii) Excavation of soil & rock around existing water body:-**

It is proposed to excavate laterite around existing water body to expand and maintain the same. The estimated cost of the same is Rs. 5,20,000.00. The details pertaining towards the conservation of existing water body on the campus is given in [Annexure S-13](#) as per SOP under MERU.

**ix) 2 Mts pathway with laterite stone masonry on either side:-**

2 Mts pathway with laterite stone masonry on either side with filling and levelling with soil and 20 cms thick rubble packing is proposed inside the campus covering around 803 Mts. This will lessen the risk of researchers who venture into the field for their research on flora and fauna inside the campus. The estimated cost of the above is Rs. 24,16,227.00 @ of Rs. 3,009.00 per Mt. The details pertaining to the above work is given in [Annexure S-14](#) as per SOP under MERU. This work also includes initial clearing of ground and removal of hindrances, surface dressing and leveling.



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