To,
The Convenor of Research and Development Cell,
Regent Education and Research Foundation Group of Institutions,
Barrackpore, Kolkata 700121

Date: 22/04/2022

Subject: Proposal for Establishment of Robotics Lab and Procurement of High-End Desktop Computer

Dear Sir,

I hope this letter finds you in good health and high spirits. On behalf of the Robotics Club at Regent Education and Research Foundation Group of Institutions, I am writing to request funding for the establishment of a state-of-the-art Robotics Lab and the procurement of a high-end desktop computer. Our vision is to foster a culture of innovation, creativity, and advanced research within the field of robotics, enabling students to gain practical experience and skills that align with the industry's demands.

Objective:

- The primary objective of this proposal is to establish a dedicated Robotics Lab within the institute premises, equipped with modern robotics hardware, software, and tools.
- This lab will serve as a hub for various robotics-related activities, workshops, research, and competitions,
- Empowering our students to stay at the forefront of cutting-edge technology.

Project Description:

Robotics Lab Development:
The Robotics Lab will be designed to offer a conducive environment for students and researchers to work collaboratively on robotics projects. The lab will consist of the following components:

a. Robotics Kits: We will acquire a range of robotic kits, including mobile robots, robotic arms, sensors, actuators, and microcontrollers, to facilitate hands-on learning and project development.

b. Computer and 3D printers: To support programming and 3D modelling, we intend to set up computer workstations equipped with the necessary software and tools for programming robotic systems and a

c. Test and Measurement Equipment: The lab will be equipped with essential test and measurement tools to calibrate and troubleshoot robotic systems effectively.

High-End Desktop Computer:
In addition to the Robotics Lab, we seek to procure a high-end desktop computer with advanced processing capabilities, ample memory, and top-tier graphics, enabling resource-intensive simulations, 3D modeling, and AI-based programming tasks.

Budget Breakdown:

The estimated cost for the Robotics Lab development and the high-end desktop computer is as follows:

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Robotics Kits and Components: INR 2,00,000
Computer Workstations: INR 60,000
Test and Measurement Equipment: INR 30,000
Total: INR 2,90,000

Funding Request:

We kindly request the Research and Development Cell to grant us a total of INR 2,90,000 for the establishment of the Robotics Lab which also includes an allocation of INR 60,000 to procure the high-end desktop computer.

Benefits and Impact:

The proposed Robotics Lab will provide numerous benefits to the institution and its students:

Skill Development: Students will gain hands-on experience in robotics and automation, enhancing their problem-solving and critical-thinking abilities.

Research and Innovation: The lab will foster a culture of research, innovation, and entrepreneurship in the field of robotics, encouraging students to develop groundbreaking projects.

Industry Relevance: By equipping students with practical robotics knowledge, the lab will enhance their employability and readiness for the ever-evolving job market.

Prestige: The Robotics Lab will elevate the institution's reputation by showcasing its commitment to cutting-edge technology and practical education.

Conclusion:

We firmly believe that establishing a Robotics Lab and procuring a high-end desktop computer will significantly contribute to the academic and research excellence of Regent Education and Research Foundation Group of Institutions. We are committed to ensuring the efficient utilization of the funds for the benefit of the students and the institution.

We eagerly await your favourable response to our proposal. Please feel free to contact us if you require any further information or clarification.

Thank you for considering our request.

Sincerely,

agdastidar

Avik Ghosh Dastidar
Convenor, Robotics Club
Regent Education and Research Foundation Group of Institutions
Mail: avikgd@regent.ac.in
Ph: 9433742010

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Components and approximate price for proposed ROBITICS LAB, RERF

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
Microcontroller Board	1	Arduino UNO R3 Atmega328p	10	949.00	9490.00
	2	Arduino Mega 2560 R3	5	1499.00	7495.00
	3	Arduino Nano ATmega328P Nano V3	5	899.00	4495.00
	4	Raspberry Pi 4, 8GB RAM	4	8260.00	33040.00
	5	BeagleBone Black Rev C	1	5426.82	5426.82
	6	Waveshare XNUCLEO-F103RB, Improved STM32 NUCLEO Board	1	4099.00	4099.00
	7	Adafruit Industries LLC 2542 FONA 800 GSM 850MHz, 900MHz, 1.8GHz, 1.9GHz	1	3800.00	3800.00
Microcontroller Board Total					**54520.00**
Bread Board	8	830 Points Bread Board	10	220.00	2200.00
	9	400 Points Bread Board	10	195.00	1950.00
	10	170 Points Bread Board	10	64.00	640.00
Bread Board Total					**4790.00**
USB Cable	11	Type-A to Mini Type-B USB 2.0 Cable for Arduino NANO 1m length	5	289.00	1445.00

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Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	12	Type-A to Type-B USB 2.0 Cable for Arduino UNO/Mega 1m length	15	299.00	4485.00
USB Cable Total					**5930.00**
Bread Board Jumper Cable	13	Male to Male	500	3.00	1500.00
	14	Male to Female	400	3.00	1200.00
	15	Female to Female	200	3.00	600.00
Bread Board Jumper Cable Total					**3300.00**
Breadboard Wire	16	P/N B-30-1000 Single-Core Breadboard Wire - Colour RED in meter	10		
	17	P/N B-30-1000 Single-Core Breadboard Wire - Colour GREEN in meter	10		
	18	P/N B-30-1000 Single-Core Breadboard Wire - Colour BLUE in meter	10		600.00
	19	P/N B-30-1000 Single-Core Breadboard Wire - Colour BLACK in meter	10		
	20	P/N B-30-1000 Single-Core Breadboard Wire - Colour YELLOW in meter	10		
Breadboard Wire Total					**600.00**
Other wires	21	20 Gauge single core copper wire of different colours (200 Meters)	1		200.00

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	22	Multiple Core Flexible Copper Wires and Cables (100 Meters) -RED and BLACK	1		200.00
Other wires Total					**400.00**
Sensors	23	HC-SR04 Ultrasonic Transducer Sensor	5	136.00	680.00
	24	MQ2 Gas Sensor	5	98.00	490.00
	25	IR Proximity Sensor For Line Follower	10	30.00	300.00
	26	IR Analog Distance	5	505.00	2525.00
	27	Dht11 Digital Relative Humidity & Temperature Sensor Module	5	99.00	495.00
	28	MLX90614 Contactless Temperature Sensor Module	2	839.00	1678.00
	29	Mpu6050 3 Axis Gyroscope And Accelerometer Module	5	123.00	615.00
	30	LM393 Optical Photosensitive LDR light sensor module	5	38.00	190.00
	31	PIR HC-SR501 Passive Infrared PIR Motion Sensor	5	65.00	325.00
	32	SW-420 Normally Closed Alarm Vibration Sensor Module	5	61.00	305.00
	33	IR Infrared Flame Sensor Module	5	55.00	275.00
	34	Laser Beam Sensor Module Tube Laser Receiver Module Non-Modulator	2	110.00	220.00
	35	650nm Laser Module 6mm 5V 5mW Red Laser Diode with Copper Head	2	90.00	180.00

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	36	TTP223 Capacitive Touch Sensor Module for Arduino	5	29.00	145.00
	37	TTP229 16-Channel Digital Capacitive Switch Touch Sensor Module for Arduino	2	112.00	224.00
	38	Soil Moisture Sensor	5	52.00	260.00
	39	10kg Load Cell with HX711 Weight Weighing A/d Module Pressure Sensor	2	560.00	1120.00
	40	R307 Fingerprint Reader Module	2	899.00	1798.00
	41	TCS3200 Color Sensor KG038	2	499.00	998.00
	42	Raspberry Pi 5MP Camera Board	2	290.00	580.00
	43	OV7670 300KP VGA Camera Image Sensor Module	2	179.00	358.00
	44	MPU6050 - Triple Axis Gyro Accelerometer Module	4	123.00	492.00
	45	Mercury Medallion Module	2	49.00	98.00
	46	Photo interrupter module	2	48.00	96.00
	47	SMD 3 Color LED Module	2	59.00	118.00
	48	Small passive buzzer module	2	33.00	66.00
	49	KY-024 Linear Magnetic Hall Effect Sensor Module	2	49.00	98.00
	50	Tilt Switch Module	2	57.00	114.00
	51	JoyStick Shield Module Robotics Control	2	285.00	570.00

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Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	52	Magnetic Reed Switch Sensor Module	2	185.00	370.00
	53	TCRT5000 Dual Channel Line Tracking Sensor Module	8	44.00	352.00
	54	Sound Detection Sensor	2	54.00	108.00
	55	360 Degree Rotary Encoder Module	2	58.00	116.00
	56	1/8 inch Water Flow Sensor - YF-S401	2	290.00	580.00
	57	12V 0.25A 55ml/min Silicone Tube Liquid Pump	2	399.00	798.00
Sensors Total		Total + 18% GST			20929.66
Motor	58	SG90 Micro Servo Motor	5	99.00	495.00
	59	Dc Bo Dual Shaft Motor	6	55.00	330.00
	60	Stepper Motor DC 5V 4 Phase 5 Wire with ULN2003 Driver Board	4	139.00	556.00
	61	1800 Kv Bldc Brushless Dc Motor	4	345.00	1380.00
	62	1000 RPM - 12V Centre Shaft DC Geared Motor	8	135.00	1080.00
	63	60 RPM Single Shaft BO Motor - Straight	6	55.00	330.00
Motor Total		Total + 18% GST			4921.78

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
Sheild / Driver	64	L293D Motor Driver/Stepper/Servo Shield	8	135.00	1080.00
	65	PCA9685 16 Channel 12-bit PWM Servo Motor Driver I2C Module	2	389.00	778.00
	66	Generic 170PST Prototype Shield Expansion Board with SYB-170 Mini Breadboard Base for Arduino UNO Proto Shield	10	81.00	810.00
	67	Iic/I2C/Twi/Spi Serial Interface Board Module For Arduino 1602 Lcd Display	5	59.00	295.00
	68	Ethernet W5100 Shield Network Expansion Board	5	1239.00	6195.00
	69	Micro Sd Card Module Tf Card Memory Shield	5	51.00	255.00
	70	L293D Wifi Motor Drive Shield For Node Mcu ESP8266 ESP-12E	2	158.00	316.00
	71	LM358 Gain Amplification Operational Amplifier Module	2	73.00	146.00
	72	ISD1760 Voice Recording and Playback Module	2	395.00	790.00
Sheild / Driver Total		Total + 18% GST			12584.70
Display	73	Lcd 16X2 Yellow/blue Backlight Alphanumeric Display	5	135.00	675.00
	74	0.96 Inch I2C IIC Interface OLED Screen Display 4 Pin	2	188.00	376.00
	75	2.4 Inch Touch Screen TFT Display with Shield	2	559.00	1118.00
Display Total					2169.00

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
Communication	76	Hc-05 Wireless Bluetooth Module	6	223.00	1338.00
	77	WeMos ESP8266 D1 R2 V2.1.0 WiFi Development Board	2	295.00	590.00
	78	ESP8266 Serial WIFI Wireless Transceiver Module with Breakout Board	2	499.00	998.00
	79	NODEMCU - ESP8266 Wifi Development Board	2	209.00	418.00
	80	NRF24L01 2.4GHz Wireless Transceiver module	6	74.00	444.00
	81	SIM900A GSM Module with SMA Antenna	2	805.00	1610.00
	82	HM-10 Bluetooth Module	6	238.00	1428.00
	83	NEO-6M GPS Module	2	320.00	640.00
	84	SIM808 Bluetooth Compatible GSM/GPRS/GPS Module	2	1899.00	3798.00
	85	ESP32 Development Board with Wifi and Bluetooth	2	395.00	790.00
	86	ESP32-S3-WROOM-1-N8R2 DEV BRD	1	1140.00	1140.00
Communication Total					13291.52
Relay	87	4 Channel 5V 10 A Relay Module	3	140.00	420.00
	88	2 Channel 5V 10 A Relay Module	3	73.00	219.00
	89	12V 1.1 A Solenoid Lock	2	310.00	620.00

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
Relay Total					1485.62
Chesis/arm/Robot structures	90	KG192 4-Wheel Robot Smart Car Chassis Kits Car Model with Speed Encoder, wheels, bo motors, wheels, Battery box, clamp screw	2	749.00	1498.00
	91	kit4curious 4 wheel drive curious chassis for diy robotics-Black	2	999.00	1998.00
	92	3D printed Robotic Arm With Gripper incuding All nuts and bolts, Servos	2	699.00	1398.00
	93	Cligo Wireless Remote Controlled Smart Car Chassis	2	449.00	898.00
	94	65mm Robot Wheel for BO Motors	8	38.00	304.00
	95	Robot Wheel 10cm Dia. x 2cm Width	8	62.00	496.00
	96	80mm-A Mecanum Wheel Compatible with 6.7mm Coupling (Pack of 4)	2	919.00	1838.00
	97	Wheel Trolley Cart 25mm Dia 360° Rotation Swivel Caster Wheel (Pack of 4)	1	249.00	249.00
	98	Extention plates for chesis	4	100.00	400.00
	99	L shape clamps	20	79.00	1580.00
	100	U shape clamps	20	149.00	2980.00
	101	Nuts and Bolts of different sizes (Set of 500 pieces)	1	1000.00	1000.00
	102	Plastic gears of differents sizes and shafts (set of 200 pieces)	1	500.00	500.00
	103	6 mm Worm gears+22 Teeth (60mm dia) Spur Gear	4	420.00	1680.00

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
Chesis/arm/Robot structures Total					19846.42
Discrete Components	104	3mm Round DIP LED RED (Pack of 50)	1	70.00	70.00
	105	3mm Round DIP LED GREEN (Pack of 50)	1	70.00	70.00
	106	3mm Round DIP LED YELLOW (Pack of 50)	1	70.00	70.00
	107	3mm Round DIP LED BLUE (Pack of 50)	1	70.00	70.00
	108	3mm Round DIP LED WHITE (Pack of 50)	1	70.00	70.00
	109	5mm Round DIP LED RED (Pack of 50)	1	100.00	100.00
	110	5mm Round DIP LED GREEN (Pack of 50)	1	100.00	100.00
	111	5mm Round DIP LED YELLOW (Pack of 50)	1	100.00	100.00
	112	5mm Round DIP LED BLUE (Pack of 50)	1	100.00	100.00
	113	5mm Round DIP LED WHITE (Pack of 50)	1	100.00	100.00
	114	5mm RGB LED MODULE	2	54.00	108.00
	115	0.25w 5% tollerence Registors of all mixed values set of (1000 pieces)	1	340.00	340.00
	116	0.25w 5% tollerence 1K Resistor	100	0.50	50.00
	117	0.25w 5% tollerence 10K Resistor	100	0.50	50.00

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	118	0.25w 5% tollerence 330Ω Resistor	100	0.50	50.00
	119	0.25w 5% tollerence 220Ω Resistor	100	0.50	50.00
	120	0.25w 5% tollerence 100Ω Resistor	100	0.50	50.00
	121	1k, Vertical PCB Preset Variable Resistor Trimmer Potentiometer	10	10.00	100.00
	122	10k, Vertical PCB Preset Variable Resistor Trimmer Potentiometer	10	10.00	100.00
	123	Ceremic Capacitors of all mixed values (set of 100 pieces)	5	120.00	600.00
	124	Electrolytic Capacitor Assortment Box (Set of 500 pieces)	1	1199.00	1199.00
	125	push button 2 pin (set of 50)	1	99.00	99.00
	126	push button 4 pin (set of 50)	1	88.00	88.00
	127	Pack of 10 Choke and Coils Inductors	10	158.00	1580.00
	128	LM7805 Positive Voltage Regulator IC, 5V 1A	5	9.00	45.00
	129	LM1117 3.3V 1A DIP Voltage Regulator	5	38.00	190.00
Discrete Components Total					**5549.00**
Power Supply	130	3.3v/5v Power Supply Module for Breadboards	10	59.00	590.00
	131	12V 1A Adaptor	5	99.00	495.00

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Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	132	12V Li-ion 18650 Lithium ion Rechargeable (2000 Mah)	3	819.00	2457.00
	133	12.6V 12V 11.1V 18650 3S Battery Pack Lipo Lithium Battery Charger Constant Voltage Constant Current with Indicator (2A)	1	999.00	999.00
	134	Duracell Ultra Alkaline 9V Batteries	5	184.00	920.00
	135	9V Battery Clip Connector	5	10.00	50.00
	136	DC Power Jack Plug Adapter Connector, 12V 24V Male to 2.1mm x 5.5mm Barrel Connectors	10	20.00	200.00
	137	DC Power Jack Plug Adapter Connector, 12V 24V female to 2.1mm x 5.5mm Barrel Connectors	10	20.00	200.00
	138	6 x AA Battery Case Storage Holder With DC2.1 Power Jack For Arduino	2	200.00	400.00
	139	12V 10A DC SMPS	2	695.00	1390.00
	140	20 Watt - 12 Volt Solar Panel	2	1650.00	3300.00
Power Supply Total					**11001.00**
Soldering	141	Safe Antistatic 936 Analog Soldering Station with 50W Soldering Iron & Stand	2	4335.00	8670.00
	142	25 Watt soldering iron	2	300.00	600.00
	143	10 Watt soldering iron	2		
	144	Professional 220V-40W Electrically Heated Manual Desoldering Pump	2	499.00	998.00
	145	Soldering wire 50 gm+flux	2	300.00	600.00

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Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	146	Anti-Static Non-Slip Magnetic Silicone Repair Mat, Multi Work Station Soldering Mat (45 x 30 cm)	1	600.00	600.00
	147	3. 5X / 12X Helping Hand Magnifier Magnifying with Soldering Stand & LED Light	2	870.00	1740.00
	148	Soldering Iron Stand	1	60.00	60.00
	149	Soldering Iron Tip Cleaner Steel Wire with /Stand Set Tool	1	470.00	470.00
Soldering Total					13738.00
Tools	150	Anti Static ESD Safe Tweezers set for Electronics - Straight Pointed, Flat and curved Tip	1	489.00	489.00
	151	Wire Striper & Cutter, Size: 5" (125mm)	2	90.00	180.00
	152	7 Inch Combination Plier (Multi-purpose)	2	300.00	600.00
	153	Multi-purpose Long Nose Plier, 6 Inches	1	200.00	200.00
	154	Interchangeable Precision Screwdriver Tool Set Kit with Magnetic Holder	1	200.00	200.00
	155	Combination Screw Driver Set with Tester	1	250.00	250.00
	156	PCB Micro Drill Machine With Power Supply with Drill Bits	1	700.00	700.00
Tools Total					2619.00
Misc	157	TH-M98 Digital Multimeter	2	799.00	1598.00

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	158	DPDT ON-Off 6 Pin 2 Position Slide Switch (set of 8)	1	280.00	280.00
	159	40watt Glue Gun	1	300.00	300.00
	160	Glue Stick	20	300.00	6000.00
	161	3D printer (WOL 3D ENDER - 3 MAX Model 2022)	1	26191.00	26191.00
	162	3D Printer Heat Bed Platform Sticker Sheet 235x235mm (Consumable)	1	379.00	379.00
	163	22Pieces 3D Printer Extruder Nozzle MK8	1	449.00	449.00
	164	PLA 3d Filament 1.75mm (White, 1kg) (Consumable)	1	1000.00	1000.00
	165	PLA 3d Filament 1.75mm (Black, 1kg) (Consumable)	1	1000.00	1000.00
	166	PLA 3d Filament 1.75mm (RED, 1kg) (Consumable)	1	1000.00	1000.00
	167	PLA 3d Filament 1.75mm (GREEN, 1kg) (Consumable)	1	1000.00	1000.00
	168	PLA 3d Filament 1.75mm (BLUE, 1kg) (Consumable)	1	1000.00	1000.00
	169	Raspberry pi 4 case Model B Acrylic case with Fan with heatsink Included	4	308.00	1232.00
	170	Hitsink for LM7805	5	150.00	750.00
	171	Hitsink for LM1117	4	250.00	1000.00
	172	Polyolefin Heat Shrink Tube Sleeve of different size (set of 300 pieces)	2	431.00	862.00
	173	Solar Charger Controller with Battery Regulator and LCD Display with USB Port 12V/24V (10A)	2	632.00	1264.00

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Component List

Item Type	SL No	Specification	Quantity	Approx cost per unit	Approx Total Cost
	174	12V 92W Thermoelectric Peltier Plate Module 40mm x 40mm with CPU Cooling Fan and Heat sink	4	499.00	1996.00
	175	Desktop (i7 8GB RAM 500GB HDD 17" Monitor)	1	65000.00	65000.00
Misc Total					112301.00
Grand Total					289976.70

for payment 289977/-
(In Words) Two lakhs eighty nine thousands nine hundred seventy seven only.

Principal
RERFGI, Barrackpore

Regent Education & Research Foundation
Group of Institutions

R&D PROJECT PROPOSAL

1. Title of the project: Rainwater Harvesting
2. Name of the Applicant: Dr. Kaushik Dutta Roy (Associate Professor)
3. Name, Designation, and Affiliation of Principal Investigator: Dr. Kaushik Dutta Roy(Associate Professor)
4. Name, Designation, Affiliation of Co-PI (if any):1. Yuvaraj Mondal (AP) 2. Payel Chakraborty (Senior TA) 3. Chinmay Majumder (Senior TA)
5. Collaborating Institute (if any):NA
6. Broad Subject area of the Project Proposal : Civil Engineering
7. Abstract (Maximum 150 words):

Utilization of rainwater is an important eco-friendly approach –Suchagreenpracticeencouragedinthe formofa CommunityDevelopmentProgramcanfinditspopularitywhenitshowsthemanifoldbenefits. On the other hand, rainwater as well as run-off storm water stored in a planned way save the earth from soil erosion, In the RERFGI campus rainwater harvesting system has been installed on the roof of exactly 836.36 Sqm area of the rooftop. The rainwater is collected through a network of pipelinesand stored in the tank. There are two 5000 liters tanks on the campus rooftop where the roof runoffwater is stored. The roof runoff wateris allowed to use for washrooms, Gardening, and construction purposes. TotalAreaoftinshadeofrooftopinRERF 836.36m².Our civil Engineering departmental students were involved in this project

8. Total Duration (Months): 6 Months
9. Plan of Work: (500 characters):

- Have to Arrange a meeting with students and concerned faculties of the institute
- Selection of the rainwater catchment area
- Design of the different components related to rainwater collection, transportation, and plumbing arrangement for the project.
- Financial estimation for this project had been finalized and sent to the competent authority of the institute.

- After getting the financial approval work will be started.
- Involvement of interested students for the project

1st Quarter (November 2022 to February 2023): Estimation for the project willbe sent to the competent authority for getting approval.

2nd Quarter (March 2023 to June 2023): Procurement of different ancillary items i.e. four no of water tanks in different sizes, pipes, and accessories, and complete the installation process.

10. Do you need any Instruments/ facilities outside the Institute(List out within 500 characters):

Sl. No.	Name	Description
1.	Sachin Das	Plumber
2.	LitanSaha	Helper
3.	Md.RajaAhamed	Helper
4.		

11. Total estimated cost (In Rupees and in Words): 4,00,000/-

12. Summary of the budget:

QUOTATION					
To REGENT EDUCATION & RESEARCH FOUNDATION BARA KANTHALIA, BARRACKPORE Site:- BARA KANTHALIA, BARRACKPORE		OUR REF.:- DATE : YOUR REF.:- DATE :		SS/Q-21/2023-24 05-07-2023 What's app 05-07-2023	
SL.No.	MATERIALS DESCRIPTION	QTY.	UNIT	NET RATE	AMOUNT
1	5000 Ltr. (Four Layer Foam) Water Tank (Rel. Classic)	3	Pcs.	38000.00	114000.00
2	2000 Ltr. (Four Layer Foam) Water Tank (Rel. Classic)	5	Pcs.	15600.00	78000.00
3	1½" UPVC Tank Connector	14	Pcs.	67.00	938.00
4	1½" UPVC Ball Valve	8	Pcs.	390.00	3120.00
5	1½" UPVC Elbow	135	Pcs.	54.00	7290.00
6	1½" UPVC Tee	30	Pcs.	80.00	2400.00
7	1½" UPVC Passover	10	Pcs.	177.00	1770.00
8	1½" UPVC China Clamp	180	Pcs.	11.00	1980.00
9	1½" UPVC 45° Elbow	18	Ft.	42.00	756.00
10	1½" UPVC Socket	98	Pcs.	31.00	3038.00
11	1½" X 1" UPVC Reduceing Socket	35	Pcs.	32.00	1120.00

12	1½" X 1¼" UPVC Reduceing Socket	8	Pcs.	33.00	264.00
13	1½" X 1" UPVC Reduceing Elbow	30	Pcs.	69.00	2070.00
14	1½" X 1" UPVC Reduceing tee	25	Pcs.	57.00	1425.00
15	1½" UPVC End Cap	12	Pcs.	22.00	264.00
16	1½" UPVC Pipe	950	Ft.	49.00	46550.00
17	1½" PVC Ball Cock	10	Pcs.	905.00	9050.00
18	237ml UPVC Solvent Cement	38	Pcs.	225.00	8550.00
19	1" UPVC Pipe	760	Ft.	29.00	22040.00
20	1" UPVC Elbow	95	Pcs.	23.50	2232.50
21	1" UPVC Tee	28	Pcs.	32.00	896.00
22	1" UPVC Socket	50	Pcs.	19.00	950.00
23	1" X ¾" UPVC Reduceing Elbow	38	Pcs.	21.00	798.00
24	1" X ¾" UPVC Reduceing Tee	12	Pcs.	33.00	396.00
25	1" X ½" UPVC Reduceing Elbow (Metal)	24	Pcs.	90.00	2160.00
26	1" X ½" UPVC Reduceing Tee (Metal)	14	Pcs.	122.00	1708.00
27	1" UPVC Ball Valve	28	Pcs.	240.00	6720.00
28	1" UPVC China Clamp	210	Pcs.	8.50	1785.00
29	¾" UPVC Pipe	130	Ft.	20.00	2600.00
30	110mm X 10' PVC Pipe S/S	30	Pcs.	520.00	15600.00
31	110mm PVC End Cap	12	Pcs.	56.00	672.00
32	1" X 1" UPVC Elbow (Metal)	12	Pcs.	210.00	2520.00
33	Teflon Tape	48	Pcs.	25.00	1200.00
34	250gm. BOND SET (M-seal)	18	Pcs.	75.00	1350.00
35	1½" C.I. Hook	36	Pcs.	11.50	414.00
36	¾" UPVC Ball Valve	25	Pcs.	140.00	3500.00
37	¾" UPVC China Clamp	42	Pcs.	7.50	315.00
38	Tap	4	Pcs.	100.00	400.00
39	Tank connector	4	Pcs.	160	**640.00**
40	Service & Labour Charge				**47700.00**
	(including GST) SUB TOTAL AMOUNT(NET) :-				**399181.50**
	Discount on Labour Charge				**7700**
	Total Amount				**391481.50**

Items			
Year	**1stQuater**	**2ndQuater**	**Total**
A. Recurring: a. Remunerations b. Consumables c. Travel d. Othercosts	0	0	0
B. Non-recurring Permanent equipment/ publication/ software*	1,50,000	2,50,000	4,00000
Grand Total (A+B)	1,50,000	2,50,000	4,00000

Date..... 5th July, 2023
Place..... REGENT, Barrackpore

Kaushik Dutta Roy
(Name and signature of the Applicant)

REGENT EDUCATION & RESEARCH FOUNDATION
HOD
CIVIL

Shovik Sarkar
(Name and signature of the Head of the Department)

DR. RAJORSHI BANDYOPADHYAY, (Principal)
REGENT EDUCATION & RESEARCH FOUNDATION
Bara Kathalia, Sweli Telinipara
Barrckpore, Kolkata - 700121

PROJECT REPORT

ON

RAINWATER HARVESTING

REGENT EDUCATION AND RESEARCH FOUNDATION
GROUP OF INSTITUTIONS

Prepared by: CIVIL ENGINEERING DEPARTMENT

Dr.Kaushik Dutta Roy
Associate Professor
Principal Investigator
Department of Civil Engineering

Mr. Yuvaraj Mondal
Assistant Professor
Co- Principal Investigator
Department of Civil Engineering

Dr. Rajorshi Bandyopadhyay
Principal
REGENT EDUCATION & RESEARCH FOUNDATION
Bara Kathalia, Sweli Telinipara
Barrckpore, Kolkata - 700121.

DR. RAJORSHI BANDYOPADHYAY, (Principal)

Ms. Payel Chakraborty
Senior Technical Assistant
Co-Principal Investigator
Department of Civil Engineering

Mr. Chinmay Majumder
Senior Technical Assistant
Co- Principal Investigator
Department of Civil Engineering

Mr. Shouvik Sarkar
Assistant Professor
HOD
Department of Civil Engineering

HOD CIVIL

Name of Students Involved in the project

Name	Roll No
Soumi Das	26301321081
Naurin Sultana	26301321094
UJJAL BISWAS	26301321121
Brayen Sarkar	26301321033
NARAYAN KHANRA	26301322025
Abhijeet Banerjee	26301320012
Indrani Dutta	26301321091
Sujan Kumar Dey	26301321090

DR. RAJORSHI BANDYOPADHYAY, (Principal)
REGENT EDUCATION & RESEARCH FOUNDATION
Bara Kathalia, Sweli Telinipara
Barrckpore, Kolkata - 700121

Rain Water Harvesting Project in Regent Education and ResearchFoundation Group of Institutions

Introduction:

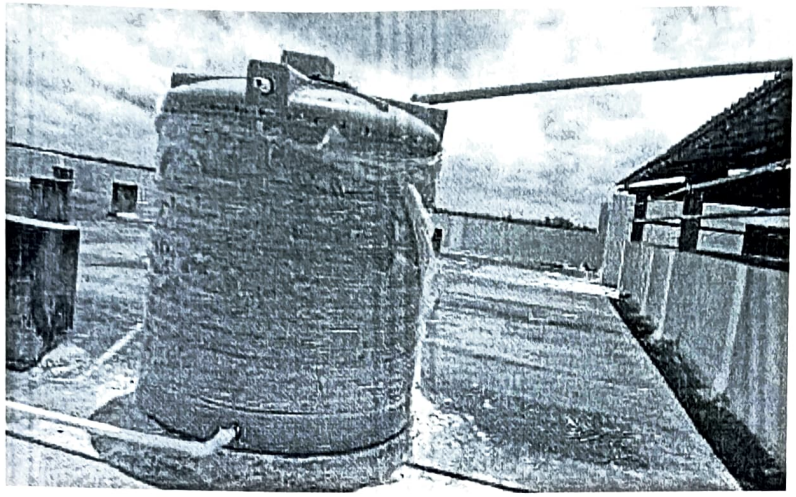
Rainwater harvesting is an important environment friendly approach – dubbed as a Green Practice which has double benefit in both keeping the groundwater table undisturbed and charging the aquifer. Such a green practice encouraged in form of Community Development Program can find its popularity when it shows the manifold benefits of, in one hand, bringing people together to collective thinking on 'green' approaches, innovating approaches to save earth by harping on their creative notes, achieving nobler feelings saving water for future; on the other hand, rainwater as well as run- off storm water stored in a planned way save the earth from soil erosion, flood; recharge the aquifers to give a shot in the arm to the decreasing groundwater table.

The increasing urbanization lead to concentrated population density at places resulting into uneven drawing of ground water. This is ensuing into draught and drying up of river beds at places where domestic and industrial use of water is rising. This places if shift focus towards using rainwater, the groundwater there may gradually fall back to its normal level thus ensuring the eco-balance not lost. The extensive and unplanned usage of groundwater not only disturbed the natural water table but also has made the groundwater contaminated and, in many a place, totally unfit for any use. The groundwater in these places required to be immediately left to revive. Collecting rainwater, and harvesting the storm water run-offs, in these places, surely would minimize the risk of the future population here.

Rainwater harvesting, besides being eco-friendly, is an economic practice as well. The cost of digging a catchment area even can be saved by a roof-top collection of rainwater. The freshwater canals or rain-fed natural ponds too can be used for harvesting. Sand-gravel filters for purifying rainwater is again something that can be easily arranged. The catchments and settlement tanks built in the area easily free the spot and the vicinity from the curse of flood or water logging, thus saving money of pumping outdirty muddy storm water. The presence of a water body in the region also reduces the ground heat and acts as a natural cooler.

The best part of the practice of rainwater harvesting, however, is that in one hand it is checking one from leaning towards using groundwater as rainwater is obtained in abundance in many countries; on the other hand, if remains unused or extra, this rainwater, collected in say natural ponds or evenin artificial tanks can pour back to the ground thus charging the natural aquifer to boost the groundwater level.

DR. RAJORSHI BANDYOPADHYAY, (Principal)
REGENT EDUCATION & RESEARCH FOUNDATION
Bara Kathalia, Sweli Telinipara
Barrckpore, Kolkata - 700121



Rain Water Collected in Tank

Objectives:

- To increase recharge of groundwater by capturing and storing rainwater, by rainwater harvesting from rooftop run-offs.
- To store the water for gardening & washing purpose.

Need for rainwater harvesting -

- Increasing water demand The rapid rise in human population has made optimum use of fresh water imperative.
- Urban water supply systems in particular are under tremendous pressure to meet the needs of the population as well as industry and large-scale construction.
- The increased need for water results in lower groundwater levels and depleted reservoirs.
- Consumption of polluted water creates health hazards.
- The use of rainwater is a useful alternative

Responsibilities towards protecting Nature -

- Using more of rainwater helps to conserve & augment the storage of ground water
- It helps to arrest sea water intrusion in coastal areas
- It helps to avoid flood & water stagnation in urban areas
- Reduces water and electricity bills

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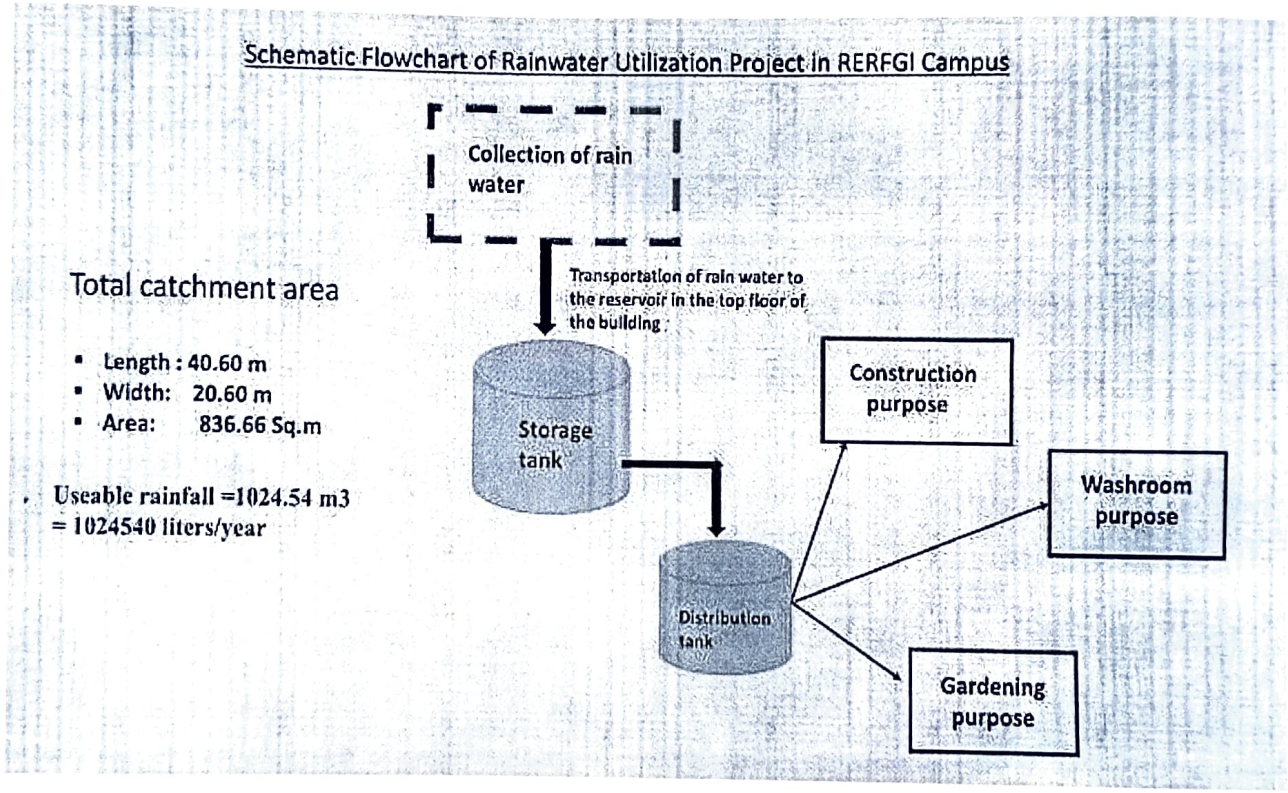
Advantage of collection and storage near the place of use -

- Collecting and storing water close to households improves the accessibility and convenience of water supplies.
- It costs less to collect rainwater than to exploit groundwater.
- Only traditional knowledge, skills and materials can be used to collect the water and no government technical assistance is required for repair and maintenance.
- Collecting rainwater is the only way of recharging water sources and revitalizing dry open wells

Typical details for Rain Water harvesting tanks and systems: -



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Bara Kathalia, Sweli Telinipara
Barrckpore, Kolkata - 700121.

Practice:

- In the RERFGI campus rainwater harvesting system has been installed on the roof of exactly 836.36 m^2 of the shade area of the rooftop. The rainwater is collected through a network of pipelines and stored in the tank. There are two 5000 liters tanks on the campus rooftop where the roof runoff water is stored. The roof runoff water is allowed to use for washrooms, Gardening, and construction purposes. Total Area of tin shade of rooftop in RERF 836.36 m^2.Our civil Engineering departmental students was involved in this project. A budget proposal was Rs 4,00,000 and subsequent approval of institute authority was Rs 337881.50 (Rupees Three lakhs thirty seven thousand eight hundred eighty one and paisa fifty)
-

Area m^2	Average Depth of Rainfall (m) *	volume of Runoff m^3	30 % losses	Total Quantity m^3
836.36	1.75	1463.63	439.09	1024.54

* Reference - (https://wbindustries.gov.in/Climate.html#:~:text=Most%20of%20the%20annual%20average,plains%20and%20western%20plateau%20region)

- **Useable rainfall =1024.54 m^3 = 1024540 liters/year**

DR. RAJORSHI BANDYOPADHYAY, (Principal)
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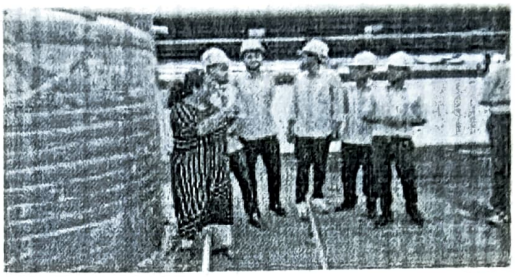
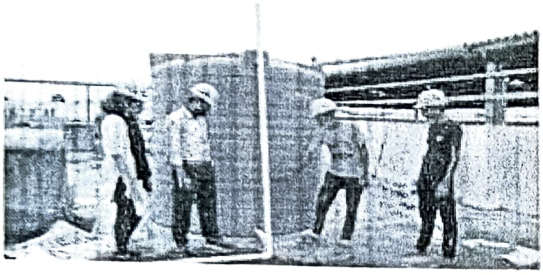
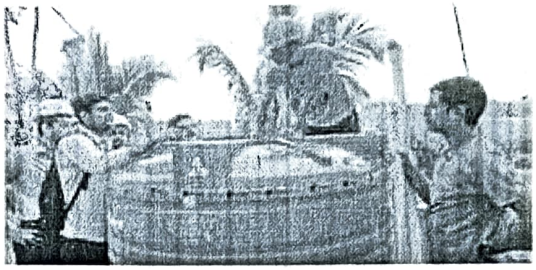
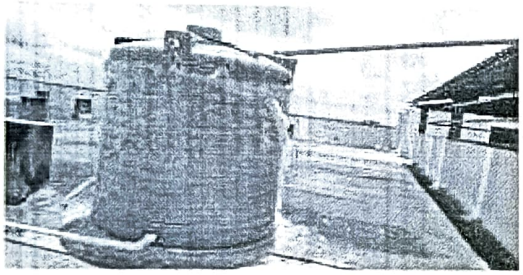
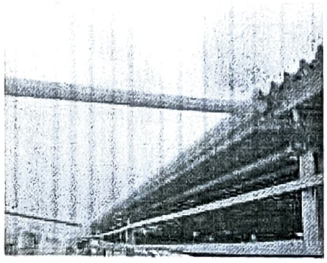
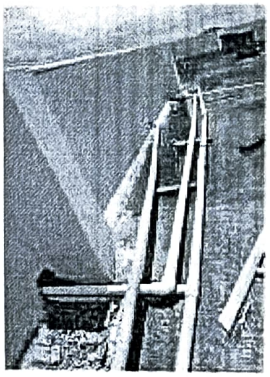
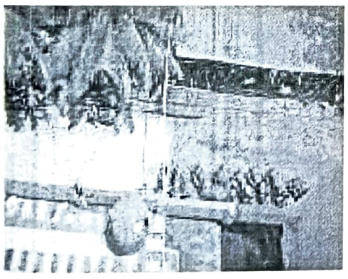
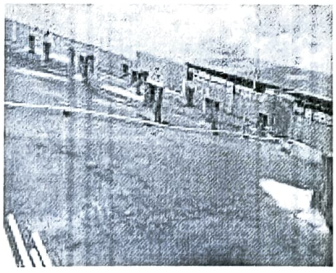
REGENT EDUCATION & RESEARCH FOUNDATION
GROUP OF INSTITUTIONS

Photography of Rainwater Harvesting Project

DR. RAJORSHI BANDYOPADHYAY, (Principal)
REGENT EDUCATION & RESEARCH FOUNDATION
Bara Kathalia, Sweli Telinipara
Barrckpore, Kolkata - 700121

Materials Required For Rainwater Harvesting System and Cost

QUOTATION

To	OUR REF.:-	SS/Q-21/2023-24	
REGENT EDUCATION & RESEARCH FOUNDATION	DATE :	05-07-2023	
BARA KANTHALIA, BARRACKPORE	YOUR REF.:-	What's app	
Site:- BARA KANTHALIA, BARRACKPORE	DATE :	05-07-2023	

Sl.No.	MATERIALS DESCRIPTION	QTY.	UNIT	NET RATE	AMOUNT
1	5000 Ltr. (Four Layer Foam) Water Tank (Rel. Classic)	2	Pcs.	38000.00	76000.00
2	2000 Ltr. (Four Layer Foam) Water Tank (Rel. Classic)	4	Pcs.	15600.00	62400.00
3	1½" UPVC Tank Connector	14	Pcs.	67.00	938.00
4	1½" UPVC Ball Valve	8	Pcs.	390.00	3120.00
5	1½" UPVC Elbow	135	Pcs.	54.00	7290.00
6	1½" UPVC Tee	30	Pcs.	80.00	2400.00
7	1½" UPVC Passover	10	Pcs.	177.00	1770.00
8	1½" UPVC China Clamp	180	Pcs.	11.00	1980.00
9	1½" UPVC 45° Elbow	18	Ft.	42.00	756.00
10	1½" UPVC Socket	98	Pcs.	31.00	3038.00
11	1½" X 1" UPVC Reduceing Socket	35	Pcs.	32.00	1120.00
12	1½" X 1¼" UPVC Reduceing Socket	8	Pcs.	33.00	264.00
13	1½" X 1" UPVC Reduceing Elbow	30	Pcs.	69.00	2070.00
14	1½" X 1" UPVC Reduceing tee	25	Pcs.	57.00	1425.00
15	1½" UPVC End Cap	12	Pcs.	22.00	264.00
16	1½" UPVC Pipe	950	Ft.	49.00	46550.00
17	1½" PVC Ball Cock	10	Pcs.	905.00	9050.00
18	237ml UPVC Solvent Cement	38	Pcs.	225.00	8550.00
19	1" UPVC Pipe	760	Ft.	29.00	22040.00
20	1" UPVC Elbow	95	Pcs.	23.50	2232.50
21	1" UPVC Tee	28	Pcs.	32.00	896.00
22	1" UPVC Socket	50	Pcs.	19.00	950.00
23	1" X ¾" UPVC Reduceing Elbow	38	Pcs.	21.00	798.00
24	1" X ¾" UPVC Reduceing Tee	12	Pcs.	33.00	396.00
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26	1" X ½" UPVC Reduceing Tee (Metal)	14	Pcs.	122.00	1708.00
27	1" UPVC Ball Valve	28	Pcs.	240.00	6720.00
28	1" UPVC China Clamp	210	Pcs.	8.50	1785.00
29	¾" UPVC Pipe	130	Ft.	20.00	2600.00
30	110mm X 10' PVC Pipe S/S	30	Pcs.	520.00	15600.00
31	110mm PVC End Cap	12	Pcs.	56.00	672.00
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34	250gm. BOND SET (M-seal)	18	Pcs.	75.00	1350.00
35	1½" C.I. Hook	36	Pcs.	11.50	414.00
36	¾" UPVC Ball Valve	25	Pcs.	140.00	3500.00
37	¾" UPVC China Clamp	42	Pcs.	7.50	315.00
38	Tap	4	Pcs.	100.00	400.00
39	Tank connector	16	Pcs.	40.00	640.00
40	Service & Labour Charge				47000.00
	(including GST) SUB TOTAL AMOUNT(NET) :-				345581.50
	Discount on Labour Charge				7700
	Total Amount				337881.50

DR. RAJORSHI BANDYOPADHYAY (Principal)
REGENT EDUCATION & RESEARCH FOUNDATION
Bara Kathalia, Sweli Telinipara
Barrackpore, Kolkata - 700121

REGENT EDUCATION & RESEARCH FOUNDATION
GROUP OF INSTITUTIONS

Barrackpore, 5 August 2023

Dr. Chiranjib Chakrabarti
Debibari Road (Near Telephone Exchange),
Post & Dist. Coochbehar, West Bengal, India, PIN -736101
mobile: +91-9476274347
e-mail: chiranjib1987@yahoo.com

To Whom It May Concern,

Subject: No Objection Certificate (NOC) for Dr. Chiranjib Chakrabarti

We are pleased to provide this No Objection Certificate (NOC) for Dr. Chiranjib Chakrabarti (Aadhaar No: 5312 1770 5655; Passport No: Z7046878), an esteemed Associate Professor in the Department of Basic Science and Humanities, to pursue research under the Short-term research or professional development component at Institut national de la recherche scientifique (INRS)-EMT in Montreal, Canada, from August 2023 to December 2023. We take this opportunity to congratulate Dr. Chiranjib Chakrabarti for having been awarded the highly prestigious research grant from the Quebec Research Fund (FRQNT). In addition, we are also pleased to support him with INR 50,000.00 (in total) to partially cover his travelling expenses.

During this period, Dr. Chiranjib Chakrabarti will be engaging in academic research at INRS-EMT to advance knowledge and expertise in their respective field of study. This opportunity will contribute significantly to their professional growth and enhance their academic contributions to Regent Education and Research Foundation upon their return.

We, at Regent Education and Research Foundation, firmly believe in fostering collaboration and promoting research initiatives that lead to advancements in science and technology. We are confident that Dr. Chiranjib Chakrabarti's research at INRS-EMT will be of immense value to both institutions and the broader academic community.

Regent Education and Research Foundation wholeheartedly supports Dr. Chiranjib Chakrabarti's pursuit of knowledge and academic excellence, and we are confident that their research endeavor will bring positive outcomes to the field of Physics and Materials Engineering.

Authorized Signatory
(With official Seal)

Principal
Regent Education & Research Foundation
Bara Kanthalia, P.O.-Sewli Telinipara
Barrackpore, Kolkata- 700121

Government of Canada / Gouvernement du Canada

Date: July 29, 2023

UCI: 11-3462-0444 Application no.: V401511027

Please quote these reference numbers when referring to this application.

Dear CHIRANJIB CHAKRABARTI,

This is in reference to your application for temporary residence. A decision has been made on your application. We require your passport to finalize processing your application.

Passport requirements

- Please provide your passport or travel document, with a copy of this letter.
- There must be at least one blank page in your passport.
- Your passport must be valid for the duration of your expected length of stay in Canada.
- *Please note that we cannot issue a visa beyond the expiry date on the passport.*

Your passport must be received by Immigration, Refugees and Citizenship Canada within 30 days from the date of this letter. Failure to do so could result in the refusal of your application. Please ensure that a copy of this letter is included with your passport.

Note: For **super visa** applications, passports must be submitted to a visa application centre **outside** Canada for insertion of a visitor visa.

To find out where to send your passport, visit our website: https://www.canada.ca/content/canada site/en/immigration-refugees-citizenship/services/application/account/where-submit-passport.html.

Thank you for the interest you have shown in Canada.

Attention: The unique client identification (UCI) number in the upper left corner of this letter is your personal identification number. For your own protection, do not allow any person, other than an authorized representative, to use this number as it provides access to personal information on your file.

Immigration, Refugees and Citizenship Canada

.....

This message has been submitted to your account.

By submitting your application electronically, you have agreed to receive correspondence

Canada

IMM 5740 (07-2023) E GCMS

Principal
Regent Education & Research Foundation
Bara Kanthalia, P.O.-Sewli Telinipara
Barrackpore, Kolkata- 700121

Fonds de recherche Nature et technologies Québec

Enseignement supérieur Québec

Lettre d'annonce
Document électronique officiel

Le 27 avril 2023

Chiranjib Chakrabarti
chiranjib1987@yahoo.com

Programme : PBEEE / Bourses de court séjour de recherche ou perfectionnement
Demande : 2023-2024 - V3 - 334832
Comité : V3, G2 - 2

Bonjour,

Sur recommandation positive du comité de pairs qui l'a évaluée et avec l'approbation du ministère, j'ai le plaisir de vous informer que la demande de bourse que vous avez soumise dans le cadre du programme *PBEEE / Bourses de court séjour de recherche ou perfectionnement*, au concours de l'automne 2022, **recevra l'appui financier du Fonds.** Vous trouverez en annexe les résultats obtenus pour chacun des critères d'évaluation du programme ainsi que les montants offerts.

Cet octroi est conditionnel à l'adoption par l'Assemblée nationale du Québec des crédits budgétaires nécessaires à sa disponibilité conformément aux dispositions de la *Loi sur l'administration financière* (RLRQ, c. A-6.001) et aux décisions du conseil d'administration du Fonds. Il peut être modifié en tout temps, sans préavis.

Vous devez nous aviser **dans les 30 jours calendrier suivant la date de la présente lettre** de votre décision d'accepter ou de refuser la bourse via la section *Gérer mon financement* du Portfolio électronique FRQnet. La procédure à suivre est précisée dans le *Guide technique pour les titulaires d'un octroi-Bourse FRQNT*, disponible dans le menu « Documents » du Portfolio électronique FRQnet.

Si le programme de formation pour lequel la bourse est demandée n'a pas débuté et si vous souhaitez modifier la durée ou la date d'entrée en vigueur de votre financement, nous vous invitons à faire cette demande de modification en même temps que vous procédez à l'acceptation de la bourse. Si le programme de formation pour lequel la bourse est demandée est en cours, les versements doivent obligatoirement débuter à la session d'été. Dans tous les cas, aucune modification de la durée du financement ne sera autorisée suite au premier versement.

Le cumul de bourses n'est pas permis avec les bourses attribuées par des ministères, des agences gouvernementales ou encore par des organismes subventionnaires des gouvernements canadien et québécois. Le cumul de la bourse est permis avec les bourses provenant du secteur privé, du gouvernement du pays d'origine du boursier, ainsi que les bourses des universités.

Cette offre de bourse est assujettie au respect des conditions énoncées dans la présente lettre, de même qu'aux « conditions d'acceptation » présentées dans la section *Gérer mon financement* de votre Portfolio électronique FRQnet, aux *Règles générales communes* ainsi qu'aux conditions d'utilisation énoncées dans les règles du programme.

Pour tout renseignement supplémentaire relatif à votre dossier, nous vous invitons à communiquer avec Michel Garceau, responsable de programmes, à l'adresse pbeee@frq.gouv.qc.ca.

Au nom de tous les membres de l'équipe du FRQNT, je tiens à vous féliciter et à vous offrir mes meilleurs vœux de succès dans la poursuite de vos études.

La directrice scientifique,

Janice Bailey, Ph. D.

Principal
Regent Education & Research Foundation
Bara Kanthalia, P.O.-Sewli Telinipara
Barrackpore, Kolkata- 700121

Fonds de recherche Nature et technologies Québec

Enseignement supérieur Québec

Lettre d'annonce
Document électronique officiel

Annexe – Montants offerts

Chiranjib Chakrabarti
chiranjib1987@yahoo.com

Programme : PBEEE / Bourses de court séjour de recherche ou perfectionnement
Demande : 2023-2024 - V3 - 334832
Comité : V3, G2 - 2

Année	Période d'octroi	Montant
1e année (2023-2024)	La bourse doit débuter en mai 2023 (session d'été), en septembre 2023 (session d'automne) ou en janvier 2024 (session d'hiver).	**12 000 $**

Note : Les titulaires d'un octroi doivent, dans tout rapport, article, œuvre ou communication découlant de l'octroi, mentionner l'appui financier du Fonds et identifier le numéro de dossier de la bourse.

Principal
Regent Education & Research Foundation
Bara Kanthalia, P.O.-Sewli Telinipara
Barrackpore, Kolkata- 700121

Fonds de recherche Nature et technologies Québec

Enseignement supérieur Québec

Lettre d'annonce
Document électronique officiel

Annexe – Résultats obtenus

Chiranjib Chakrabarti
chiranjib1987@yahoo.com

Programme : PBEEE / Bourses de court séjour de recherche ou perfectionnement
Demande : 2023-2024 - V3 - 334832
Comité : V3, G2 - 2

Les membres du comité d'évaluation ont étudié **5** candidatures et ont classé votre dossier au **rang 2**.

4 dossiers ont fait l'objet d'une offre de financement au sein de ce comité.

	L'excellence du dossier universitaire (30 pts)	L'aptitude à la recherche et l'expérience pertinente en recherche (30 pts)	Qualité et intérêt scientifique du projet de recherche et du milieu de recherche proposé (40 pts)	Total (100 pts)
Moyenne	**21**	**22.5**	**30.5**	**74**

Note : Les commentaires du comité d'évaluation ne sont pas consignés. Par conséquent, toute l'information disponible concernant l'évaluation de votre demande de bourse est présente dans cette annexe.

Principal
Regent Education & Research Foundation
Bara Kanthalia, P.O.-Sewli Telinipara
Barrackpore, Kolkata- 700121

Regent Education & Research Foundation Group of Institutions

R&D PROJECT PROPOSAL

(To be filled by the applicant)

1. Title of the project: Frequency and temperature dependence of conductivity spectra of silver-phosphate glass nanocomposites.

2. Name of the Applicant: Dr. Dipankar Biswas

3. Name, Designation, Affiliation of Principal Investigator: Dr.Dipankar Biswas, Associate Professor, Electronics and Communication Engineering

4. Name, Designation, Affiliation of Co-PI (if any):NA

5. Collaborating Institute (if any): NA

6. Broad Subject area of the Project Proposal :Nano composite glasses with rare earth materials

7. Abstract (Maximum 150 words):The typical melt quenching procedure will be used to create a succession of glass nanocomposite systems with the composition $xAgI-(1-x)(0.5Ag_2O-0.5P_2O_5)$ for x = 0.1, 0.2, 0.3, and 0.4. The X-ray diffraction patterns of all glassy samples will show amorphous nature and crystallinity, superposed over broad peaks. FT-IR measurement will identify several sorts of bonds that exist in the current system. The sample's dc and ac conductivity will be computed using the AgI concentration. The activation energy values for dc conductivity and activation will be determined. Complex impedance graphs will reveal the lack of the grain boundary effect. With increasing AgI content, the production of the cation-electron pair is expected to obstruct the diffusive or hopping path, indicating a decrease in conductivity.

8. Total Duration (Months):6 months

9. Plan of Work: (500 characters):

   1st Year: Formation of sample by melt quenching method and analysing data through FT-IR, XRD method

   2nd Year: NA

   3rd Year: NA

10. Do you need any Instruments/ facilities outside the Institute(List out within 500 characters):

Sl. No.	Name	Description
1.	NA	NA

11. Total estimated cost (In Rupees and in Words): 30,000/- (Thirty Thousand Only)

12. Summary of the budget

Items	BUDGET (InRupees)			
Year	1st Year	2nd Year	3rd Year	Total
A. Recurring: a. Remunerations b. Consumables c. Travel d. Othercosts	NA	NA	NA	NA
B. Non-recurring Permanent equipment/ publication/software*	30,000	NA	NA	NA
Grand Total (A+B)	30,000	NA	NA	NA

Date 06/08/2022

Place Barrackpore

Dipankar Biswas

(Name and signature of the Applicant)

(Name and signature of the Head of the Department)

Passed for payment

(In Words) Ten Thousand only

Principal
RERI GI, Barrackpore

Bundesrepublik Deutschland

Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2022 104 505

Bezeichnung:
Ein System zur Synthese von Se50-XTe30Sn20Sbx-Chalkogenidglas

IPC:
C03B 19/09

Inhaber/Inhaberin:
Adhikari, Shuma, Dr., Imphal, Manipur, IN
Biswas, Dipankar, Dr., Kolkata, West Bengal, IN
Das, Anindya Sundar, Dr., Kolkata, West Bengal, IN
Kabi, Soumyajyoti, Dr., Kharagpur, West Bengal, IN
Mondal, Rittwick, Labpur, West Bengal, IN
Ningthemcha, Rajkumar Nanao, Imphal, Manipur, IN
Singh, Loitongbam Surajkumar, Dr., Imphal, Manipur, IN
Singh, Yumnam Bonney, Imphal East, Manipur, IN

Tag der Anmeldung:
08.08.2022

Tag der Eintragung:
22.08.2022

Die Präsidentin des Deutschen Patent- und Markenamts

Cornelia Rudloff-Schäffer

Cornelia Rudloff-Schäffer

München, 22.08.2022

DEUTSCHES PATENT- UND MARKENAMT

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Regent Education & Research Foundation
Group of Institutions

R&D PROJECT PROPOSAL

(To be filled by the applicant)

1. Title of the project:Glass composition (Ag2O-MoO3-P2O5) to determine the effects of silver sulfide on electrical conductivity and dielectric relaxation
2. Name of the Applicants: Dr.DipankarBiswas, Puspendu Chandra Chandra, Aninda Das,DebtanuPatra, Bidyut Kumar Ghosh, PabitraMaji, ArpanMandal, Sabyasachi Mukherjee , Dr. Rahul KantiNath, AsheshRakshit
3. Name, Designation, Affiliation of Principal Investigator:Dr.DipankarBiswas, Associate professor, ECE Department, RERF
4. Name, Designation, Affiliation of Co-PI (if any):
5. Collaborating Institute (if any): NIT, Manipur, India
6. Broad Subject area of the Project Proposal (Ex. Electrical Engineering): Material Science
7. Abstract (Maximum 150 words):

The influence of Ag2S incorporation on the electrical and dielectric properties of the host Ag2O-MoO3-P2O5 glassy matrix has been systematically studied in the present work. By applying the well-known Archimedes principle, the density of the samples has been determined. The ionic property for all the as-prepared glassy systems has been explored methodically. The nearly identical obtained values of the crossover frequency and the activation energy for DC and AC conductivity suggest that the same mechanism is responsible for electrical conduction. For the purpose of inspecting the frequency and temperature dependent AC conductivity, the Almond-West formalism model has been used. The observed values of dielectric constant and dielectric loss are found to increase with the temperature rise and drop with rising frequency. The coinciding scaled complex electric modulus spectra suggest a non-Debye type dynamical relaxation mechanism, which also indicates that the relaxation mechanism is temperature independent but composition dependent.

8. Total Duration (Months): 6 months
9. Plan of Work: (500 characters):

1st Year:Glass systems with chemical compositions of xAg2S-(1-x)(0.30Ag2O-0.35MoO3–0.35P2O5) where x = 0.0–0.4 have been synthesized from reagent-grade chemicals Ag2O, MoO3, P2O5 and Ag2S by well-known melt-quenching technique. The suitable quantities of Ag2S, Ag2O, MoO3 and P2O5 powders are systematically assorted andcalcined for 1 h at 200 ◦C, then melted in the temperature range from 800 to 900 ◦C depending on chemical composition. The molten mass has been ultimately quenched between two heavily polished metal plates at room temperature after homogenization for 20 min. The thickness of the as-quenched semi-transparent glass samples is ~ 1–2 mm. The Archimedes principle has been deployed to determine the density of the as-prepared samples under study, with acetone as the immersion liquid. The measured density and molecular weight of the composition of the Ag2S-doped quaternary glass samples are used to compute the molar volumes. The FTIR spectra of the powder samples in the KBr matrix in the ratio of 1:100 have been recorded at room temperature using an FTIR spectrometer (SHIMADZU, model FTIR-8400S). X-ray diffraction (XRD) patterns are recorded using a Rigaku (TTRAX-III) X-ray diffractometer with CuKα radiation of 1.5418 Å to analyze the microstructure of as-quenched complex glassy systems. The scanning rate has been set at 4 ◦/min in steps of 0.02◦, while Bragg's angle (2θ) varies from 10◦ to 80◦ Silver paste has been used as an electrode to investigate conductivity using an LCR meter (QuadTech, model 7600) over a wide range of temperature and frequency range of 20 Hz–5 MHz. The experiments have been carried out in a liquid nitrogen cryostat with a temperature stability of ~ ± 0.1 K.

2nd Year:

3rd Year:

10. Do you need any Instruments/ facilities outside the Institute(List out within 500 characters):

Sl. No.	Name	Description
1.	FTIR spectrometer	SHIMADZU, model FTIR-8400S
2.	X-ray diffraction (XRD)	Rigaku (TTRAX-III)
3.	LCR meter	QuadTech, model 7600
4.		

11. Total estimated cost (In Rupees and in Words): 45000/- (Forty Five Thousands)

12. Summary of the budget

Items	**BUDGET** (InRupees)			
Year	**1st Year**	**2nd Year**	**3rd Year**	**Total**

A. Recurring: a. Remunerations b. Consumables c. Travel d. Othercosts	15000/-			
B. Non-recurring Permanent equipment/ publication/software*	30000/-			
Grand Total (A+B)	45000/-			

Date....10/8/2022.....
Place....Baruckpore.....

Dipankar Biswas

(Name and signature of the Applicant)

(Name and signature of the Head of the Department)

Passed for payment
(in Words).. Ten Thousands only.

Principal

Bundesrepublik Deutschland

Urkunde

über die Eintragung des Gebrauchsmusters Nr. 20 2022 106 386

Bezeichnung:
Glaszusammensetzung (Ag2O-MoO3-P2O5) zur Bestimmung der Auswirkungen von Silbersulfid auf die elektrische Leitfähigkeit und die dielektrische Relaxation

IPC:
C03C 3/16

Inhaber/Inhaberin:
Biswas, Dipankar, Dr., Kolkata, West Bengal, IN
Chandra, Puspendu Chandra, Hooghly, West Bengal, IN
Das, Aninda, Siliguri, West Bengal, IN
Patra, Debtanu, Howrah, West Bengal, IN
Ghosh, Bidyut Kumar, Medinipur, West Bengal, IN
Maji, Pabitra, Medinipur, West Bengal, IN
Mandal, Arpan, Murshidabad, West Bengal, IN
Mukherjee, Sabyasachi, Birbhum, West Bengal, IN
Nath, Rahul Kanti, Dharmanagar, West Bengal, IN
Rakshit, Ashes, Madarpur, West Bengal, IN

Tag der Anmeldung:
15.11.2022

Tag der Eintragung:
21.11.2022

Die Präsidentin des Deutschen Patent- und Markenamts

Cornelia Rudloff-Schäffer

Cornelia Rudloff-Schäffer

München, 21.11.2022

DEUTSCHES PATENT- UND MARKENAMT

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Regent Education & Research Foundation
Group of Institutions

R&D PROJECT PROPOSAL

(To be filled by the applicant)

1. Title of the project:Development of an Artificial Intelligence Based Safer Transport System in Mountains
2. Name of the Applicants: Pooja Jain, Dr.SaikatGochhait, Prof. Swati Gandhi, SabyasachiMukherjee , Dr.Shilpa Mehta, Sandeepkandwal
3. Name, Designation, Affiliation of Principal Investigator:
4. Name, Designation, Affiliation of Co-PI (if any):
5. Collaborating Institute (if any):Lingaya's University, Faridabad, Haryana, India
6. Broad Subject area of the Project Proposal (Ex. Electrical Engineering): Mechanical Engineering
7. Abstract (Maximum 150 words):

Safety in transport systems is the foremost requirement. For which Cognizance is sought in right design initiatives such as thru' artificial intelligence (AI). In this work, using a sensor system and signal processors a tool was used to avoid road accident in hilly area. Sensors used to monitor each vehicle from designed standoff distance and buzzer to alert driver crossing from other side was the forte of development. Design and fabrication of trouble free driving using arduino road tracking was the prime objective of experimental set up. Ultrasonic sensors used to detect up to a distance to an object by at a specific frequency to the target by measuring the time between the emission and reception.

8. Total Duration (Months): 6 months
9. Plan of Work: (500 characters):

1st Year:In nature, signals can take the form of any action by one organism able to be perceived by other organisms, ranging from the release of chemicals by plants to alert nearby plants of the same type of a predator, to sounds or motions made by animals to alert other animals of the presence of danger or of food. Signalling occurs in organisms all the way down to the cellular level, with cell signalling. Signalling, in evolutionary biology, proposes that a substantial driver for evolution is the ability for animals to communicate with each other by developing ways of signalling. In human engineering, signals are typically provided by a sensor, and often theoriginal form of a signal is converted to another form of energy

using a transducer. For example, a microphone converts an acoustic signal to a voltage waveform, and a speaker does the reverse.

After sensing the signal by the ultra-sonic sensors. It gives the signal to the signal pole and then a red signal is displayed on the signal pole with a buzzer sound to alert the vehicle driver to stop. After the vehicle coming from the opposite direction, when it passes the signal pole it gives the green signal to pass the vehicle freely. This signal system we used in this project .Then it is easy to recognize and there is a chance to control the vehicle. A buzzer or beeper is an audio signalling device, which may be mechanical, electromechanical, or piezoelectric (piezo for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke. A piezoelectric buzzer/beeper also depends on acoustic cavity resonance or Helmholtz resonance to produce an audible beep These are the buzzer we used in this project Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler tool chains, the Arduino project provides an integrated developmentenvironment (IDE) based on the Processing language project.

2nd Year:

3rd Year:

10. Do you need any Instruments/ facilities outside the Institute(List out within 500 characters): NA

Sl. No.	Name	Description
1.		
2.		
3.		
4.		

11. Total estimated cost (In Rupees and in Words): 30000/- (Thirty Thousands)
12. Summary of the budget

Items	**BUDGET** (InRupees)			
Year	**1st Year**	**2nd Year**	**3rd Year**	**Total**

A. Recurring: a. Remunerations b. Consumables c. Travel d. Othercosts	10000/-			
B. Non-recurring Permanent equipment/ publication/software*	20000/-			
Grand Total (A+B)	30000/-			

Date 03/08/2022

Place Barrackpore

(Name and signature of the Applicant)

(Name and signature of the Head of the Department)

Passed for payment

(In Words) Ten Thousands only

Principal
RGFGI, Barrackpore

ORIGINAL

मूल/No : 120408

सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA
पेटेंट कार्यालय
THE PATENT OFFICE
डिजाइन के पंजीकरण का प्रमाणपत्र
CERTIFICATE OF REGISTRATION OF DESIGN

डिजाइन सं. / Design No.	:	367798-001
तारीख / Date	:	16/07/2022
पारस्परिकता तारीख / Reciprocity Date*	:	
देश / Country	:	

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो **ROAD SAFETY INDICATOR DEVICE** से संबंधित है, का पंजीकरण, श्रेणी **10-06** में 1.Pooja Jain 2. Dr. Saikat Gochhait 3.Prof. Swati Gandhi 4.Sabyasachi Mukherjee 5.Dr. Shilpa Mehta 6.Sandeep Kandwal के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class **10-06** in respect of the application of such design to **ROAD SAFETY INDICATOR DEVICE** in the name of 1.Pooja Jain 2. Dr. Saikat Gochhait 3.Prof. Swati Gandhi 4.Sabyasachi Mukherjee 5.Dr. Shilpa Mehta 6.Sandeep Kandwal.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

निर्गमन की तारीख/Date of Issue : 16/12/2022

महानियंत्रक पेटेंट डिजाइन और व्यापार चिह्न
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