

SINDH AGRICULTURE UNIVERSITY TANDOJAM

No. PD-SAU-2024/ 225

Dated: 11/03/2024

Corrigendum-2

This is in continuation of NIT No. PD-SAU-2024/217, dated: 22/02/2024, the missing data of some items as observed and included as under:

S. No.	Description of equipment	Qty	Rate	Amount
	Department of Farm Power and Machinery Engineering			
1	Stationary I.C. Engines (Petrol & Diesel, 20 HP) Country of Origin: UK/USA/EU or Equivalent	2		
2	Complete Glass Chassis showing all operating function of Engine up to transmission. Country of Origin: UK/USA/EU or Equivalent	1		
3	Complete Toolbox Country of Origin: UK/USA/EU or Equivalent	1		
4	Voltmeter Country of Origin: UK/USA/EU or Equivalent	1		
5	Sledgehammer 5 kg Country of Origin: UK/USA/EU or Equivalent	2		
6	Hand Saw of Various types. Country of Origin: UK/USA/EU or Equivalent	10		
7	Tongs of different types Country of Origin: UK/USA/EU or Equivalent	10		
8	Hammers of Various types Country of Origin: UK/USA/EU or Equivalent	5		
9	Hack Saw blade of Various size Country of Origin: UK/USA/EU or Equivalent	20		
10	Wood Chisel of Various types Country of Origin: UK/USA/EU or Equivalent	10		
11	Drawing board and T-Square Country of Origin: UK/USA/EU or Equivalent	50		
12	Transmission Model Gear Section cut away transmission model for learning purpose. Both automatic and Manual transmission Country of Origin: UK/USA/EU or Equivalent	1		
13	Portable Exhaust Analyzer Country of Origin: UK/USA/EU or Equivalent	1		
14	Vacuum and Pressure Tester Country of Origin: UK/USA/EU or Equivalent	1		
15	Nozzle Tester Country of Origin: UK/USA/EU or Equivalent	1		
16	Cylinder Power Analyzer Country of Origin: UK/USA/EU or Equivalent	1		
17	Cylinder Bore Gauge Country of Origin: UK/USA/EU or Equivalent	1		

18	Battery Hydrometer Country of Origin: UK/USA/EU or Equivalent	1		
19	Agro Laser Land Leveling System	1		
20	Zero Tillage Drill for Wheat	1		
21	Cotton Planter with Bed making mechanism	1		
22	Moldboard plough Max Depth: 22 cms Working width: 85 cms Weight: 225 kg Tractor Compatibility: 35 to 55 HP	2		
23	Disk plough Frame Type: Tubular Seamless Steel Number of Furrow: 2,2+1,3,3+1 Furrow Width: 254mm Max. Working Depth: 300mm Longitudinal clearance: 522mm Furrow wheel dia: 508mm Plain discs: 660mm-inside or outside bevel Bearing: Taper roller Weight: 360 kg (3 Furrow) Tractor Compatibility: 50 to 85 HP	2		
24	Rotavator Length (mm) :1760-2080 Width (mm) :950-1050 Height (mm): 935-1110 Working width of rotavator (mm): 1000-2000 Shape of blade: L-Shape Orientation of blade (degrees): 45 -47 Length of blade along the flange (mm):160-170 Length of blade along the rotor shaft (mm): 115-130 Distance between consecutive flanges (mm): 213-220 Total number of flanges :6-8 Number of blades per flange:6 Diameter of rotor shaft (mm) :70-90 Rotor diameter (mm):420-435 Revolution of rotor shaft (rpm):210-237 Weight (kg):280-415	2		
25	Offset Disk harrow Number of Discs: 16 Discs Disc Size: 24" Weight: 590 kgs Working width: 145cm Tractor Compatibility: 50 HP	2		
26	Cultivator (TINE TILLER) Frame Type: Pipe Set and Z Type Number of Tine: 11 Linkage Category: I & II Working Depth: 229 mm Tine Spacing: 229 mm to 254 mm Tractor Compatibility: 50 to 85 HP	2		
27	Trolley 12' x 6' x 2' single	2		
28	Land Leveler	1		
29	Complete Tillage Meter with accessories (for measuring force of tillage tools)	1		
30	Strain Gauges Country of Origin: UK/USA/EU or Equivalent	2		
31	Shearing Boxes Country of Origin: UK/USA/EU or Equivalent	2		
32	Pull Type Dyno Meter Drawbar Country of Origin: UK/USA/EU or Equivalent	1		

33	Computer for advance Drawing & Design Country of Origin: UK/USA/EU or Equivalent	2		
34	Drafting Machine Country of Origin: UK/USA/EU or Equivalent	2		
35	Electric Planner Machine Country of Origin: UK/USA/EU or Equivalent	2		
36	Electric Hand Drilling Machine Country of Origin: UK/USA/EU or Equivalent	1		
37	Wooden Planner Country of Origin: UK/USA/EU or Equivalent	12		
38	Wooden vice	12		
39	Electric Welding Transformer 350 Amp Country of Origin: UK/USA/EU or Equivalent	4		
40	Oxygen Gas Cylinder	4		
41	Acetylene Gas Cylinder Country of Origin: UK/USA/EU or Equivalent	3		
42	Spot Welding Machine Country of Origin: UK/USA/EU or Equivalent	1		
43	Tig Welding Machine Country of Origin: UK/USA/EU or Equivalent	1		
44	Anvil 75 Kgs Country of Origin: UK/USA/EU or Equivalent	1		
45	Ball Point Hammer 1.5 Kg Country of Origin: UK/USA/EU or Equivalent	24		
46	Electric Blowers 0.5 HP Country of Origin: UK/USA/EU or Equivalent	2		
47	Fire clay Country of Origin: UK/USA/EU or Equivalent	6		
48	Electric Arc Welding Plant Country of Origin: UK/USA/EU or Equivalent	1		
49	Oxy-Acetylene/ Gas Welding Plant Country of Origin: UK/USA/EU or Equivalent	1		
50	Welding Hood, Shield & Goggle Country of Origin: UK/USA/EU or Equivalent	10		
51	Bench vice and Leg vice Country of Origin: UK/USA/EU or Equivalent	5		
52	Portable Power Plainer Country of Origin: UK/USA/EU or Equivalent	5		
53	Potable Power Drill Machine Country of Origin: UK/USA/EU or Equivalent	5		
54	Blade Set for Electric Plainer Country of Origin: UK/USA/EU or Equivalent	10		
55	Turbo Diesel engine Direct injection (Cut working model, look & learn) Country of Origin: UK/USA/EU or Equivalent	1		
56	Chassis Front-Wheel Drive Diesel Engine Indirect (Cut working model, look & learn) Country of Origin: UK/USA/EU or Equivalent	1		
57	Chassis rear wheel derive Twin cam overhead camshaft petrol engine (Cut working model, look & learn) Country of Origin: UK/USA/EU or Equivalent	1		

58	<p>Small Engine Test Bed</p> <p>Main metallic elements made of stainless steel. Diagram in the front panel with distribution of the elements similar to the real one. Mounting base with vibration dampening device to install the testing engine. Transparent panels that allow to visualize the operation of the unit. Computer controlled electric motor to generate the load: Braking torque: 8 Nm. Maximum speed: 3600 rpm. This motor also works as the engine starter. Transmission between the combustion engine and the brake through an elastic coupling. Acceleration of the combustion engine through the computer controlled fuel valve (acceleration/deceleration). 1 capacity fuel tank: either for petrol or for diesel-oil (depending on the purchased test engine). Determination of the characteristic curves of an internal combustion engine at different speed regimes: Torque. Power. Specific consumption of fuel. 2 Determination of the efficiency, fuel specific consumption and air-fuel ratio of an internal combustion engine. 3 Determination of the volumetric efficiency and the average effective pressure of an internal combustion engine. Additional practical possibilities: Country of Origin: UK/USA/EU or Equivalent</p>	1		
59	<p>Fuel Cell Demonstration Unit</p> <p>Anodized aluminum frame and panels made of painted steel. Main metallic elements made of stainless steel. Diagram in the front panel with distribution of the elements similar to the real one. Metal hydride bottle for storage of H₂ of 300 NL capacity. Pressure regulator for the hydrogen inlet at the PEM fuel cell, range: 0 – 1 bar. Pressure regulator of the H₂ bottle. Inlet at 200 bar and outlet at 5 – 50 bar. Solenoid valve to supply H₂. Purge solenoid valve. Suitable tubes and hoses for their use with H₂ with a high safety factor, up to 210 bar. Load module: Rheostat: 22 R – 760 W. Battery and charger (12 V). 1.- Study of the fundamental principles of operation of a proton exchange fuel cell (PEM). 2.- Study of the structure and main principles of a metal hydride bottle. 3.- Calculation of a fuel cell efficiency. 4.- Study of the influence of air consumption and hydrogen in the efficiency of a fuel cell. 5.- Study of the influence of generated power in the efficiency of a fuel cell. 6.- Determination of the current density - voltage characteristics of a fuel cell. 7.- Power density from a single cell and a stack of cells. 8.- Representation of the polarization curve of a fuel cell. 9.- Study of the influence of the reagents' flows in the generation of electrical power. 10.-Study of the use of reagents and transport phenomena. Country of Origin: UK/USA/EU or Equivalent</p>	1		
60	CNC Lathe Machine	1		
61	Milling Machine	1		
62	Shaper Machine	1		
	Department of Soil and Water Resources Engineering			
63	<p>Turbidity Meter Portable Complete</p> <p>Country of Origin: UK/USA/EU or Equivalent</p>	1		
64	<p>Test kits for Manganese, Nitrite Phosphate</p> <p>Country of Origin: UK/USA/EU or Equivalent</p>	1		
65	<p>Pocket Spring Balance 0 to 110 Kg</p> <p>Country of Origin: UK/USA/EU or Equivalent</p>	1		
66	<p>Flow meters.</p> <p>Country of Origin: UK/USA/EU or Equivalent</p>	1		
67	<p>Cutthroat Flume</p> <p>Minimum Head (Ft) 0.10, Minimum Head (m) 0.0305,</p>	1		

	<p>Psychrometric chart and Enthalpy diagram of R-513a. This unit has been designed for the use with the refrigerant R-513a, CFC-free, environmentally friendly.</p>			
128	<p>Computer Controlled Vapour-Compression Refrigeration Unit Anodized aluminum frame and panels made of painted steel. The unit includes wheels to facilitate its mobility. Main metallic elements made of stainless steel. Diagram in the front panel with distribution of the elements similar to the real one. High pressure area: Computer controlled hermetic compressor with different operation speed. Wattmeter to measure the compressor power. Pressure sensor located at the outlet of the compressor, range: 0 – 25 bar. High pressure manometer located at the outlet of the compressor. “J” type temperature sensor located at the outlet of the compressor. High pressure switch. Condensation area: Plate heat exchanger that uses water as heat transfer medium. High pressure manometer located at the outlet of the condenser. “J” type temperature sensor located at the outlet of the condenser. Refrigerant receiver. Refrigerant filter to retain particles of condensate. Refrigerant flow sensor, range: 5 – 60 l/h. Low pressure area: Expansion valve. Low pressure manometer located after the expansion valve. “J” type temperature sensor located after the expansion valves. Evaporation area and compressor inlet: Plate heat exchanger that uses water as heat transfer medium. Liquid separator to retain liquid particles before going on to the compressor. Low pressure manometer located at the outlet of the evaporator. Pressure sensor located at the compressor inlet, range: 0 – 10 bar. “J” type temperature sensor located at the outlet of the evaporator. Heat exchange water circuit: Water reservoir, capacity: 400 l. Two computer controlled water circulation pumps: Max. flow: 47 l/min. Max. head: 6 m. Two regulation valves to control the condensation water flow and the evaporation water flow. Two water flow sensors, one for the condensation water and other for the evaporation water, range: 0.25 – 6.5 l/min. Four “J” type temperature sensors for measuring the inlet and outlet temperature of condensation and evaporation water. Enthalpy diagram of R-513a. This unit has been designed for the use with the refrigerant R-513a, CFC-free, environmentally friendly</p>	1		
129	<p>Computer Controlled Refrigeration Cycle Demonstration Unit Bench-top Unit Anodized aluminum structure and panels of painted steel. Main metallic elements of stainless steel. Diagram in the front panel with distribution of the elements similar to the real one. Compressor: Computer controlled hermetic compressor. Power: 1/2 CV. Condenser: Vertical transparent cylinder, through which the coil of heat exchange can be seen. Totally hermetic by Viton joints. It has a copper coil through which circulates cooling water inside: Nine nickel-plated copper spires. Diameter of coil: 1/4”. Heat transfer area: 0.032 m² approx. Expansion: Expansion valve, float type, that is assembled on the condenser. Sight glass placed between the expansion valve and the evaporator, to show the formation of vapour bubbles after the expansion valve. Evaporator: Vertical transparent cylinder, through which the coil of heat exchange can be seen. Totally hermetic by viton joints. It has a copper coil through which circulates water to promote the ebullition inside: Nine nickel-plated copper spires. Diameter of coil: 1/4”. Heat transfer area: 0.032 m² approx. Instrumentation: Eleven temperature sensors (“J” type) that indicate the water output and input temperatures, both in the condenser and in the evaporator, and the evaporation, condensation, expansion and environmental temperatures. Two flow sensors to measure the water flow (condenser and evaporator), range: 0.25 – 6.5 l/min.</p>	1		

	<p>Two pressure sensors indicate the refrigerant fluid pressure in the condenser and in the evaporator: Pressure sensor (condenser), range: 0 – 6 bar. Pressure sensor (evaporator), range: -1 – 1.6 bar. Power measurement from computer. Measure range: 0 – 1000 W. The unit has all necessary security measures for safe work: Relief valve with a tare of 2.4 bar, so in case of overpressure in the condenser it will open. High pressure cut-out, that stops the compressor if the condensation pressure exceeds 2.3 bar. Other valves: Isolation valves to allow easy maintenance and modification. Control valves. This unit has been designed for the use with the SES36 refrigerant gas, environmentally friendly. With the unit is supply following diagrams: Mollier diagram of SES36 refrigerant. Enthalpy diagram of SES36 refrigerant. The complete unit includes as well: COMPLETE TECHNICAL SPECIFICATIONS (for main items) With this unit there are several options and possibilities: Main items: 1, 2, 3, 4, 5 and 6. Optional items: 7, 8, 9, 10 and 11. Let us describe first the main items (1 to 6): 1 Advanced Real-Time SCADA. Open Control + Multi control + Real-Time Control.</p>			
	Department Food Sciences and Technology			
130	<p>Centrifuge Machine (micro and temperature controlled) <u>Specifications:</u> LCD Display, Programmable Microprocessor control, Speed, RCF and Temperature LCD Display Indicates the current speed, time and RCF Brushless Motor, No carbon dust pollution, With many kinds of rotor and rotor identification system for convenient use and rotor recognition. Safety lid latch lock and emergency lid lock, in the process of centrifugation the lid cannot open for the operator safety. Technical Specifications: Speed Range: 0 – 16000rpm RCF: 20,600xg Speed Accuracy: ± 50rpm Time: 0 – 99 Minutes Noise: ≤ 65dBA Dimension: 515x370x320mm Weight: Approx. 42Kg Power: 220VAC/50Hz Rotor: 24x1.5/2.0ml Country of Origin: UK/USA/EU or Equivalent</p>	1		
131	<p>Autoclave (small) <u>Specifications:</u> Designed Pressure: 0.28MPa Max. Working Pressure: 0.23MPa Designed Temperature: 150°C Temperature Selective Range: 105°C -136°C Insulation Temperature: 40.0°C -60.0°C Temperature Display Precision: 0.1°C Timing Range: 0-99 h 99 min Chamber Material: SUS304 stainless steel Basic Accessory: 2 PCS stainless steel baskets Country of Origin: UK/USA/EU or Equivalent</p>	1		
132	<p>Autoclave large <u>Specifications:</u> Capacity: 50 Litters Designed Pressure: 0.28MPa Max. Working Pressure: 0.23MPa Designed Temperature: 150°C Temperature Selective Range: 105°C -136°C Insulation Temperature: 40.0°C -60.0°C Temperature Display Precision: 0.1°C Timing Range: 0-99 h 99 min Chamber Material: SUS304 stainless steel Basic Accessory: 2 PCS stainless steel baskets Country of Origin: UK/USA/EU or Equivalent</p>	1		

133	Water Bath Temp. Controlled <u>Specifications:</u> Digital, Microprocessor PID Controlled Temp. Range: +5 Amb – 100°C Built-in Timer with Temperature Limiter Heavy Stainless Steel Tank with Gabled Cover Capacity: 10.0 Liters Power: 220VAC/50Hz. Country of Origin: UK/USA/EU or Equivalent	1		
134	Incubator Chamber volume: 160 liters Temperature range: Ambient Temperature +7°C to 50°C Temperature variation / fluctuation: ±0.3°C at 37°C /±0.1°C. Programmable temperature alarm range: ±0.5°C to 5°C Air jacketed heating system RaPID cell™ fast temperature recovery without overshoot CO2 Range: 0 to 20 % CO2 CO2 Variation / Fluctuation: ±0.3 % / ±0.1 % Programmable CO2 alarm range: ±0.5 % to 5.0 % Infra-Red CO2 level control permitting frequent access Life Cell™ control software to optimize parameters Large, bright LCD display with text messages and Help Simultaneous display of set and actual values Seamless stainless-steel chamber with rounded corners Clean chamber without any sensor inside Nive Dis™ 90°C wet disinfection system Nive Track™ monitoring and recall of last 72 h parameter values and alarms. Auto Zero for permanent accurate control 0.22 µ m sterile filtration of CO2, sampled gases and. Auto-Zero reference air. Typical 95 % RH to protect cultures against dehydration. Audible and visual (text) alarms. Remote alarm outlet. Built in 2 nd stage gas regulator. Three shelves Humidity tray Country of Origin: UK/USA/EU or Equivalent	1		
135	Top loading balance Country of Origin: UK/USA/EU or Equivalent	1		
136	Spectrophotometer 200nm to 800nm (ELISA Reader) Elisa compatible, Detection Photodiode Array Format Single-Beam Type UV/Vis Accuracy $\pm 1.0\text{ nm}$ from 200-250, 300-800 nm$\pm 0.5\text{ nm}$ from 250-300 nm Sample volume 80 µL to 3500 µL wavelength(s) 200-800 nm Light Source Xenon Lamp Country of Origin: UK/USA/EU or Equivalent	1		
137	Laminar Flow Cabinet <u>Specifications:</u> Vertical Flow, Digital Display Main Filter UPLA Filter (99.999% efficient at 0.3 micron particles) • Associate Filter HEPA Filter (99.99% efficient at 0.3 micron particles) • Air Velocity 0.3 – 0.5 m/s • Illumination Fluorescent Lamp 40W x 1 or 20W x 2ea • Sterilizing UV Lamp 40W x 1 or 20W x 2ea • Controller LCD Microprocessor (Filter Change Alarm) • Overall Size (WxDxH):1300mm*750mm*2000mm Working Zone Size (WxDxH): 1200mmx645mmx610mm Country of Origin: UK/USA/EU or Equivalent	1		
138	Double distillation units Country of Origin: UK/USA/EU or Equivalent	1		
139	Polarimeter Country of Origin: UK/USA/EU or Equivalent	1		
140	KJELTEC-2300 Analyzer Unit 230 V With all accessories and parts 1. Cables steam/ valves 2. Water valve, 3. Safety door cpl, 4. Electronic compartment cpl, 5. Pump plate cpl, 6. Water Pump, 7. Burette valve cpl,	1		

	8. Fluorescent lamp, 9. Titration vessel drain valve, 10. Titration vessel cpl, 11. Burette cpl, 12. Steam generator cpl, 13. Condenser cpl, 14. Adapter, 15. Splash Shield, 16. Steam valve, 17. Tube emptying valve, 18. Pinch valve, 19. Tube emptying vessel, 20. Reed relay cpl, 21. Platform for tubes, 22. Splash head, 23. Sliding channel, 24. Spring, 25. Stirring bar, 26. Stirrer, 27. Silicone tube, 28. Sensor For burette, 29. Condensate over temp. switch cpl. 30. Magnet, 31. Holder for reed relay, 32. Drip tray. Country of Origin: UK/USA/EU or Equivalent			
141	Digital moisture meter Country of Origin: UK/USA/EU or Equivalent	1		
142	pH meter Specification: Range (pH): 0 to 14 Resolution (pH): 0.01 Range (mV): 2000 to 2000 mV Temperature Range (Metric): 0°C to 100°C Country of Origin: UK/USA/EU or Equivalent	1		
143	Conductivity meter Country of Origin: UK/USA/EU or Equivalent	1		
144	Refrigerators Country of Origin: UK/USA/EU or Equivalent	1		
145	Deep Freezer Defrosting Type: Frost Free Door Type: Swing Door Country of Origin: UK/USA/EU or Equivalent	1		
146	Cooking range /Gas oven Country of Origin: UK/USA/EU or Equivalent	1		
147	Microscope Country of Origin: UK/USA/EU or Equivalent	1		
148	Hand Refractor meter c-32/cutm Country of Origin: UK/USA/EU or Equivalent	1		
149	Digital balance Specification: Capacity: 620g Readability: 0.01g Repeatability: 0.01g Linearity: 0.02g Country of Origin: UK/USA/EU or Equivalent	1		
150	Juicer Blander Country of Origin: UK/USA/EU or Equivalent	1		
151	Electric Chopper Braum MR 555 Country of Origin: UK/USA/EU or Equivalent	1		

152	Electric Fryer machine 5 kg batch capacity Country of Origin: UK/USA/EU or Equivalent	1		
153	Freeze dryer large <u>Specifications:</u> Condenser temperature: -60°C/ -85°C Chamber type: Stoppering Touch screen controller Real time display of collector temperature & vacuum level. Automatic control of freeze-drying process, program can be set by users Country of Origin: UK/USA/EU or Equivalent	1		
154	Vertical electric dehydrator (dehydrator chamber) Country of Origin: UK/USA/EU or Equivalent	1		
155	Gas stove Country of Origin: UK/USA/EU or Equivalent	1		
156	Gas Cylinder Country of Origin: UK/USA/EU or Equivalent	1		
157	Thermometer Country of Origin: UK/USA/EU or Equivalent	1		
158	Baking oven gas operated (reeling oven) large Country of Origin: UK/USA/EU or Equivalent	1		
159	Hot air oven Specification: Capacity (metric): 256 L Width (Metric) Interior: 640 mm Country of Origin: UK/USA/EU or Equivalent	1		
160	Dough mixer Country of Origin: UK/USA/EU or Equivalent	1		
161	Cold storage unit humidity control Country of Origin: UK/USA/EU or Equivalent	1		
162	Batch type digital Refractor meter Country of Origin: UK/USA/EU or Equivalent	1		
163	Bottle sterilizer Country of Origin: UK/USA/EU or Equivalent	1		
164	Steam generator Country of Origin: UK/USA/EU or Equivalent	1		
165	Pulping machine Country of Origin: UK/USA/EU or Equivalent	1		
166	Garber machine Country of Origin: UK/USA/EU or Equivalent	1		
167	Vacuum sealing machine Country of Origin: UK/USA/EU or Equivalent	1		
168	Sealing Machine Country of Origin: UK/USA/EU or Equivalent	1		
169	Grinder Machine with different sieves Country of Origin: UK/USA/EU or Equivalent	1		
170	Utensils Country of Origin: UK/USA/EU or Equivalent	1		
171	Hot air gum Country of Origin: UK/USA/EU or Equivalent	1		
172	Digital Grain Analyzer (for all cereals) Country of Origin: UK/USA/EU or Equivalent	1		

173	Semi-Automatic Labeling Machine Country of Origin: UK/USA/EU or Equivalent	1		
174	Abrasive peeler machine Country of Origin: UK/USA/EU or Equivalent	1		
175	Hot water bath machine Country of Origin: UK/USA/EU or Equivalent	1		
176	Multimedia Country of Origin: UK/USA/EU or Equivalent	1		
	Department of Biotechnology	1		
177	Digital balance Specification: Capacity: 620g Readability: 0.01g Repeatability: 0.01g Linearity: 0.02g Country of Origin: UK/USA/EU or Equivalent	1		
178	Micro Pipettes (0.5µl-10µl) Country of Origin: UK/USA/EU or Equivalent	1		
179	Micro Pipettes (2µl-20µl) Country of Origin: UK/USA/EU or Equivalent	1		
180	Micro Pipettes (20µl-200µl) Country of Origin: UK/USA/EU or Equivalent	1		
181	Micro Pipettes (100µl-10000µl) Country of Origin: UK/USA/EU or Equivalent	1		
182	pH meter Country of Origin: UK/USA/EU or Equivalent	1		
183	Microwave Oven Country of Origin: UK/USA/EU or Equivalent	1		
184	Freezer (-20) Country of Origin: UK/USA/EU or Equivalent	1		
185	Freezer (-40) Country of Origin: UK/USA/EU or Equivalent	1		
186	Freezer (-80) Country of Origin: UK/USA/EU or Equivalent	1		
187	Refrigerated Cold Cabinet Country of Origin: UK/USA/EU or Equivalent	1		
188	Flake Ice Machine with Ice Storage Tank Specifications: Maximum storage in 24 h: 70kg Storage Capacity: 25 kg Country of Origin: UK/USA/EU or Equivalent	1		
189	Autoclaving Machine Country of Origin: UK/USA/EU or Equivalent	1		
190	Stir bar magnetic Country of Origin: UK/USA/EU or Equivalent	1		
191	Laminar Flow Cabinet Country of Origin: UK/USA/EU or Equivalent	1		
192	Digital balance Specification: Capacity: 620g Readability: 0.01g Repeatability: 0.01g Linearity: 0.02g	1		

	Country of Origin: UK/USA/EU or Equivalent			
193	Gel Documentation System <u>Specifications:</u> High-Resolution Digital Images for Gel Documentation. An Ideal System for Limited Budget. Featuring with 12.0MP Camera, Transilluminator, Darkroom Hood, System Tablet and Analysis Software. 12 Megapixel camera connects to a PC via USB Image Finder® Ultraviolet Transilluminator is available with world best UV Lamps of 254nm, 312nm or 365nm ranges Selectable according to need). Filter size of Image Finder® Transilluminator is 20x20 cm. Maximum gel size that can be captured is 16x20 cm. Operating system compatibility: Windows XP, Windows 7, Windows 10 220 VAC/50Hz Country of Origin: UK/USA/EU or Equivalent	1		
194	Vertical Midi Gel Electrophoresis Country of Origin: UK/USA/EU or Equivalent	1		
195	Blotter for Transfer DNA to membrane Country of Origin: UK/USA/EU or Equivalent	1		
196	Horizontal Mini gel Electrophoresis Country of Origin: UK/USA/EU or Equivalent	1		
197	Power supplies (1 to 500V) Country of Origin: UK/USA/EU or Equivalent	1		
198	Power Pac Supply (1 to 5000V) Country of Origin: UK/USA/EU or Equivalent	1		
199	Dry bath Country of Origin: UK/USA/EU or Equivalent	1		
200	Laboratory water bath Specification: Temperature Uniformity: $\pm 0.05^{\circ}\text{C}$ Temperature Presets: 3 Controller Type: Digital Display: Monochrome LCD Material: Epoxy Powder-coated Cold Rolled Steel Country of Origin: UK/USA/EU or Equivalent	1		
201	Water Single Distillation Unit Country of Origin: UK/USA/EU or Equivalent	1		
202	Water Double Distillation Unit Country of Origin: UK/USA/EU or Equivalent	1		
203	Water Purification System Country of Origin: UK/USA/EU or Equivalent	1		
204	Circulating Water Bath with Cooling Country of Origin: UK/USA/EU or Equivalent	1		
205	Growth Chambers Country of Origin: UK/USA/EU or Equivalent	1		
206	Spectrophotometer Country of Origin: UK/USA/EU or Equivalent	1		
207	Thermal Cycler (Gradient PCR System) <u>Specifications:</u> Display: 7" LCD Environment Model with Automatic ID, Automatic Correction Capacity: 96x0.2ml, 54x0.5ml, 96x0.2ml+54x0.5ml ,384 Temp range: 0°C ~99°C (RT \leq 30°C) Heating rate: $\geq 5.0^{\circ}\text{C} / \text{s}$ Cooling rate: $\geq 5^{\circ}\text{C} / \text{s}$ Heating/Cooling Rate: 0.1.0°C /s...4.0°C /s (Adjustable) Uniformity: $\leq \pm 0.2^{\circ}\text{C}$ (Constant 10s)	1		

	<p>Accuracy: $\leq \pm 0.1^{\circ}\text{C}$ Gradient Temp Range: 30~99°C Gradient spread: 1~30°C Gradient Uniformity: $\leq 0.2^{\circ}\text{C}$ (Single Row) Heated lid temp: 20~110°C Temp control: block, tube, calculated Stored program no: 200 Max. No. of Cycle: 999 Communication: USB2.0, RS232, RJ45 Voltage: 110V-220VAC Country of Origin: UK/USA/EU or Equivalent</p>			
208	<p>Real Time PCR Country of Origin: UK/USA/EU or Equivalent</p>	1		
209	<p>Mini Centrifuge Micro spin <u>Specifications:</u> Rotor: 12 x 1.5/2ml microtubes Maximum Speed: 14 500 rpm Temperature: +4°C to +25°C Country of Origin: UK/USA/EU or Equivalent</p>	1		
210	<p>Centrifuge Machine Country of Origin: UK/USA/EU or Equivalent</p>	1		
211	<p>High Speed Refrigerated Micro Centrifuge <u>Specifications:</u> Max Speed: 14,800 rpm Max RCF: 21,100 x g Temperature set range: -9°C to +40°C per 1°C increment Time set range: 1 min - 99 min: 1 min increments + HOLD mode Noise level: 50 dBA Electricals: 230V (50 / 60 Hz) Country of Origin: UK/USA/EU or Equivalent</p>	1		
212	<p>Ultracentrifuge Machine (50000 rpm) Country of Origin: UK/USA/EU or Equivalent</p>	1		
213	<p>Hybridization oven Country of Origin: UK/USA/EU or Equivalent</p>	1		
214	<p>Forced Convection Laboratory Incubator <u>Specifications:</u> Microprocessor PID Controlled Dual Display Digital Capacity 54 liters Country of Origin: UK/USA/EU or Equivalent</p>	1		
215	<p>Liquid Nitrogen Container <u>Specifications:</u> Capacity: 30 Litres Comprises on: LN2 Container, Include 6 racks with 5x5 Cryo boxes, 4 Cryo boxes per rack; Lockable cap; PU bag. Country of Origin: UK/USA/EU or Equivalent</p>	1		
216	<p>Flasks for Liquid Nitrogen <u>Specifications:</u> Capacity: 1-2 Liters Country of Origin: UK/USA/EU or Equivalent</p>	1		
217	<p>Vortex Mixer <u>Specifications:</u> Continuously Adjustable Vibrating Motion Speed: up to 2500rpm Vib. Orbit: 5mm For 25 and 50ml Tubes Power: 220VAC/50Hz. Country of Origin: UK/USA/EU or Equivalent</p>	1		
218	<p>Binocular Microscope <u>Specifications:</u> Advanced Optical System UIC2 Infinite Optical System Trinocular Rotating Interchangeable Tube Quadruple Revolving Nosepiece Built-in New Reckless Stage with Coaxial and Vernier scale Abbe Type Condenser with Aperture, Iris, Diaphragm Filter Holder Rack,</p>	1		

	<p>Stage Height Movement Coarse and Fine Focusing on both side of frame Built-In Transmitted Illumination System with adjustable Intensity LED Light (We recommend LED Light being new and Modern Technique with more Light Source Life and Even Brightness in whole Field of view. Pair of Wide Field Antifungus treated Eyepiece 10X Plan Achromat Objectives (Antifungus) Scanning 4X, 10x, 40x and 100x (Spring Loaded Oil Immersion) Optical System: Universal Infinity Color Correction System 2 Power Source: Single-phase 110-220V/50HZ Camera System 9.0MP with Application and measuring Software Country of Origin: UK/USA/EU or Equivalent</p>			
219	<p>Stereo Zoom Microscope, Trinocular <u>Specifications:</u> Ergonomic Design, Sharp Image Display with Wide Image Display Diopter adjustment with Large Working Hanging Over Stand <u>Specifications:</u> Trinocular Head inclined 45° Wide Field Eyepiece 10x/20mm Interpupillary Distance: 52-75mm Zoom Ratio: 1:4.5 Zoom Objective: 1x – 4.5x Stand Size: 396-296mm HT Company (Ilford) Ltd. UK Accessories: HDCE-90B Camera System 9.0MP with Measuring Software SZM405-22 Measuring Eyepiece 10x L-150 Cold Light Illuminator 150watt with Dual Light Guide. Country of Origin: UK/USA/EU or Equivalent</p>	1		
220	<p>UV Face Protection Shields Country of Origin: UK/USA/EU or Equivalent</p>	1		
221	<p>UV Lamp Country of Origin: UK/USA/EU or Equivalent</p>	1		
222	<p>Hot and Cold-Water dispenser Country of Origin: UK/USA/EU or Equivalent</p>	1		
223	<p>Uninterrupted Power Supply (UPS)2KVA Country of Origin: UK/USA/EU or Equivalent</p>	1		
	I.T Equipment			
224	<p>Branded Desktop Computers</p> <ul style="list-style-type: none"> • Processor: Core i7-11th Gen. • RAM: 16GB DDR-4 • Hard Disk: 512 GB SSD • Casing Type: Tower • LED: 24" Screen • Keyboard/ Mouse: Branded • Wi-Fi: Built-in • 1 Year local Warranty <p>HP, Dell, Lenovo or Equivalent</p>	50		
225	<p>Laptops</p> <ul style="list-style-type: none"> • Processor: Core i7-11th Gen • RAM: 16GB DDR-4 • Hard Disk: 512 GB SSD • Wi-Fi: Built-in • Screen: 15.6" FHD • 1 Year local Warranty <p>HP, Dell, Lenovo or Equivalent</p>	1		
226	<p>Multifunction Laser Printers (includes Scanner, Photocopier)</p> <ul style="list-style-type: none"> • PPM: 30 Pages • Printing Resolution: 1200x1200 • Memory Capacity: 512 MB • Processor Speed: 800 MHz 	3		

	<ul style="list-style-type: none"> • Interface: Network and USB • 1 Year local warranty HP or equivalent			
227	Laser jet Printer PPM: 42 Pages Printing Resolution: 1200x1200 dpi Interface: Network and USB HP Laser jet Enterprise M 406 dm or equivalent.	4		
228	Laser jet Printer PPM: 18 Pages Printing Resolution: 600 x 600 dpi Interface: Network and USB HP or equivalent	6		
229	Photocopier Two-way paper feeding system. Bypass Feeding System. Network Printer & Scanner. Automatic Document Feeding & Duplexing Option. Ricoh, Konica, Canon or equivalent	2		
230	Scanner Flatbed Scanner 1200 dpi Canon or equivalent	8		
231	Multimedia Projectors <ul style="list-style-type: none"> • Lumens: 4,000-5,000 • Contrast: 5,000:1 • Resolution: 1920 x 1200 pixels • Speakers • Built-in bulb life cycle, normal: 37 dB • HDMI and Wireless supportable • 1 Year local warranty ViewSonic, Acer, Panasonic or equivalent	8		
232	Wall mounted multimedia screen including Ceiling mounted kit Foreign or equivalent	8		
233	Sound System and Mic (For Large Class) <ul style="list-style-type: none"> • 2 Mics (one fixed with stand and one wireless) • 2 Speakers • Amplifier • Remote Control • LED Display • MIC input • USB Supported • 1 Year Local Warranty Audionic or equivalent	8		
234	Camera DSLR Country of Origin: UK/USA/EU or Equivalent	1		


PROJECT DIRECTOR