

| TOOLS                            |                                 |   |          |        |
|----------------------------------|---------------------------------|---|----------|--------|
| PKG - G(Mech Mining MC)          |                                 |   |          |        |
| SL. NO.                          | NAME OF THE ITEMS               | UNITS   | QUANTITY | REMARK |
| 1                                | Bench Type Drilling Machine     | (a) drilling 40 mm ; (b) face mill 100 mm ; © end mill : 20mm; (d) tapping : 20mm mill  | 1 no     |        |
| 2                                | Vice Working Table              | 4' x4'  | 1 no     |        |
| 3                                | Surface plate (big),            | size 2x2'   | 1 no     |        |
| 4                                | Bench Grinder                   | Wheel size : 125 mm; no, load speed : 2950 mm   | 1 no     |        |
| 5                                | Portable Electric Drill Machine | Hole size : 5 mm to 25 mm; variable chuck   | 1 no     |        |
| 6                                | Black Smith Hammer with handle  | Alloy steel hammer head; harden and normalized; weight of head : 1.5 kg and 2 kg  | 1 no     |        |
| 7                                | Sledge Hammer                   | Drop forged, hardened and tempered alloy steel hammer head : weight of hammer head : 3 kg   | 1 no     |        |
| 8                                | Open hearth coal Fired Furnace  | Size : 600 x 600 mm MS fabricated complete with water tank; coal tank air control valve, electrically operated motorized blower, ashtray, hopper with smoke outlet (hood); complete with fire brick lining; 8" diameter chimney with installation | 1 no     |        |
| 9                                | Pneumatic Power Hammer          | Distance between Dies: 9" ; Blows per minute : 240; Dia size : 2.375" x 4.75";  | 1 no     |        |
| 10                               | Anvils with damping base        | Weight: 200 kg (approx); hardy hole : 1" : Pritchel hole : 7/8" : Round horn : 12" Flat horn : 10"; Face : 6.5" x 16" ' Total Length : 38"; Height : 13"; Base dimension ; 12" x 14"  | 1 no     |        |
| 11                               | Steel Swage Block               |   | 1 no     |        |
| 12                               | Working Table                   | Size : VA" x 7" x 3"  | 1 no     |        |
| C. GENERAL MACHINERY SHOP OUTFIT |                                 |   |          |        |

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| 1 | V-belt Driven Lathe Machine | Length of Bed : 1370 mm; Width of bed : 235mm; Height of centre : 165mm; Admit between canters : 765mm; Hole through spindle : 42mm; Swing over bed : 315mm; Swing over carriage : 230mm; Lead screw : 6 TPI; Power : 1HP; Accessories : Electrical Motor, 160mm x 3 jaws true chuck, 200mm x 4 jaws dog chuck, motorized coolant pump with fittings, face plate, steady rest, follow rest, Norton gear box, turning attachment, flame hardened bed ways                                      | 1 no |
| 2 | All Geared Lathe Machine    | Length of Bed : 1370 mm; Width of bed : 285mm; Height of centre : 205mm; Swing over bed 410mm; Swing over cross slide : 205 mm; Distance between centers : 750mm, Movement of cross slide: 240mm, Bed type : 2V & 2 Flat, Type of spindle nose: Taper nose; Taper bore in spindle sleeve : MT -3, Spindle bore : 42mm , Tail stock spindle diameter: 52mm, Tail stock taper bore in spindle : MT -3, Tail stock spindle travel : 150mm, Travel of top side : 160mm, Tool shank section : 25 x | 1 no |
| 3 | Turret Lathe                | Bar stock capacity : 25 - 64 mm, chuck size : 250380mm, Drive motor capacity : 5 - 10 HP, Swing over ways : 550mm, speed : 50 - 150 rpm   |      |

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|   |                                   | Length of bed : 1370mm, Width of bed: 150mm, Maximum distance between spindle nose to turret face : 275mm, cross slide traverse travel : 110mm, cross slide longitudinal travel : 150mm, No of spindle speeds : 3, range of spindle speed: 650 - 1660 rpm, Effective stock of capstan slide: 95, bore size of hex turret, 25, centre of holes above turret slide : 40mm, Height of centre above bed: 150mm , Accessories : bar feed attachment, true chuck 160mm x 3 jaws, adjustable knee tool holder, bush guide tool holder, boring toolholder, circular forming tool holder for rear end, coupling for spindle nose 160mm dia, coupling for spindle nose 200mm dia, collet end roll above 8mm, compound slide for cross slide centering and facing tool holder, drill chuck 13mm with sleeve, four way tool holder with stopper, knee tool holder, knurling tool holder for turret, multi tool holder, plain |      |
| 4 | All Geared Capstan Lethe          |  | 1 no |
| 5 | Universal Radial Drilling Machine | Drilling Capacity in MS : 38mm, Drilling Capacity in Cl: 45mm, Spindle nose : MT - 4, Spindle Travel : 220mm, Number of spindle speed : 8 ( gear drive ), Range of spindle speeds (rpm), 62 - 1980, main motor hp: 2, Elevating motor hp: 0.5, size of working table : 280 x 300 x 300 mm, Drilling radius max / min: 895/440, Max / Min distance column to spindle : 930/230mm, Diameter of column : 165mm, swivel of arm L/R side: 760 x 1250 x 150, No of T - slots : (4) 16, Overall height : 200mm, Motorized coolant pump with fittings.   |      |
| 6 | Planning Machine                  | Length of stroke : 1220mm, Width between arms : 762mm, Height under cross rail : 762 mm, Length of bed : 2033mm, width f bed : 457mm, working surface : 1220 x 610 mm, No of T - slots : 4, Width of T - slots : 19mm, Motor hp : 3  | 1 no |

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| 7  | Slotting Machine                     | Length of stroke (maximum) : 175mm, Working Stroke : 150mm, Ram adjustment : 125mm, length of ram bearing : 500mm, Maximum diameter accommodated when machine at centre : 500 mm, Height between table and head : 300mm, Longitudinal feed (manual) ,200mm,Longitudinal feed (auto): 175mm, Cross feed (manual): 225mm, Cross feed ( auto) : 200mm, Dimension of table : 275mm. Dimension of base plate 700 x 490mm, number and range of speeds : 2 (30 - 50), Motor (960 rpm) : 1.5 HP, Optional Accssories: Tilting Head, rapid feed |        |
| 8  | Universal Milling Machine            | Surface of table : 900 x 225mm, Distance between T - Slot: 55mm, Longitudinal travel of table 485mm, Cross travel of table 1500mm, Vertical adjustment of table : 275mm, Distance between centerline of spindle to lower surface of overarm : 140mm, taper in spindle : ISO 40, Diameter of milling arbor : 25.4mm, range of spindle speed : 75,140,210,275,350,525 rpm, Number of feeds : 3, Motor : 2HP/ 1440 rpm, Motorized coolant pump.   | 1 no   |
| 9  | Double Ended Motorized Bench Grinder | Motor HP: 1, Three Phase , 440V, 2800rpm, Coolant pump, wheel size : 250 x 25 mm , wheel guard   | 1 no   |
| 10 | Double Ended Pedestal Grinder        | Motor HP: 1, Three Phase , 440V, 2800rpm, Coolant pump, Grinding wheel : 200 x 40mm , working table size : 185 x 175mm   | 1 no   |
| 11 | Hand Operated Hydraulic Press        | Capacity : 5tons, Dimenssion between columns : ( LxB) 500 X 125 mm, Distance between ram and bed maximum 600mm and minimum 75mm, Travel of ram: 100mm  | 1 no   |
| 12 | Hydraulic jack                       | Capacity : 1t with hand pump   | 1 no   |
| 13 | Manual Chain Pulley Black            | Capacity : 1t& 3t  | 1 each |
| 14 | portable Blower                      | Specifications : Air Volume : 4.5m3/ min, Air Pressure : 0 - 7.2 kpa, No - load speed : 0-16000rpm, Weight : 1.8 kg  | 1 no   |

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| 15   | Mechanical Transmission training Unit, Trolley Version with Storage cabinet and toolkit ( Product of Feedback instruments Ltd. / UK)                            |                             | 1set   |
| 16   | Mechanical Training Bench (Imp - 1) with TSA Two student add - on (Product of interlitek, USA)  |                             | 1set   |
| 17   | Belt Driver Trainer (Product of DAC,USA)  |                             | 1 no   |
| 18   | Chain Driver Trainer (Product of DAC,USA)   |                             | 1 no   |
| 19   | Combined mechanical trainer ( Product of DAC,USA)   |                             | 1 no   |
| 20   | Coupling / Shaft Alignment Trainer (Product of DAC , USA)   |                             | 1 no   |
| 21   | Combined mechanical trainer ( Product of DAC,USA)   |                             | 1 no   |
| 22   | BSC Bearing Service Cart with two students Add-on (Product of Intelitek,USA)  |                             | 1 no   |
| 23   | Automatic Submerged Arc Welding Machine   | 470 A 415 V, 3 Phase        | 1 no   |
| 24   | Mig Welding Torch<br>Gas Cooled - Cap<br>Water Cooled - Cap   | 180A/250A/300A<br>300A/500A | 1 no   |
| 25   | Pneumatic Spot Welding machines<br>Primary Supply Voltage   | 415 V Rating 20KVA          | 1 no   |
| 26   | A/C, D/C Welding Rectifiers Input Supply voltage  | 380/415/440                 | 1 no   |
| 27   | Welding tool Kit consists of Cutting torch, Gas Regulator, Welding Nozzles, Cutting Nozzles, Rubber Tube,Binkers, Copper Brush, Lighter,Spanner, Nozzle Cleaner |                             | 1 sets |
| 28   | Pencil / Hand Grinder Collet Capacity   | 3,6,6mm each                | 1 no   |
| <b>D. ITEMS REQUIRED FOR VARIOUS HYDRAULICS EXPERIMENTS (OPEN CIRCUIT)</b> |   |                             |        |
| 1  | Determination of Critical Velocity Complete with all Accessories  |                             | 1 no   |
| 2  | Collection tank with two compartments   |                             | 1 no   |
| 3  | Venturimeters (Brass) of different sizes  | 25 mm, 38 mm, 50 mm         | 1 sets |
| 4  | Pitot tube  |                             | 1 sets |
| 5  | U Tube Double Column Manometer of differe   | 15 cm, 25 cm, 50 cm, 100 cm | 1 sets |
| 6  | Differential Manometer and Inclined Tube Manometer  | 50cm Scale                  | 1 sets |
| 7  | Inclined Manometer  | 20-0-20 cm                  | 1 sets |
| 8  | Demonstration Manometer   | 50 cm                       | 1 sets |
| 9  | Piezometer Tube   | One Meter Long              | 1 no   |
| 10   | Differential Manometer  | One Meter Long              | 1 no   |
| 11   | Hydraulic Non-return valve  |                             | 1 no   |
| 12   | Hydraulic Gate valve  |                             | 1 no   |
| 13   | Hydraulic Globe Valve   |                             | 1 no   |
| 14   | Centrifugal Runner Actual Cast Iron   |                             | 1 no   |
| 15   | Different Impellers of Pumps  |                             | 1 sets |
| 16   | Display Board for Pipes   |                             | 1 no   |

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|----|---------------------------------------|------|
| 17 | Hydraulic Jack                        | 1 no |
| 18 | Hydraulic Press Model                 | 1 no |
| 19 | Hydraulic Ram                         | 1 no |
| 20 | Gear Pump Model                       | 1 no |
| 21 | Rotary Pump                           | 1 no |
| 22 | Centrifugal Pump (Actual Cut Section) | 1 no |
| 23 | Reciprocating Pump                    | 1 no |
| 24 | Submersible Pump                      | 1 no |

**HYDRAULICS & FLUID MECHANICS LAB EQUIPMENTS (CLOSED CIRCUIT)**

|   |                                   |      |
|---|-----------------------------------|------|
| 1 | Centrifugal Pump Test Rig         | 1 no |
| 2 | Reciprocating Pump Test Rig       | 1 no |
| 3 | Gear Pump Test Rig                | 1 no |
| 4 | Hydraulic Ram Test Rig            | 1 no |
| 5 | Two Stage Air Compressor Test Rig | 1 no |
| 6 | Centrifugal Compressor Test Rig   | 1 no |
| 7 | Rotary Compressor Test Rig        | 1 no |

**DEMONSTRATION UNIT WITH EXPERIMENTAL SET**

|   |   |                                      |
|---|---|--------------------------------------|
| 1 | Axial Flow Fan Demonstration Unit fitted with sensors and Instruments to carry out various experiments (Manufactured by Armfield Ltd. / USA)  | 1 sets                               |
| 2 | Centrifugal Pump Demonstration Unit fitted with sensors and Instruments to carry out various experiments (Manufactured by Armfield Ltd. / USA)  | 1 sets                               |
| 3 | Basic Hydraulic Bench with Accessories to carry-out the following experiments.<br>Dead weight calibrator<br>Hydrostatic pressure<br>Bernoulli's Theorem demonstration<br>Orifice discharge<br>Energy losses in pipes<br>Flow meter demonstration<br>Energy losses in bends<br>Hydraulic Ram Series /Parallel Pumps<br>Cavitation demonstration<br>(Manufactured by Armfield Ltd. / USA) | 1 sets                               |
| 4 | Machine suitable for separately excited, series, shunt and Compound Connections and excitation.   | 2.5 kW, 250V, 1000 r.p.m.d.c<br>1 no |

**LIST OF AUTOMOBILE EQUIPMENT**

|   |   |      |
|---|---|------|
| 1 | Sectional Working Model of 4 Stroke Diesel Engine   | 1 NO |
| 2 | Circuit breaker. i. Air circuit breaker (ACB).<br>ii. Oil circuit breaker (OCB)<br>iii. Minimum oil circuit breaker (MOCB).<br>iv. Sf6 circuit breaker.<br>v. Vacuum circuit breaker (VCB). | 1 NO |
| 3 | Isolator, Earthing switch & Lightning Arrestor.   | 1 no |
| 4 | Various Types of Fuses.   | 1 no |
| 5 | Various Types of Armoured & Flexible Power Cables.  | 1 NO |
| 6 | Overhead Line Insulators.   | 1NO  |

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| 7  | Flame Proof Enclosures of Mining Type<br>Circuit Breaker & Electrical motor |   | 1NO |
| 8  | Nozzle Tester   | Max Pressure : 40 MPa or 60 Mpa<br>Volume of fuel Tank 1500ml | 1NO |
| 9  | Cummins PT Pump Test Stand  | Model No. PTW 100   | 1NO |
| 10 | Fuel Injector Pump Tester For Heavy Duty<br>Type for Multi Cylinder Engine  |   | 1NO |
| 11 | Cummins Tools and equipments  |   | 1NO |
| 12 | Cummins PT Injector Test Stand  | Model No. PTW 200   | 1NO |
| 13 | Injector Leakage tester   |   | 1NO |
| 14 | Injector Top Stop Fixture   |   | 1NO |
| 15 | STC Top Stand   | STC with digital indicator                                    | 1NO |
| 16 | Injector Disassembly & Assembly Tool  |   | 1NO |
| 17 | Injector Cup Spray Tester   |   | 1NO |
| 18 | Common Rail System Injector Tester  |   | 1NO |

T/C : \* GST tax will be as soon in the quotation

\* Delivery at Destination

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