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**48<sup>th</sup> SERIES OF STUDENT PROJECT PROGRAMME**

**List of Broad Themes / S&T technologies for submitting the project proposals**

1. Technologies for Rural livelihood improvement (Focussing areas under energy, water, agriculture, environment, health, livelihood, green technology, assistive aid, handicraft, textile, animal health, post-harvest and education (project titles and areas for submitting the proposal is provided below:)

SL NO.	TECHNOLOGY/ PRODUCT DETAILS	FOCUS AREA
i.	<ul style="list-style-type: none"> <li>• (EDU-BOX) SOLAR PROJECTOR AND OFFLINE SERVER.</li> <li>• SOLAR POWERED SHEEP SHEARING MACHINE</li> <li>• SOLAR WATER FILTRATION AND VENDING MACHINE</li> </ul>	ENERGY, WATER
ii.	<ul style="list-style-type: none"> <li>• LOW-COST SENSOR AND DEEP LEARNING-BASED METHOD TO SPRAY THE FARMS WITH CONTROLLED OR LIMITED PESTICIDES WITH EQUAL DISTRIBUTION</li> </ul>	AGRICULTURE, ENVIRONMENT
iii.	GREEN POLYMER NANOCOMPOSITE (BIOPLASTIC) FROM AGRICULTURAL RESIDUE FOR FOOD PACKING APPLICATION	
iv.	<ul style="list-style-type: none"> <li>• IMPROVED HAPPY SEEDER TECHNOLOGY FOR PADDY STRAW MANAGEMENT ON FARMER'S FIELD</li> </ul>	
v.	INTEGRATED BIOTECHNOLOGICAL APPROACH FOR THE TREATMENT OF MICROPLASTICS (MPS) AND PLASTIC DERIVED COMPOUNDS (PDCS) ALONG WITH REFRACTORY ORGANICS IN THE MUNICIPAL LANDFILL LEACHATE	ENVIRONMENT
vi.	ENERGY EFFICIENT MULTIFUNCTIONAL FIELD DISTILLATION UNIT FOR ISOLATION OF ESSENTIAL OILS	ENERGY
vii.	<ul style="list-style-type: none"> <li>• MOUNTAIN SOLAR WATER AND SPACE HEATING SYSTEMS</li> <li>• HERBAL CHIRAYITA FORMULATIONS FOR CONTROL OF DIABETES, ANTI-BACTERIAL, ANTIVIRAL, ANTI- FIBROID AND HEPATO-PROTECTIVE ACTIVITIES.</li> <li>• SOLAR BIOGAS HYBRID SYSTEMS FOR MOUNTAIN NEEDS.</li> </ul>	ENERGY, WATER, HEALTH
viii.	<ul style="list-style-type: none"> <li>• RESILIENT FARMING TOOLS &amp; TECHNOLOGIES IN FLOOD AND WATER-LOGGED AREAS (CYCLE WEEDER AND HOEING, SOIL DIGGER, PADDY TRANSPLANTING, IMPROVISED PORTABLE LOW TUNNEL POLY HOUSE) AND POST-HARVEST TOOLS (TURMERIC RAMMER TOOL, GROUNDNUT DE-HUSKING TOOL, TURMERIC STEAM BOILER, ROOT CROPS WASHING TOOL, ZERO ENERGY COOL CHAMBER, MAIZE DE-HUSKING MACHINE, BRIQUETTE MAKING TOOL) FOR REDUCING LABOURER COST</li> </ul>	AGRICULTURE, ENERGY

ix.	<ul style="list-style-type: none"> <li>• COST-EFFECTIVE BRIDGE (BAMBOO, WOODEN &amp; STEEL) FOR RURAL CONNECTIVITY</li> <li>• UPGRADED WATERMILLS WITH LOW HEAD TURBINE DESIGN AND STANDARDIZATION</li> </ul>	LIVELIHOOD, WATER
x.	<ul style="list-style-type: none"> <li>• IMPROVED BIOMASS COOKSTOVES</li> <li>• PV INTEGRATED SOLAR TUNNEL DRYER • SOLID STATE BIO-GAS PLANT</li> <li>• KITCHEN WASTE-BASED BIO-GAS PLANT</li> <li>• WALK IN TYPE SOLAR TUNNEL DRYER</li> <li>• DHABHA SIZE IMPROVED BIOMASS COOKSTOVES</li> <li>• FLUIDIZED BED GASIFIER</li> <li>• MSW ORGANIC WASTE BIO-METHANATION</li> <li>• SOLAR-BIOMASS BASED HYBRID DRYER</li> </ul>	GREEN TECHNOLOGY, ENERGY,
xi.	<ul style="list-style-type: none"> <li>• ARID SPECIFIC TREE BASED FARMING SYSTEM (WADI)</li> <li>• BREED IMPROVEMENT OF MARWARI SHEEP AND GOAT</li> <li>• DOORSTEP AI SERVICES FOR ARTIFICIAL INSEMINATION AND PREVENTATIVE HEALTH CARE OF CATTLE.</li> <li>• ESTABLISHMENT OF CACTUS AS A FODDER (NEW CROP)</li> <li>• LOW-COST GRAVITY-BASED DRIP IRRIGATION SYSTEM AND EFFICIENT WATER USE TECHNIQUE</li> <li>• TANKA WITH AGOR AND ROOFTOP RAINWATER HARVESTING FOR TAPPING OF RAINWATER</li> </ul>	AGRICULTURE, LIVELIHOOD, INFORMATION TECHNOLOGY, WATER
xii.	<ul style="list-style-type: none"> <li>• BIOMASS DRYERS, PYRO LITE STOVE, OUTDOOR ANIMAL FEED STOVE,</li> <li>• VERSION 2 OF PYRO STOVE WITH NEW INSULATING MATERIALS AND MANUFACTURING IMPROVEMENTS</li> <li>• 2 VERSIONS OF FORCED DRAFT AGNI SAKHI &amp; AGNI MITHRA STOVE</li> <li>• FUEL EFFICIENT BAKERY OVEN</li> <li>• CUSTOMIZED SARALA STOVE DESIGNS</li> </ul>	LIVELIHOOD, ENERGY
xiii.	<ul style="list-style-type: none"> <li>• BIOMETRIC SOLAR ATM NAMED AS 'JANATA ATM'</li> <li>• MICRO SOLAR DOME</li> <li>• MICRO SOLAR PUMP COUPLED WITH RO SYSTEM &amp; INTEGRATED WITH PRE FILTER AND INTELLIGENT CONTROLLER</li> <li>• MECHANIZED FERRO CEMENT BASED PRODUCTS</li> <li>• BAMBOO BASED SHUTTERS AND DOORS FOR RETROFITTING OF HOUSES</li> </ul>	ENERGY, GREEN TECHNOLOGY, LIVELIHOOD
xiv.	<ul style="list-style-type: none"> <li>• NECK REST PILLOW WITH MEMORY USE</li> <li>• BRICK MAKING FROM GRANITE WASTE</li> <li>• ERGONOMIC DESIGN OF MECHANICAL WEEDING UNIT FOR REDUCING PHYSICAL STRAIN</li> <li>• E-WASTE SEGREGATION AND PREPROCESSING MODEL</li> <li>• CUSTOMISED GIFT MAKING THROUGH 3D CHOCOLATE PRINTING</li> </ul>	LIVELIHOOD, ASSISTIVE AID, GREEN TECHNOLOGY
xv.	<ul style="list-style-type: none"> <li>• GREEN BUILDING TECHNOLOGY: STABILIZED MUD BLOCK, TREATED BAMBOO, TERAFIL WATER, RAINWATER HARVESTING &amp; LOW-COST TOILET</li> <li>• AGARBATI BAMBOO STICK</li> <li>• PRODUCTS FROM TREATED BAMBOO STICKS</li> <li>• COST-EFFECTIVE HATCHERY-SOLAR BASED</li> </ul>	GREEN TECHNOLOGY, WATER, LIVELIHOOD, ENERGY
xvi.	<ul style="list-style-type: none"> <li>• UP-GRADATION OF CONVENTIONAL RIVER ROPE WAY CROSSINGS OVER MAIN RIVERS EXISTS IN RURAL / HILLY TERRAINS</li> </ul>	LIVELIHOOD

xvii.	<ul style="list-style-type: none"> <li>• THIRUMATHIKART: E-COMMERCE PLATFORM FOR SHGS FOR ENHANCING THEIR LIVELIHOODS AND GENERATING NEW EMPLOYMENT OPPORTUNITIES.</li> </ul>	
xviii.	<ul style="list-style-type: none"> <li>• ECO-FRIENDLY AND BIO-DEGRADABLE POT BY USING COW DUNG AND AGRICULTURE WASTE</li> <li>• VALUE ADDITION OF CHARCOAL-BRIQUETTE BY ADDING LAC.</li> <li>• GOAT SPECIAL - CONCENTRATE MIXTURE PRODUCT</li> </ul>	
xix.	<ul style="list-style-type: none"> <li>• HERBAL MOSQUITO REPELLENT INCENSE STICK MAKING</li> <li>• HAND MADE PAPER PRODUCTION &amp; PAPER BAG MAKING</li> <li>• CHALK PENCIL AND LIQUID DEODORANT PRODUCTS</li> </ul>	
xx.	<ul style="list-style-type: none"> <li>• CUSTOMIZATION IN BIOMASS PALLETISATION UNIT</li> <li>• TECHNOLOGY PROTOCOL FOR PRODUCTION OF FUEL PELLETS FROM BIOMASS</li> <li>• OPTIMIZATION PROCESS OF PELLET PRODUCTION USING LANTANA, AMLA PROCESSING WASTE, SUGARCANE BAGASSE, FOREST LEAVES, PADDY STRAW ETC.</li> </ul>	GREEN TECHNOLOGY, LIVELIHOOD
xxi.	<ul style="list-style-type: none"> <li>• HAND OPERATED SEWING MACHINE FOR DIFFERENTLY ABLED</li> <li>• COST EFFECTIVE AND ECO-FRIENDLY PAVER BLOCK MAKING</li> <li>• IMPROVED SILVER ANKLET PLATING TECHNOLOGY</li> </ul>	HANDICRAFT, TEXTILE
xxii.	<ul style="list-style-type: none"> <li>• FLEXIBLE CAGE FOR CATTLE TRANSPORT VEHICLE WITH LOADING ADJUSTMENT</li> </ul>	ANIMAL HEALTH, LIVELIHOOD, AGRICULTURE
xxiii.	<ul style="list-style-type: none"> <li>• COMPACT AND EASILY MANOEUVRABLE TRACTOR OF LOW HP RANGE TO MEET THE REQUIREMENT OF THE SMALL FARMERS</li> </ul>	
xxiv.	<ul style="list-style-type: none"> <li>• POTABLE WATER USING FUNCTIONALISED CELLULOSE AS CATALYST FROM LOCALLY AVAILABLE BIOMASS</li> </ul>	WATER
xxv.	<ul style="list-style-type: none"> <li>• WATER FILTRATION SOLUTIONS, BUILDING MATERIAL TECHNOLOGY SOLUTIONS</li> </ul>	
xxvi.	<ul style="list-style-type: none"> <li>• COST-EFFECTIVE NEEM FRUIT HARVESTER, AND PROCESS STANDARDIZATION</li> <li>• NEEM FRUIT COLLECTION AND POST-HARVEST PROCESSING TO PRODUCE QUALITY PULP AND NEEM SEED FOR PRODUCT DEVELOPMENT.</li> </ul>	POST HARVEST
xxvii.	<ul style="list-style-type: none"> <li>• PORTABLE LABORATORY WORKBENCH FOR LEARNING AND PROTOTYPING</li> </ul>	EDUCATION

2. **Structural Engineering, Geotechnical Engineering, Geomatics, Construction Technology and Management**
3. **Water and Environment Engineering, Transportation Engineering, Industrial and System Engineering**
4. **Energy Engineering, Energy for Sustainable Development, Waste Management**
5. **Data Science, Cyber Security, Computing, Pattern Recognition and Image Processing, Signal Processing**

- 6. Big Data, integrating Internet of Things, Artificial Intelligence, Data Engineering, Robotics (agriculture, health, education, digital literacy, assistive aid)**
- 7. Networking and Communication Engineering, Embedded Systems, VLSI Design, Robotics**
- 8. Power System Engineering, Electric Vehicles, Smart Grid Technologies and Micro-grids**
- 9. Materials and Design Engineering, Thermal and Fluid Engineering, Manufacturing Processes and Analysis**
- 10. Control and Automation, Biomedical Engineering, Sensors and Measurement Techniques**
- 11. Rural Engineering and Technical support, Smart cities and infrastructure development**
- 12. Biological / Medical Science, Physical Science, Chemical Science, Agriculture Science, Biotechnology**
- 13. Healthcare management, Information Technology, Resources and Environmental Management.**