

ADP Scheme - 777 (100336)

**(Package-4) Mechanical Technology, B-Tech For GCT, Abbottabad
ADVANCE MACHINE SHOP**

S#	Items	Specification	Unit	For one college Qty	Unit Price (Both in Figures and words) Inclusive all taxes	Total Price (both in Figures and words) Inclusive all taxes
1	Late Machine	Bed Length:72inch (approx.) Bed Width: x9.5" Height of Center: x7.5", Swing Over bed : x14" Swing over Cross slide: x7", Spindle bore= 1.625" Matric Threads: 13/1mm to 6mm, Inch Threads : 19/2 TPI to 24 TPI, RPM (MIN/MAX): 35/885, Main Motor: 3HP/1440 RPM, Power Requirement: 440 VAC;50Hz; 3PH, Standard Accessories: 3-Jaws Universal chuck with reversible jaws(Self Centered) 4-Jaws Independent Chuck (8"dia) 4- jaws Universal chuck (Self-centered) (8"dia) Lath Chuck key, drive plate, dog carrier, face Plate, Quick change tool post, tool post accessories, Steady rest, follow rest, taper turning attachment, grinding attachment, coolant pump, live center, dead center live center set		5		

2	CNC Lathe Machine.	<p>Controller: Fanuc, siemens, headan lhanc, Specification -Mechanical Working area Swing over bed: 270~280mm, X Axis Travel = 125-150mm, Z Axis travel = 450-475mm, X rapid speed: 3000rpm/min, Z rapid speed: 2500rpm/min, X positioning accuracy: 0.03, Z positioning accuracy: 0.032, X repositioning accuracy: 0.012, Z repositioning accuracy: 0.013, Swing over cross slide = 80~150mm, Centre Height: 140mm, Width of bed: 180mm, Spindle bore: 25~26mm, Taper of spindle bore = MT4, Quill travel: 80mm, Quill diameter: 30mm, Quill taper: MT2 Range of spindle speed 30-7000rpm Tooling Turret: 12 Tools Live Tools: 2 Tools Power requirement: 440 VAC; 50Hz; 3 Ph Bed hardened and ground with precision anti-backlash ball screw fitted to both axes. Standard Accessories. 3-Jaw chuck 125mm Dead center Wrench Bon. 4 position servo tool post Face plate with slots Lighting attachment Study Rest and follower rest Cooling system. Features: AC Servo Motor High Speed Machining ISO Standard G & M Codes Graphic Dry Run Control System: fanuc, siemens, headanlhance Lubrication system Operational Manual Maintenance Manual, Programming Manual: 1. Instructor Manual, 2. Student Manual Chip Conveyer Hydraulic chuck</p>		1		
3	Shaper Machine 30"	<p>Length of Ram Stroke: 762 mm/ 30" Length of Ram : 1400 mm (approx.) Max/Min distance of Table From Ram: 485/109 mm (approx.) Working Surface of Table : 762 x 370 mm (approx.). Max. Horizontal Table Travel : 670 mm Max. Vertical Table Travel : 435 mm. Angular Movement of Table: + 60 deg. Number of Ram Speeds/Strokes : 4. Main Motor Drive : 440 VAC; 50 Hz; 3Ph</p>		2		

4	CNC Milling Machine:	<p>(3-axis Vertical Machining Center) Specification: Axis travel: X (Longitudinal): 800-1000mm Y (cross) 400-500mm, Z (Vertical) 400-500mm, Spindle speed 8000rpm, Table size 850x510mm, T-slot No. 05, Centre distance 100mm. T-width 18mm, Spindle nose to table surface 150-650mm, Spindle axis to column surface 550mm Power requirement: 440VAC, 50Hz, 3Ph. Bed hardened and ground with precision anti backlash ball-screw fitted to all axes. Controller: fanuc, siemens, haidelnhain Standard Accessories, Cooling system Chip conveyer, Servicing tools, Collets holder with collects set, Machine vice, Instructional manual, Programming Manual, Maintenance manual, Operational Manual, etc. Features: AC servo motors on xyz axes, 3-axis interpolation, ISO standard G & M codes, High precision C-3 balls screws.</p>		1		
5	Cylindrical Grinding machine	<p>Max diameter to be ground X length = 200x400mm (approx) Min diameter to be ground: 4mm Range of the bore to be ground: 10~40mm Max .depth of bore to be ground: 50mm Height of center x Distance between centers: 100x370 (approx) Rotation angle (degree): Worktable, Headstock, Wheel frame: ± 9 ± 45 ± 180 Power Requirement: 440VAC; 50 Hz; 3 Ph Working Accuracy Roundness: Specify Cylindercity: : Specify Roughness: Specify</p>		1		

6	Surface Grinding machine	<p>Working Table Size : 700 x 320mm (approx) Max longitudinal travel of the working table: 800mm (approx) Max cross travel of the working table: 370mm(approx) Max distance from spindle axis to table surface: 600mm (approx) Slandered Magnetic Chuck size: 700x320mm Wheel size: 350x30x127mm Power Requirement: 440VAC; 50Hz; 3Ph. Built in cooling system Slandered Accessories. Wheel, Wheel adaptor, Wheel balancing stand, Standard tools, Balancing arbor, Wheel dresser with diamond tip, Nut for dismantling the wheel adaptor, Cushion set, Electro magnetism chuck. Along with all standard accessories.</p>		1		
7	Drill press (heavy duty)	<p>Drill press (heavy duty) Motor : 220 VAC, 1 Ph; 50 Hz or 440 VAC; 3 PH; 50 Hz Spindle Speed : 0-1200 RPM Drilling Capacity : 1" Drill to center : 18" Column Diameter 4" Morse Taper: MT2 Work Table size: 280x300mm T-slot size: 14 mm Distance spindle table (max)= 595mm Distance spindle table (max)= 445mm Working Surface stand= 280x264mm Along with all standard accessories</p>		1		
8	Pedestal Grinder	<p>Size: 10" diameter grinding wheel. Adjustable eye shield, over size ball bearing heavy cast iron base, 1-2 hp Motor, 220 volts AC, 50 HZ, 2800-3000 RPM motor speed, including two grinding wheels 10" X1" X1: . Along with all standard accessories.</p>		2		
9	Power hacksaw with Hydraulic feed	<p>Cutting capacity (approx) i. Round bar=150-200 mm ii. Square Bar=100x 100 mm iii. Flat Plate =200 mm/8" Cutting speed stroke=100rpm Saw Blade=Specify Electric Power : 1Ph, 220 VAC; 50 Hz OR 3 Ph; 440 VAC; 50 Hz Along with built in cooling system and all standard accessories.</p>		2		

10	Electric Arc Welding Machine(A C)	Electric input 220 volts AC, single phase, 50 Hz, Range of current: 50-400 amp Dial Type control simple quick current selection. Includes electrode holder gourd clamp, electrode and ground cables each 15ft. and welding helmet.		2		
11	Oxy-Acetylene gas welding & cutting equipment	Oxygen gas cylinder (filled): 20cu ft. (Approx).(original test report from BOC/Daud Hercules should be attached). Acetylene gas cylinder (filled): 10 cu ft. (Approx).(original test report from BOC/Daud Hercules should be attached). Cuts up to 1" and weld up to 1/16" Cuts up to 4" with optional ditch tips.		2		
12	Broaching Machine	Max. pulling force (KN) : 50 Max. stroke (mm) : 800 Broaching speed (m/min) : 1 to 60 Work Loading/Unloading Height (mm): 1000 Floor space Standard Accessories: Mist Coolant device Chip Conveyor Sheet Plate		1		
13	Honing machine	Honing range : 35-90 mm Max. honing Depth 230 mm Max. Travel of honor : 171 mm Spindle Speed (20) : 230 and 350 rpm Motor HP: 0.5 HP		1		

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(Package-4) Mechanical Technology, B-Tech Fluid Mechanic & Hydraulics Lab

S.No.	Name of Item	Specification	For one college Qty	Unit Price (Both in Figures and words) Inclusive all taxes	Total Price (both in Figures and words) Inclusive all taxes
1	HYDRAULICS BENCH	Specifications equivalent to: Sump tank capacity -250-250 liters High flow volumetric tank -40 liters (approx.) Low flow volumetric tank -10 liters (approx.) Pump 42 liters/min, against 5m head. Max head of 20m of water at zero floor rates. Electrical requirements 220volt. Single phase 50 Hz supply Accessories/Apparatus: Auxiliary pump & speed control unit. Pump speed display constant head inlet tank Variable head out let tank Feed block Manometer, Hook Gauge and scale. All other standard accessories for performing the flowing test. Centrifugal pump characteristics Flow in pipes and pipe fittings Flow through orifices and over weirs Flow in channels Bernoulli's experiment Water flow measurement Hydrostatics Free and forced vortices fluid friction apparatus Reynolds number Pelton Trubine: An all metallic working model, comprising of a single jet horizontal shaft turbine, a disc is provided with double hemispherical cups mounted in	1		

		housing with a transparent window on one side. Note : Provide Instructor manual and students' manual.			
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(Package-4) Mechanical Technology, B-Tech

THERMODYNAMICS AND HEAT ENGINE LAB

S.No	Name of Items/ Specification	Specification	For one college Qty	Unit Price (Both in Figures and words) Inclusive all taxes	Total Price (both in Figures and words) Inclusive all taxes
1	4 Stroke 4 Cylinder Diesel Engine Test Rig	<p>Diesel Engine: A Four stroke four cylinder Diesel engine developing about 10.0 HP at 1500 RPM variable speed with standard accessories. Engine is provided with self starter, Battery, dynamo, lubrication oil filter, fuel pump, ignition coil, exhaust silencer, oil pressure gauge, choke control and throttle control</p> <ul style="list-style-type: none"> · Loading Device: A Hydraulic Dynamometer complete with a weighing gear, dead weight in kgm suitable for testing the engine at variable speeds. The engine and hydraulic dynamometer are directly coupled on substantial base plate · Fuel Measuring Arrangement: Consisting of fuel tank, fuel piping from fuel tank to engine, measurement of fuel consumption by a burette and a three way cock connecting tube · Air Intake and Exhaust Gas Measurement: A S.S. tank, mounted on iron stand, fitted with suitable orifice plate, manometer, temperature sensor for measuring the air intake temperature is provided. A temperature sensor is also provided to measure the exhaust gas temperature · Exhaust gas calorimeter with temperature sensors, water meter is also provided to plot heat balance sheet. Cooling water arrangement is also provided for measuring the heat carried away by the cooling water consisting of suitable inlet and outlet piping with temperature sensors. 	1		

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· Panel board: The entire temperature sensor measuring device and manometer are mounted on panel board. It also consists of ignition and starting switch, fuse unit pilot lamp, throttle control switch and choke control switch

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2	4 Stroke 4 Cylinder Petrol Engine Test Rig	<p>Petrol Engine: A Four stroke Four cylinder petrol engine developing more than 300 HP at 1500 RPM variable speed with standard accessories. Engine is provided with self starter, Battery, dynamo, lubrication oil filter, fuel pump, ignition coil, exhaust silencer, choke control and throttle control. The engine is provided with switches for conducting Morse test</p> <p>Loading Device: An Electrical Dynamometer complete with a weighing gear, dead weight in kg suitable for testing the engine at variable speeds. The engine and Electrical Dynamometer are directly coupled on substantial base plate</p> <ul style="list-style-type: none"> · Fuel Measuring Arrangement: Consisting of fuel tank, fuel piping from fuel tank to engine, measurement of fuel consumption by a burette and a three way cock connecting tube · Air Intake and Exhaust Gas Measurement: A S.S. tank, mounted on iron stand, fitted with suitable orifice plate, manometer, temperature sensor for measuring the air intake temperature is provided. A temperature sensor is also provided to measure the exhaust gas temperature · Preparation of energy balance for above engine. Exhaust gas calorimeter with temperature sensors, water meter is also provided to plot heat balance sheet. Cooling water arrangement is also provided for measuring the heat carried away by the cooling water consisting of suitable inlet and outlet piping with temperature sensors · Panel board: All the temperature sensor measuring device and manometer are mounted on panel board. It also consists of ignition and starting switch, fuse unit Pilot lamp, throttle control switch, choke control switch, and switch assembly for cutting off each cylinder for conducting morse test 	1		
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3	Planimeter	<p>Measuring Functions: area, length of line Standard Units : mm, cm, m, km Special Units : in, ft, mi, ac, user specific Scale Setting : ratio input or manual scaling Measuring Keys: POINT (straight line), CONTINUOUS (curve), ARC (arc), CANCEL Display : 128 x 64 dot matrix graphic LCD Measuring Range : Vertical: 38 cm (380dIII) 46 cm (460dIII) Horizontal: 200 cm (both) Power: Rechargeable NiH battery Battery Charger : AC 220V 50 Hz 3VA Dimensions (Planimeter) : 334x162x47 mm (380dIII) / 380x162x47 mm (460dIII)(approx) Accessories : AC charger, Gauge template, Case, Manuals</p>	2		
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(Package-4)Mechanical Technology, B-Tech
REFRIGERATION AND AIR CONDITIONING LAB

S.No	Name of Items	Specification	For one college Qty	Unit Price (Both in Figures and words) Inclusive all taxes	Total Price (both in Figures and words) Inclusive all taxes
1	Refrigerator Trainer	Base unit for the refrigeration training system Condensing unit, consisting of hermetic compressor, condenser, receiver, pressure switches and shut-off valves Insulated refrigeration chamber with integrated evaporator, electric defrost heater and condensate drip tray Refrigeration chamber, condensing unit and power supply equipped with shock-proof lab jacks Refrigerant R134a, CFC-free Air-cooled condensing unit - power consumption: 367W at -10/32°C - refrigeration capacity: 731W at -10/32°C - max. air flow: 850m ³ /h - receiver: 1,4L Evaporator with fan - capacity: 190W at t=2°C, ΔT=8K - cooling surface: 1,81m ² - max. air flow: 140m ³ /h - electric defrost heater: 50W/m 220V 1 phase, 50Hz, 1condensingunit 1 refrigeration chamber 1 set of instructional material	1		
2	Air Conditioner Trainer	Air Conditioning System Trainer contains three types of liquid control devices, a capillary tube, Thermostatic expansion valve, and hand expansion valve. A reversing valve is included so that the system may be run as a heat pump. all of the system's fittings have been brazed. The trainer includes sight glasses and pressure gauges at the inlet and outlet of the evaporator and condenser, thermometer wells, temperature and pressure controls, Receiver, filter dryer, and accumulator. It is factory charged withR-410A refrigerant. Furnished complete with operating instructions, experiment	1		

		<p>and teacher manuals. The components are mounted to a steel panel and completely piped and wired. All components are clearly identified by legends. The panels are mounted to a mobile cart with four (4) casters, two with brakes.</p>			
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