

## ADP Scheme - 777

### (Package-5) Fluid Mechanics 1.

**GCT Kohat, 2. GCT Nowshera, 3. GCT Timergara**

S#	Items	Specification	Unit	For one college Qty	For 3 college Qty	Unit Price (Both in Figures and words) Inclusive all taxes	Total Price (both in Figures and words) Inclusive all taxes
1	VISCOMETER APPARATUS (Falling ball Viscometer)	Set of six balls to test a wide variety of samples Connection to circulating bath for temperature control of sample Temperature probe Pivot bearing allows for quick and easy tube rotation for repeat test Variable angles ( 500, 600 , 700 & 800 ) Viscosity range 0.5 to 70,000 mPa*s (cP) Accuracy: 0.5 % to 2.0 %( depending on ball used)	Nos.	2			
2	Pitot-Static Tube Apparatus	Length: 10 in.( 25 cm), diameter: ½ in, Several small holes drilled around outside of the tube and a central hole is drilled down the axis of the tube.	Nos.	2			
3	Venturimeter	Venturimeter tube aluminum, Inlet inside diameter: 26 mm Throat inside diameter :16 mm, Manometer tubes: Transparent plastic, range 0 - 290 mm max. Flow rate 26 litres/min nominally 27 litres/min.	Nos.	1			
4	Orifice-meters of circular, square and rectangular shapes.	Manometer Tubes: 4 nos.Orifice plate diameter: 20 mm, variable area flowmeter: 0.1 to 1 m <sup>3</sup> /h Venture dimensions: Throat diameter: 15 mm; upstream pipe diameter: 31.75 mm; Upstream and downstream taper: 210/140 ; Services required: Hydraulic bench	Nos.	1			

5	Rectangular Notch and V-Notch	Overall dimensions of weir Plate (Aluminum or brass): Height of plate: 160 mm Width of plate: 230 mm Dimensions of Rectangular Notch(Aluminum or brass) Height: 100 mm Width: 90 mm Angle of Triangular or V-Notch Aluminum or brass): 60°, 90°	Nos.	1			
6	HYDRAULIC BENCH	<ul style="list-style-type: none"> <li>• Mobile and floor standing service unit for fluid mechanics apparatus with working height of 1 meter above the floor level.</li> <li>• Base constructed from robust, corrosion resistant plastic molding.</li> <li>• Top constructed from glass reinforced plastic</li> <li>• Volumetric flow measurement via remote sight gauge</li> <li>• Stepped tank for low and high flow rates</li> <li>• Open channel in bench top with quick release outlet fitting</li> <li>• Self-priming centrifugal pump with maximum head 21 m water with maximum flow of 1.35 liter per second</li> <li>• Motor rating=0.37 Kw</li> <li>• Sump tank capacity=250 liters</li> </ul>	Nos.	1			
7	Bernoulli's Theorem Demonstration Apparatus	<p>Pressure gauges: Pressure gauges: 7 nos. Diameter of venturimeter inlet : 25 mm Throat diameter: 10 mm Upstream taper: 140 Downstream taper: 210 Services required: Hydraulic Bench</p>	Nos.	1			

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### (Package-5) Irrigation & Hydraulic Structures

#### 1. GCT Kohat, 2. GCT Nowshera, 3. GCT Timergara

S#	Item Name/ Equipments	Specification	Unit	For one colleg e Qty	For 3 coll ege Qty	Unit Pric e (Bot h in Figu res and wor ds) Incl usiv e all taxe s	Total Price (both in Figures and words) Inclusive all taxes
1	CHANNEL/FLUME With special arrangements (Jack system adjusting the slope of a channel) for creating "Falls"	2.5 to 5 m long measuring section with transparent side walls. A centrifugal pump, a flow meter and a manual tilt for friction loss compensation or for simulating sloping ground.	Nos.	1	1		
2	FLUID FRICTION APPARATUS Shows flow and losses in different pipes, fittings and valves. Shows popular flow measurement Instruments	Resistance and head loss for turbulent pipe flow The Unit contains several sections including various straight pipes, fittings in different sizes and materials and a straight section fitted with transparent flow rate measuring Instruments. A water meter and two Rota meters are included for comparative measurement. Various pressure measuring devices are provided.	Nos.	1	1		

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### (Package-5) Hydrology

**GCT Kohat, 2. GCT Nowshera, 3. GCT Timergara**

S#	Items	Specification	Unit	For one college Qty	For 3 college Qty	Unit Price (Both in Figures and words) Inclusive all taxes	Total Price (both in Figures and words) Inclusive all taxes
1	WATER CURRENT METER-PRICEMETER TYPE AA	WITH COMPLETE ANALOG AND DIGITAL OUTFITS: <ul style="list-style-type: none"> <li>• Accuracy 2 % Minimum depth required cable suspended 18 inches, Rod suspended 6 inches.</li> <li>• Dimensions, Bucket open end diameter 2.0 inches, Bucket wheel diameter 5 inches</li> <li>• Operating velocity range: 0.2 - 25.0 ft/sec</li> <li>• Data logger, software and all necessary accessories that are required to record the data in a computer.</li> </ul>	Nos.	1	3		
2	BAROMETER	Aneroid barometer	Nos.	2	6		
3	TIPPING BUCKET RAIN GAUGE	<ul style="list-style-type: none"> <li>• Receiver : 12 inches diameter receiver with machined aluminium rim</li> <li>• Sensitivity: one tip at 1.0mm or 0.01 in.</li> <li>• Measuring range: 0 - 700 mm / hr</li> <li>• Measuring accuracy + 2 %</li> <li>• Data logger, software and all necessary accessories that are required to record the data in a computer.</li> </ul>	Nos.	4	12		
4	CUP ANEMOMETER	Used for direct reading of wind speed <ul style="list-style-type: none"> <li>• Wind velocity: 0 - 60 m/s (130 m/hr)</li> <li>• Threshold: 0.5 m/s (1.1 m/hr)</li> <li>• Wind speed signal : DC Voltage linearly proportional to wind speed.</li> <li>• 1800 rpm (2400 mV) = 28.6 m/s (64 m/hr)</li> <li>• Mounting : standard ¾ inch threaded pipe</li> </ul>	Nos.	1	3		

5	HYGROMETER: Range: 0 to 100 %	Measuring device for water vapours in the atmosphere, in soil or in confined spaces Haar Tension Hygrometer with non-linear scale	Nos.	5	15		
6	MAXIMUM AND MINIMUM THERMOMETER Range: -30Co to + 50 Co	Used in weather stations, cold storage rooms, construction industry, or anywhere , indoor and out, requiring a record of minimum and maximum temperatures	Nos.	5	15		

### **ADP Scheme - 777**

#### **(Package-5) ENVIRONMENTAL MANAGEMENT**

**1. GCT Kohat, 2. GCT Nowshera, 3. GCT Timergara**

S#	Items	Specification	Unit	For one college Qty	For 3 college Qty	Unit Price (Both in Figures and words) Inclusive all taxes	Total Price (both in Figures and words) Inclusive all taxes
1	BOD Incubator	CFC-free Thermostatically Controlled Cabinet Fully Heat-insulated cabinet with universal temperature control unit With Insulating Solid Door Water proof film front, 2 button tactile feedback Control range: 2 ~ 40°C Approx. LED-Display, Temp constancy: + 0.5°C, With Electric Sockets inside the Incubator for BOD Stirring Unit Power Supply: 220VAC, 50Hz. With BOD Measuring system OR EQUIVALENT	Nos.	1	3		
2	BOD Measurement System compatible with BOD Incubator	Measurement Principal: respirometric, electronic pressure sensor, Screw-on mounting for negative pressure measurement. BOD Sensors generate a measuring value every 24 hours, directly Show on the display, and for a maximum of 5 days, these values	Nos.	1	3		

		are automatically stored in the memory function, 20- 30 results Display: Digital LED, Measuring range from 0 ~ 4,000 mg/l (0-40, 0-80, 0-200, 0-400) 0-800, 0-2000, 0-4000 mg/l) Power Supply: Alkaline manganese Batteries Operating temperature: 5 ~ 40°C, Complete with Inductive Stirring unit, 6 sensors incl. standard Accessories 6 No's BOD Bottles, Amber Glass, 6 rubber gaskets, 6 magnetic stirring rods 2 overflow flask,, 1 bottle, potassium hydroxide solution,1 bottle, Nitrification inhibitor solution Instruction Manual, Power: 220VAC, 50Hz.					
3	COD reflux condenser assembly		Nos.	1	3		
4	COD digester		Nos.	1	3		
5	COD photometer		Nos.	1	3		
6	calibrations chemicals	COD Vario Tube Set 0 - 150mg/l O2 25 Tubes/Set COD Vario Tube Set 0 - 1500mg/l O2 25 Tubes/Set COD Vario Tube Set 0 - 15000mg/l O2 25 Tubes/Set	Nos.	1	3		
7	Turbidity meter with Calibration Kit	Safety Rating : UL, CSA, CE Micro TPW Portable Turbidimeter Measuring Range : Auto-Ranging from 0 - 1100 NTU Principle of Operation : Nephelometric Response Time : 10 -20 sec Display : Digital LCD/LED Water proof body Includes: Carrying Case, One set of Prime Time Calibration Standards, (0.02, 10, 1000 NTU). Indexing Rings, Alkaline Batteries, measuring Cuvettes with Light Shield Caps and Operator's manual	Nos.	1	3		

8	Microscope	Optical System : Infinity Optical System Illumination System : Built-in Transmitted Illumination System, Halogen Bulb Focusing : Stage height movement Fine Focus Graduation: Specify? Revolving Nosepiece: Fixed Quadruple Nosepiece Stage : Wire movement mechanical fixed stage: Specify? Travelling Range: Specify? Single Specimen Holder Rated Voltage : AC 220V 50Hz	Nos.	1	3		
9	china dishes	Capacity : Various Types	Nos.	1	3		
10	Scientific balance	•Electromagnetic force restoration weighing system. •External or automatic internal calibration. •LCD with backlight with adjustable contrast. •Protection Cover. Capacity : 200g- 250g Readability : 0.0001g Pan Size : Ø 75-100mm Repeatability : 0,0001g Linearity : + 0.0003g Response Time : < 3-5 sec.	Nos.	1	3		
11	Crucible	Capacity: Various Types	Nos.	1	3		
12	Special filtration assembly	Quick Fit Assembly” Fritted Glass support base Flask with Vacuum Connection Pyrex Funnel Graduated, Aluminum Clamp Filter Paper. Nylon membrane filter Vacuum Pump. Piston Powered & Oil - Free Pump Supplied with: Vacuum Regulator, Gauge & Moisture Trapper	Nos.	1	3		
13	Inhofe cone with accessories	Capacity: Various Types	Nos.	1	3		
14	Oil and grease meter	Capacity: Various Types	Nos.	1	3		

15	Lab Oven	Capacity : 30-40 Liters Temp. Range : Amb +5 to 250°C Power : 750 Watts Approx	Nos.	1	3		
16	Programmable Muffle Furnace	Digital Display, Microprocessor controlled thermo regulator Sensor R thermocouple (Double Sensor) Cooling Fan Built-in. Timer : 1min to 100hrs. and 100 hrs to 1000hrs Operating Temp. Range : 100°C - 1000°C Max. Temp. Reaching Time : 60 min Approx. Internal Capacity : 5-8 Liters	Nos.	1	3		
17	Balance	Capacity : 1000g Readability : 0.01g	Nos.	1	3		
18	Hygroscopic meter		Nos.	1	3		
19	A combine handy meter in belt facility of nitrogen oxide, Sulfur oxide. Carbon oxide		Nos.	1	3		
20	Calibration gases compatible with combine handy meter.	1. NOx , 2. Sox, 3. Cox 4. zero nitrogen gas 5. Carbon oxide	Nos.	1	3		

21	PH Meter Portable	<p>pH Range: -2.00~16.00pH:  pH Accuracy: ±0.01pH  mV Range: -1999~1999mV  mV Accuracy: ±1mV  Calibration Points: 2 points  Calibration Solutions: USA (pH4.01, 7.00, 10.01)  Temperature Range: 0~100°C, 32~212°F  Temperature Accuracy: ±1°C  Temperature Calibration: Manual  Temperature Compensation: 0~100°C, 32~212°F</p> <p>, Automatic or Manual  Hold Function : Manual  Memory: 50 data sets with Date/Time stamping  Output: USB  Communication Interface Connector : BNC  Built in battery Luxury III arm stand; PH Electrode, Temp Probe.</p>	Nos.	1	3		
22	VACUUM PUMP	<p>Piston-powered &amp; oil-free vacuum pumps, adaptable to many laboratory requirements</p> <ul style="list-style-type: none"> <li>- Quiet and low vibration</li> <li>- Compact and light weight</li> <li>- Oil free and maintenance-free</li> </ul> <p>Max. Vacuum : 650mm Hg = 85,5Pa = 110Torr</p>	Nos.	1	3		
23	MAGNETIC STIRRER	<p>Type : Hot Plate &amp; Magnetic Stirrer  Temp. Range : Max.400°C  Temp. Accuracy : +1°C  Temp. Controller : Digital PID Auto-Tuning  Temp. Timer : 100hr  Heater Power : 700W Approx.  Stirring Speed : 100 to 1500rpm  Stirring Speed Display : Digital  Stirring Capacity (H<sub>2</sub>O) : Upto 5L  Speed Controller : Specify?  Top Plate : Ceramic Coated Top Plate  Electrical Supply : 220VAC, 50Hz.  Complete with Thermo Couple K-type rod, clamp &amp; accessories</p>	Nos.	1	3		

24	WATER BATH	Temperature Controller, Pt100 Sensor Digital Display (LED) of set and Actual Temperature and of Programme Time Over Temperature Protection.  Temp Range : Amb +5-100°C Capacity : 20 - 25 Litres	Nos.	1	3		
25	AUTOCLAVE	Capacity : 50-75Liters Operating Temp Range : 100 ~ 150°C Heating : 45 ~ 105°C Warming : 45 ~ 100°C Max Operating Pressure : 0.265MPa Temperature Display : Digital Pressure Gauge Display : Analog Display Range : 0 ~ 0.5MPa Heat Source : 1.5kW Electric Heater Approx. Safety Device: - Water Level Sensor - Current Leakage breaker - Lid Interlock - Over heat prevention - Over pressure prevention - Open temp sensor detection - Safety valve Time Display : Digital Display Range Sterilizing: 1 to 100 hrs, 1 to 1000 minutes Chamber Material :Specify? ACCESSORIES: Stainless Basket x 2 Chamber Bottom Plate : 01 Caster Stoppers : 04 Operation Manual : 01	Nos.	1	3		
26	Flocculation Tester	<ul style="list-style-type: none"> <li>• Continuously variable stirring speed</li> <li>• Digital display</li> <li>• Height adjustment of the stirring blades during operation</li> <li>• Timer feature</li> </ul>	Nos.	1	3		

27	Spectrophotometer(digital)	<p>Optical System : Split Beam          Operating Mode : Transmittance (%), Absorbance, and Concentration          Source Lamp : Tungsten Halogen          Wavelength : 300 to 1100nm          Wavelength Accuracy: + 1.5nm (wavelength range 300 - 900nm)          Wavelength Resolution: 1nm          Wavelength Calibration: Automatic          Scanning Speed : 6-9nm/s          Spectral Bandwidth : 4-7nm          Date Storage : 2000 readings Approx.          Display : LED          Test Kits:          Ammonium 0.02 - 2.50 mg/l 100 Test          LCK301 Aluminium 0.02 - 0.5 mg/l 100 Test          2105769 Iron 0.02 - 3.00 mg/l 100 Test          LCK153 Sulphate 40 -150 mg/l 100 Test          LCK340 Nitrate 22 -155 mg/l 200 Test          LCK342 Nitrite 2 - 20 mg/l 100 Test          LCK348 Total Phosphate 5 - 15 mg/l 24 Test          Or          Equivalent</p>	Nos.	1	3		
28	Conductivity Meter	<p>Conductivity Range: 0~20mS/cm (Max.200mS/cm)          Conductivity Accuracy: <math>\pm 0.5\%</math> Full Scale          Calibration Points: Up to 5 points          Calibration Solutions: 10uS/cm, 84uS/cm, 1413uS/cm, 12.88mS/cm, 111.8mS/cm          TDS Range: 0~10ppt (Max. 20ppt, Depending on factor setting)          TDS Accuracy: <math>\pm 1\%</math> Full Scale          TDS Factor: 0.1~1.0 (Default 0.5)          Temperature Range: 0~105°C, 32~221°F          Temperature Accuracy: <math>\pm 0.5^\circ\text{C}</math>, <math>\pm 0.9^\circ\text{F}</math>          Temperature Calibration: Manual          Temperature Compensation: 0~100°C, 32~212°F, Automatic or Manual          Temperature Coefficient: 0.0~10.0% per °C          Compensation Modes: Linear or Pure Water          Cell Constant:: K=0.1, 1, 10, Selectable          Normalization Temperature: 20°C or 25°C          Auto-Off: Manual or Automatic (10, 20, 30 minutes after last key pressed,</p>	Nos.	1	3		

		Selectable) Reset Function: Yes Sensor Type: Platinum (Order Code: CON-0.1, CON-1 or CON-10 Memory: 500 data sets with Date/Time stamping Battery operated Stand					
29	Portable Multi- gas Analyzer capable of measuring	NOx-0-25,50,100,250,500,1000 and 2500ppm SO2 -0-200,500,1000 and 3000 ppm CO- 0-200,500,1000,2000 and 5000 ppm  CO - 0-5,10 and 20 Vol % O2 - 0-5,10 and 25 Vol %	Nos.	1	3		