

For GCT, Timergara and Kohat
Civil Technology for B-TECH

CONCRETE TECHNOLOGY

S.NO	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	<p>Vicat apparatus ASTM-C187 Hand operated Vicat apparatus, formed of a metal frame, a Ø 10 mm sliding consistency plunger weighing 300 gm. and a graduated scale, complete with needle Ø 1.13mm for initial setting time, final setting time needle, glass plate Ø120 mm and ASTM mould.</p> <p>Accessories and spares:</p> <ul style="list-style-type: none"> ➤ Needle Ø 1 mm for initial setting time . ➤ Needle Ø 1.13 mm for final setting time. ➤ Glass plate Ø 120mm. ➤ ASTM Vicat Mould 	10
2	<p>SLUMP CONE , ASTM C 143</p> <ul style="list-style-type: none"> ➤ Slump cone from galvanized plate ➤ Tamping rod Ø16x 600mm. ➤ Base plate made from galvanized sheet iron with handle. Dim.60x40 cm ➤ Graduated rule made from stainless steel of length 300 mm ➤ Hopper , made from aluminium 	10
3	<p>COMPACTING FACTOR APPARATUS: BS 1881 Part 103 , 5075 Made of painted steel sheet, composed of two hoppers with trap doors mounted vertically above a cylindrical mould. tamping rod 16mm in dia. and 600mm length</p>	02
4	<p>COMPACT COMPRESSION TESTING MACHINE, 3000 KN CAPACITY. ASTM C 39 Motorized, suitable for testing 150x300 and 160x320 mm, cylinders and also for testing 150 mm cubes, prismatic and Brazilian tests. Reading effected by means of a digital display.</p> <p>Accessories : Reduction platens made of steel safety guard, compressive meter, flexure test set used with 150x150x600mm beams complete with steel flexural bearers, splitting tensile test set suitable for Ø 150x300mm</p> <p>Moulds for sample preparation ASTM C-31.</p> <ol style="list-style-type: none"> 1. Single mould/ Cylinder made in non deforming steel. 2. Beam moulds ASTM-C-31 dim 6"x6"x24" and 6"x6"x36". 3. Hinged cylinder mould ASTM-C-31 Ø 6"x12". 	02
5	<p>FLEXURAL TESTING MACHINE 150 KN capacity: ASTM-C-78 Rigid constructed frame, designed for flexural test on prismatic specimens of 10 x 10 x 40 / 50 cm. and 15 x 15 x 90 cm Kerb stones and concrete beams. With manual adjustment of the load and digital display.</p> <p>Accessories. Flexure attachment for tests on kerbs</p>	02
6	<p>AGGREGATE IMPACT TEST VALUE APPARATUS, BS 812 Manufactured robustly from steel for protection against corrosion, with automatic counter to check the number of blows. Complete with cylindrical measure Ø 76 x 52 mm, deep and steel tamping rod Ø 9.5 x 300 mm long.</p> <p>Accessories and Spares: Cylindrical measure, ø 76 x 52 mm. Tamping rod ø 9.5 x 300 mm.</p>	10
7	<p>ELECTROMAGNETIC SIEVE SHAKER, with Standard sieves set , ASTM C 33-13 Activated by electromagnetic impulses. It is particularly recommended to carry out sieving test where high precision and performance are important. This electromagnetic shaker is of simple and</p>	02

	<p>sturdy construction, it is also suitable for wet sieving tests along electronic control panel. The vibrating intensity and the pauses between one vibration and the following one (this is especially indicated for fine material sieving). The sieve shaker can hold up to 10 sieves.</p> <p>Standard sieves set , ASTM C 33-13 (for fine and Coarse aggregates): Of Ø 200 mm x 50 mm with hole with compatible electromagnetic sieve shaker.</p>	
--	---	--

For GCT, Timergara and Kohat
Civil Technology for B-TECH

SURVEYING

S.NO	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	Prismatic compass With stand	10
2	Abney Level	10
3	Optical square	10
4	Line ranger	10
5	Tapes	10
6	Ranging Rods	10
7	Chains	10
8	Arrows	10
9	Cross staff	10
10	<p>TOTAL STATION, With all accessories Electronic total station which combines in one compact unit a 5-second digital read out with an electronic distance meter, with the following specification:- Angle Accuracy..... 5 Seconds Plummet..... Laser Guide light..... In Built On Board soft ware..... Power Topo light installed Distance with Single Prism. 7 KM Distance with ripple Prism. 9 KM In Built Internal Memory: 10,000 Points Auto: Atmospheric Correction: In built. Key Board Alpha Numeric Reflector- less range.....500 M and above. TS Shield. SD Card.....Built in USB Slot.....Built in</p> <p>ACCESSORIES:</p> <ul style="list-style-type: none"> ➤ Battery Pack ➤ Battery Adopter ➤ Plumb Bob ➤ A set of Tools. ➤ Rain Cover ➤ Carrying Case ➤ Operational Manual ➤ Heavy Duty Aluminum Tripod ➤ Single Prism ➤ Prism Holder ➤ Coaxial Target Plate ➤ Prism Pole ➤ 	10

11	<p>AUTOMATIC LEVEL</p> <p>SEPCIFICATION:</p> <ul style="list-style-type: none"> ➤ Magnification.....32 x ➤ Aperture.....45 mm ➤ Compensator range.....±12' <p>ACCESSORIES:</p> <ul style="list-style-type: none"> ➤ Instrument ➤ Instructional manual ➤ Plumb Bob ➤ Lens cap ➤ Heavy Duty Aluminum Tripod Stand ➤ Double sided Aluminum Staff pole. 	10
12	<p>ELECTRONIC THEODOLITES</p> <p>with all accessories:</p> <ul style="list-style-type: none"> ➤ Accuracy 5 sec ➤ Aperture 45 mm ➤ Angle measuring mode Absolute encoder ➤ Tilt sensor Automatic vertical compensation ➤ Display 5 sec/ 2 sec ➤ Magnification 30x ➤ Measurements W 175mmxL170xH334mm <p>ACCESSORIES:</p> <ul style="list-style-type: none"> ➤ Lens cap ➤ Lens brush ➤ Battery case ➤ Instructional Manual ➤ Carryi9ng case ➤ Aluminum tripod. 	06

For GCT, Timergara and Kohat
Civil Technology for B-TECH
(Building Construction)

S.NO	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	Schmidt hammer	10
2	Trowel,	10
3	Spirit Level,	10
4	Plumb Bob,	10
5	Shovel	10
6	Concrete mixer	10 set
7	Pliers adjustable	10
8	Aluminium level	10
9	Square steel	10
10	Steel drill	04
11	Mason's drill	04
12	Hack saw	10
13	Ball pen hammer	12
14	Piles (flats, round, triangular)	10 set
15	Safety equipment(work gloves, boots, glasses, overall, dust mask/respirator)	10 set
16	Screw driver set	05 set
17	Wheel barrow	04
18	Moulds : Standard concrete masonry unit moulds for solid blocks	10
19	Digital balance , ASTM C 67 Weight range 1g to 5000g	10
20	Digital Moisture Tester. ASTM D 4444-13 Complete with clip, battery and Instructions manual. Technical Features: Measure range on wood: 6 to 44%/±1% Measure range on building materials: 0.2 to 20% ±0.05% Accessories: CARRYING CASE.	10
21	Standard sieves set , ASTM C 33-13 (for fine and Coarse aggregates): Of Ø 200 mm x 50 mm	04

For GCT, Timergara and Kohat
Civil Technology for B-TECH
SOIL MECHANICS

S.NO	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	Oven, Stainless steel drying oven 50 liter, temperature controlled , Maximum temperature range 200°C , 220-240 V AC, 50 Hz, single phase	04
2	Electronic digital balance, capacity 20 kg with accuracy of $\pm 1g$	04
3	Moisture Content Tin, 90 g capacity.	20
4	Motorized Cassagrande Apparatus. ASTM D4318, Electric motor driven that ensures a frequency of 120 strokes/min., digital display of numbers of cup drops. Accessories. <ul style="list-style-type: none"> ➤ Grooving tool according to ASTM standard ➤ Spatula made of stainless steel 120 mm blade length 	04
5	Plastic limit: ASTM D 4318 Set for Plastic limit: <ul style="list-style-type: none"> ➤ Glass plate: 500mm squarex10 mm thick, ➤ Metal rod \varnothing 3x100 mm length ➤ Porcelain dish \varnothing 100mm ➤ Flexible spatula with 120mm blade length. ➤ Aluminum can(6) \varnothing55x35 mm ➤ Carrying case. 	10
6	SHRINKAGE LIMIT APPARATUS ASTM D 427, <ul style="list-style-type: none"> ➤ Glass plate, with three metal prongs. ➤ Porcelain dish \varnothing 150mm , ➤ Flexible spatula with 120mm blade length, ➤ Shrinkage dish \varnothing 42x12mm (2), ➤ glass crystallizers \varnothing 57x32 mm, ➤ Graduated cylinder 25 ml capacity and ➤ carrying case ➤ 1 kg of mercury 	04
7	PYKNOMETER: ASTM D 854, Glass jar complete with non – corrodible brass cone lid and rubber seal, capacity 1liter. <ul style="list-style-type: none"> ➤ Density Bottle 25 ml (Nominal capacity) with capillary vent stopper conforming to BS 733 and ISO 3507 Gay- Lussac type ➤ Density Bottle 50 ml (Nominal capacity) with capillary vent stopper conforming to BS 733 and ISO 3507 Gay- Lussac type 	10
8	SOIL HYDROMETER : ASTM D422, <ul style="list-style-type: none"> ➤ Soil Hydrometer- ASTM graduated 0.995 to 1.038 g/ml 	10

	<ul style="list-style-type: none"> ➤ Hydrometer sedimentation cylinder- 1000 ml capacity complete with rubber bung ➤ Mechanical analysis stirrer -220-240 V AC, 50Hz, single phase <p>Accessories:</p> <ul style="list-style-type: none"> ➤ Constant temperature Bath-220-240 V AC, 50Hz, single Phase ➤ Sodium Hexametaphosphate, 500g <p>Spares:</p> <ul style="list-style-type: none"> ➤ Mixing Paddles ➤ Soil dispersion cup ➤ Heater/Thermostat/Circulation unit. ➤ = 	
9	<p>HAND-OPERATED HYDRAULIC EXTRUDER ASTM D698, D1587, D1883 Used to remove samples from CBR, Proctor and Marshall moulds. Hand-operated driven by means of a hydraulic jack. Made of galvanized steel. It is supplied complete with Ø 4" and 6" adaptors. Capacity: 50 KN. Dimensions: Ø 300 x 410 mm.</p>	04
10	<p>STANDARD PROCTOR COMPACTION MOULD: ASTM D 558, D 559, D560, D 698, D 1557</p> <ul style="list-style-type: none"> ➤ Mould of cylindrical shape made of metal, with a detachable collar approximately 63.5 mm in height, diameter 101.6mm/152.4 mm ➤ Rammer. Circular face of 50.8mm diameter and weighing 2.5±0.01 kg with sleeve to control the height of drop to 304.8±1.6mm free fall above the elevation of the soil. <p>Accessory: straight edge, 300 mm</p>	10
11	<p>MODIFIED PROCTOR COMP. MOULD ASTM D 698, D 1557</p> <ul style="list-style-type: none"> ➤ Mould of cylindrical shape made of metal, with a detachable collar, Mould volume 1/13.33 ft³ ➤ ASTM Compaction Rammer, 2 inch diameter, 10 lbs., Drop 18 inches. ➤ Guide sleeve: machined steel tubing with air pressure release hole. <p>Accessories:</p> <ul style="list-style-type: none"> ➤ Straight edge 	10
12	<p>DIRECT SHEAR TEST APPARATUS. ASTM D 3080, Digital Direct shear test Machine (Motorized), with two round boxes or 60 and 100 mm diameter, with loading pad, retaining plate, porous plate, plane grid, perforated grid, sample cutter, extrusion dolly, Maximum shear force 5000 N, Maximum vertical load 5000 N, Lateral travel up to 19 mm, Variable speed in mm/min. Capacity 5 KN. Proving ring lever arm with ratio 10:1 Set of 50 kg weights and two 10x0.01 mm dial gauges.</p> <p>Accessories.</p> <ol style="list-style-type: none"> 1. Proving ring capacity 5 KN 2. Dial gauges 10x0.01mm 3. Dial gauges 30x0.01 4. Sample preparation/ejection kit <p>OR EQUIVALENT</p>	02
13	<p><u>MOTORIZED UNCONFINED COMPRESSION TEST APPARATUS.</u> <u>(50 KN.) With all standard accessories.</u> ASTM D 2166. For testing soil samples of 38mm and 50 mm diameters. Complete set. Power range 220-240 V.</p>	02
14	<p>SAND REPLACEMENT METHOD OR IN-SITU DENSITY ASTM D1556 (calibrated mould method) Apparatus complete in all respects ;</p> <ul style="list-style-type: none"> ➤ ASTM sand cone , Ø 6 inches ➤ Sand container: 5 liter capacity. ➤ Density Plate: for Ø 6 inches sand cone. The plate has 6.5 inches diameter recessed hole to locate the sand cone. ➤ 150 mm pouring cylinder BS1377 ➤ 150mm calibrating container, 150mm inside dia x 150mm deep with 250mm diameter 	10 sets

	<ul style="list-style-type: none"> ➤ Metal tray: 300mm square x 400 mm deep with 150 mm diameter hole. <p>Field density Tools.</p> <ul style="list-style-type: none"> ➤ Standard Sand for density test passing 600 micron and retained on 300 micron, 50 kg. ➤ Density spoon for removing soil from the hole ➤ Soft headed mallet ➤ Club hammer with steel head and wooden shaft ➤ Density chisel with hardened tip ➤ Metal dibber tool for excavating hole ➤ Scraper used to level off ground ➤ Density hand pick for excavating different ground ➤ Steel pointed rod with wooden handle <p>OR EQUIVALENT</p>	
15	<p>TRI-AXIAL COMPRESSION TEST APPARATUS. 50 KN ASTM-D2850</p> <p>Complete set with accessories, capable of performing UU, CU, CD test</p> <ul style="list-style-type: none"> ➤ Triaxial frame 50 KN capacity, control unit, ➤ DeAired, ➤ pressure transducers for back and cell pressure with pressure range of at least 0.5 MPa and 200 cc volume and pressure control ➤ 38 and 50 mm membranes with rubber O rings (20 each), ➤ 38 and 50 mm top and bottom caps (Plain and porous), ➤ Split sampler, O ring placing tool, ➤ Membrane stretcher for 50 and 38 mm samples, ➤ filter discs, porous discs, ➤ fiber glass reinforced cell, ➤ Proving ring and displacement dial gauges. ➤ Pour water pressure measurement ➤ suction system ➤ installation, Training and warranty ➤ Power supply 220-230 V , 50Hz <p>OR EQUIVALENT</p>	02 Sets
16	<p>CONSOLIDOMETER APPARATUS. (OEDOMETER), Single cell type ASTM-D-2435, D 3877, D-4546.</p> <p>Complete with Oedometer bench with 1 oedometer, sample diameter at least 50 mm, sampling, ring, upper, lower porous discs, sample ejector, slotted weights from 0.25 to 10 kg (total 64 kg), 2 dial gauges, permeability attachment with 50 ml burette.</p>	02 Sets
17	<p>Glassware and miscellaneous</p> <ul style="list-style-type: none"> ➤ Beaker, 0.5 liter capacity ➤ Beaker, 1 liter capacity ➤ Graduated cylinder, 1 liter ➤ Graduated cylinder, 2 liter ➤ Rubber hammer ➤ Steel hammer ➤ Spatula ➤ Stainless steel bowls, 6 nos. ➤ Steel tray ➤ Stop watch ➤ Vernier caliper ➤ Measuring tape 	04 Sets

For GCT, Timergara and Kohat
Civil Technology for B-TECH
FLUID MECHANICS

S.NO	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	VISCOMETER APPARATUS (Falling ball viscometer)	04
2	PITOT-STATIC TUBE APPARATUS.	04
3	VENTURIMETER Venturi tube aluminum inlet inside diameter 26mm. Throat inside diameter 16mm, outlet inside diameter = 26mm, Manometer tubes transparent plastic range: 0-290mm max: flow rate 26 litter nominally 27 L/min.	02
4	Orifice-meters of circular, square and rectangular shapes.	02
5	Rectangular Notch and V-Notch	02
6	HYDRAULIC BENCH <ul style="list-style-type: none"> ➤ Mobile and floor standing service unit for fluid mechanics apparatus with a working height of 1 meter above the floor level. ➤ Base constructed from robust, corrosion resistant plastic moldind. ➤ Top constructed from glass reinforced plastic ➤ Volumetric flow measurement via remote sight gauge ➤ Stepped tank for low and high flow rates ➤ Open channel in bench top with quick release outlet fitting ➤ Self-priming centrifugal pump with maximum head 21 m water with a maximum flow of 1.35 liter per second ➤ Motor rating = 0.37 Kw ➤ Sump tank capacity = 250 liters 	02

For GCT, Timergara and Kohat
Civil Technology for B-TECH

MECHANICS OF MATERIALS

S. No	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	UNIVERSAL TESTING MACHINE (UTM) (Computerized). TECHNICAL SPECIFICATIONS: - Maximum tensile load: 1000 KN - Maximum compression load: 1000 KN - Distance between the jaws: 700mm or more - Distance between the compression platens: 700 mm - Distance between the columns: 650 mm - Piston's stroke: 250 mm - Speed test : 100 mm/min - Precision and repeatability: $\pm 1\%$ of read value - Power supply: 230 V 1 ph 50 Hz 2.5 kW - Bending test pressed rolling distance 70 to 600 mm - Shear test fitting with size of shearing specimen =0- 20 mm - Grip for round and deformed (20- 60 mm) and flat (40mm thick x 80mm wide) samples. Extensometer.	02
2	COMBINED ROCKWELL AND BRINELL HARDNESS TESTER...ASTM-E10-66, Ball diameter: from 5 to 10mm Pressure limits: 500, 750, 1000 and 3000kg. Accuracy: $\pm 1\%$. Max: height of the test piece: 250mm Horizontal clearance: 150mm.	02
3	CHARPY'S IMPACT TESTING APPARATUS, ASTM- E 23 <ul style="list-style-type: none"> • Cast iron frame, pendulum with hardened knife, brake device to stop the pendulum, • Impact energy 300J, OR EQUIVALENT	02

For GCT, Timergara and Kohat
Civil Technology for B-TECH
IRRIGATION AND HYDRAULIC STRUCTURES

S. No	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	Channel/Flume: With special arrangements (Jack system adjusting the slope of a channel) for creating "Falls"	02
2	Fluid friction apparatus: Shows flow and losses in different pipes, fittings and valves. Shows popular flow measurement instruments.	02

For GCT, Timergara and Kohat
Civil Technology for B-TECH

HYDROLOGY

S. No	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	WATER CURRENT METER- PRICEMETER TYPE AA WITH COMPLETE ANALOG AND DIGITAL OUTFITS: <ul style="list-style-type: none"> • Accuracy 2 % Minimum depth required cable suspended 18 inches, Rod suspended 6 inches. • Dimensions, Bucket open end diameter 2.0 inches, Bucket wheel diameter 5 inches • Operating velocity range: 0.2 – 25.0 ft/sec • Data logger, software and all necessary accessories that are required to record the data in a computer. 	02
2	BAROMETER. Aneroid barometer	04
3	TIPPING BUCKET RAIN GAUGE. <ul style="list-style-type: none"> • Receiver : 12 inches diameter receiver with machined aluminium rim • Sensitivity: one tip at 1.0mm or 0.01 in. • Measuring range: 0 – 700 mm / hr • Measuring accuracy ± 2 % • Data logger, software and all necessary accessories that are required to record the data in a computer. 	08
4	CUP ANEMOMETER: <ul style="list-style-type: none"> • Wind velocity : 0 – 60 m/s (130 m/hr) • Threshold : 0.5 m/s (1.1 m/hr) • Wind speed signal: DC voltage linearly proportional to wind speed. • 1800 rpm(2400 mV)=28.6 m/s(64m/hr) • Mounting: standard $\frac{3}{4}$ inch threaded pipe 	02
5	HYGROMETER: Range: 0 to 100 %	10
6	MAXIMUM AND MINIMUM THERMOMETER: Range: -30C° to + 50 C°	10

For GCT, Timergara and Kohat
Civil Technology for B-TECH

FOUNDATIONS AND PAVEMENTS

S. No	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	FLAKINESS GAUGE, (complete set). To measure the flakiness index of aggregates. Made in galvanized sheet with Set of seven square flakiness sieves made of painted sheet.	10
2	ELONGATION GAUGES. Flakiness & Elongation of aggregate	10
3	STANDARD SHAPE GAUGES. (Shape index caliper) Stainless steel made.	10
4	FRictionAL TESTER : ASTM E303. TRRL PENDULUM FOR SKID TEST , comprising 6 rubber sliders for site use, thermometer, perspex setting gauge, spanners, water bottle, collapsible stool with tool tray, tools and translucent plastic cover, complete in transportable case with Instructions for Use. Accessories and Spares: BASE PLATE <ol style="list-style-type: none"> 1. RUBBER REPLACEMENT PAD, for PSV test. 2. RUBBER REPLACEMENT PAD, for in situ test. 3. DETACHABLE SCALE 4. SLIDER LARGE (6) 5. SLIDER SMALL (6) 	02
5	LOS ANGELES ABRASION MACHINE: ASTM-C131. Heavy hollow steel cylinder with 12± 0.5mm thickness and, having inside diameter of 710±5mm and an inside length of 510±5mm mounted on a base frame. The motor and drum mounted on steel frame. An automatic digital counter with 12 standard steel ball and extractable container, Power 1 HP power supply 220 V 50Hz with all other accessories.	02
6	ENGLER'S VISCOMETER/SAYBOLT VISCOMETER: ASTM D88 with tubes constants of 0.1, 0.3, 1.0, 3.0, 10.0 and 30.0 for determining absolute viscosity of asphalt cement	02

7	<u>PYCNOMETER APPARATUS.</u> Pycnometer, glass jar complete With non-corrodible cone and rubber seal. 1000 cc capacity	10
8	PENETRATION APPARATUS: ASTM D5 Requirement with masses of 50.0±0.05 gm and 100±0.05 gm a. Penetration needle conforming to ASTM D5 b. Sample Container For penetration below 200 Dia. 5mm Internal Depth 35mm . For penetration below 200 and 350 Dia. 70mm Internal Depth 45 mm . c. Thermometer d. Timing Device. e. Hot Plate or oven	10
9	DUCTILOMETER: ASTM D113 (to determine the bituminous ductility, The ductilo-meter basically consists of a moving carriage travelling along guide ways. The carriage is driven by an electrical motor, inside a large tank which is fitted with a thermostat and heater, and pump unit. The equipment works in an automatic way at a speed of 50 mm/min., and can accept up to 3 specimens simultaneously. Carriage travel: 1500 mm. Power supply: 220 V. 50 Hz.-1000 W. Accessories: 1. BRIQUETTE MOULD to prepare specimens in "8" form 2. BASE PLATE FOR BRIQUETTE MOULD. 3. COMPLETE REFRIGERATING SYSTEM , for test temperatures of + 5°C.	10
10	RING AND BALL APPARATUS ASTM D36 Suitable for the determination of the softening point of bitumen, formed by: two test balls, two rings, two centering guides, a cover adjustable in height and a heat resistant container. Accessories: 1. THERMOMETER OF 0-100°C 2. THERMOMETER OF 0-200°C 3. THERMOMETER ASTM 15C. 4. THERMOMETER ASTM 16C. 5. MAGNETIC STIRRER, with heating. BUNSEN BURNER 6. ASBESTOS MESH, 100 x 100 mm. Spare Parts: 7. TEST BALL. 8. CENTERING GUIDES. BRASS RING	04
11	CLEVELAND OPEN CUP APPARATUS ASTM D92 (For Flash and Fire point of bitumen) With electric heater, supplied complete with cast aluminium cup, thermometer from - 6 to + 400°C, electric thermo regulator, heating plate, rod and clip for the thermometer. Power supply: 220 V. 50 Hz. 700 W.	06
12	VACUUM PYCNOMETER: ASTM D2041 , Capacity 4.5 liter, 2000 g sample weight, Accessories: 1. Aspirator type filter pump 2. Rice test vibrator, motor 1/20 Hp, 1.6 amp. For 220-240V AC, 50 Hz, 1 ph. 3. Timer clock, battery operated (digital display of hours, minutes and seconds)	04
13	MARSHALL STABILITY TEST MACHINES. ASTM-D-1559. 50 KN max: span 800 mm Minimum 100mm horizontal span 380mm Ram Travel 100mm. Power Supply 220V 50Hz. Accessories. Load cell (50KN).	02

	Load penetration piston. Breaking head stability mould.	
14	<p>CBR- MACHINE: 50 KN ASTM D1883 Maximum vertical clearance 800mm Horizontal clearance 255mm Platen diameter 105 mm Test speed 1.27 mm/min Power Supply 220V, 50Hz.</p> <p>Accessories.</p> <ol style="list-style-type: none"> 1. Soaking Tank. 2. Penetration piston. Surface 1.935 mm² 3. Proving rings 50kN. 	02
15	<p>CBR MOULD : ASTM D 1883</p> <ul style="list-style-type: none"> • Mould Ø152.4x177.8 mm height Collar 50.8 mm height, fits both ends of mould • Base Plate perforated • ASTM CBR cutting collar • ASTM CBR spacing disc • Filter screen 150 mm diameter, 150 micro meter mesh • 10 lb annular surcharge weight • 5lb split surcharge weight • Filter papers 150mm dia. Box of 100 	12
16	<p>SPT APPARATUS: ASTM D5 With 140lb (63.5 kg) hammer, anvil and hammer guide rod with automatic release mechanism giving 30" (76 cm) free fall.</p> <p>SPT SAMPLER Consists of a tube split longitudinally into two parts, the upper end is fitted to the rod coupling, whilst a cutting shoe is fitted to the lower end. The rod coupling contains a ball valve to prevent sample Washing during extraction.</p> <p>Accessories and spare parts:</p> <ul style="list-style-type: none"> • Spare cutting shoe • Cone for hard or cemented soils • Rod dia. 50 mm x 1500 mm long in N80 steel. Weight: 10.6 kg • Rod dia. 50 mm x 3000 mm long in N80 steel. Weight: 21.3 kg • Nipple for dia. 50 mm rod. Weight: 1.3 kg • Lifting head for dia. 50 mm rod 	02
17	<p>PLATE LOAD TEST APPARATUS:</p> <ul style="list-style-type: none"> • Pressure System 100kN, comprising Hydraulic Cylinder Jack, with 150mm stroke hand operated pump unit 100mm dia, Pressure gauge and tilting saddle .Datum bar assembly. • Dial gauge 50mm Travel x0.01 mm division ,75mm dia. Bearing plate 150mm dia. Bearing plate 300mm diameter with handles. Load capsule 0 to 100kN <p>OR EQUIVALENT</p>	02

For GCT, Timergara and Kohat
Civil Technology for B-TECH
APPLIED MECHANICS

S.NO	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	FORCE TABLE. A force table is a common physics lab apparatus that has three (or more) chains or cables attached to a center ring. The chains or cables exert forces upon the center ring in three different directions	04
2	1. BENT LEVER APPARATUS THE BENT LEVER AS USED TO MEASURE THE MOMENTS OF PARALLEL FORCES 2. LINK POLYGON APPARATUS The apparatus is provided with five linkages and connectors, having hooks to which pans are hung. These are fixed between two pulleys around which rope is run to connect to two extension type spring balances. The unit is very useful for the study of arches, abutments and piers. The wooden rectangular beam is fitted with scale. Without weights.	04
3	BEAM APPARATUS: made with stainless steel (1000 mm long) supported with spring balance and various weights	04
4	CABLE WITH PULLEY AND SPRING BALANCE. One end of the cable to be fixed and the other end after passing through pulley support known weights. The assembly shall be mounted on steel frame.	02
5	ROOF TRUSS APPARATUS: with weights (stainless steel members with pin joints and supported with roller and spring support	02
6	PROJECTILE MOTION APPARATUS: , (Ballistic pendulum with spring gun and plumb bob, projectile, single pan balance, elevation stand)	02

For GCT, Timergara and Kohat
Civil Technology for B-TECH

ENVIRONMENTAL MANAGEMENT

S.no	ITEM NAME SPECIFICATIONS / DESCRIPTION	Qty
1	<p>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: $\pm 0.5^{\circ}\text{C}$, With Electric Sockets inside the Incubator for BOD Stirring Unit Power Supply: 220VAC, 50Hz. With BOD Measuring system OR EQUIVALENT</p>	02
2	<p>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 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)</p>	02

	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	02
4	COD digester	02
5	COD photometer	02
6	calibrations chemicals COD Vario Tube Set 0 – 150mg/l O ₂ 25 Tubes/Set COD Vario Tube Set 0 – 1500mg/l O ₂ 25 Tubes/Set COD Vario Tube Set 0 – 15000mg/l O ₂ 25 Tubes/Set	02
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	02
8	Microscope : Specifications: 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	02
9	china dishes Capacity : Specify?	02
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.	02
11	Crucible, Capacity: Specify?	02
12	Special filtration assembly: "Quick Fit Assembly"	02

	<p>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</p>	
13	<p>Inhofo cone with accessories: Capacity: Specify?</p>	02
14	<p>Oil and grease meter Capacity: Specify?</p>	02
15	<p>Lab Oven Capacity : 30-40 Liters Temp. Range : Amb +5 to 250°C Power : 750 Watts Approx.</p>	02
16	<p>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</p>	02
17	<p>Balance Capacity : 1000g Readability : 0.01g</p>	02
18	<p>Hygroscopic meter</p>	02
19	<p>A combine handy meter in belt facility of nitrogen oxide, Sulfur oxide. Carbon oxide.</p>	02
20	<p>Calibration gases compatible with combine handy meter. 1. NOx , 2. Sox, 3. Cox 4. zero nitrogen gas 5. Carbon oxide</p>	02
21	<p>PH Meter Portable: 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 , 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>	02
22	<p>VACUUM PUMP Piston-powered & oil-free vacuum pumps, adaptable to many laboratory requirements - Quiet and low vibration</p>	02

	<ul style="list-style-type: none"> - Compact and light weight - Oil free and maintenance-free Max. Vacuum : 650mm Hg = 85,5Pa = 110Torr	
23	MAGNETIC STIRRER Type : Hot Plate & Magnetic Stirrer Temp. Range : Max.400°C Temp. Accuracy : $\pm 1^{\circ}\text{C}$ 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 ₂ O) : Upto 5L Speed Controller : Specify? Top Plate : Ceramic Coated Top Plate Electrical Supply : 220VAC, 50Hz. Complete with Thermo Couple K-type rod, clamp & accessories	02
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	02
25	AUTOCLAVE Capacity : 50-75 Liters 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: <ul style="list-style-type: none"> - 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	02
	Flocculation Tester: <ul style="list-style-type: none"> • Continuously variable stirring speed • Digital display • Height adjustment of the stirring blades during operation • Timer feature 	02

36	<p>Spectrophotometer(digital) 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</p> <p>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 ----- <i>Or Equivalent</i></p>	02
37	<p>Conductivity Meter Conductivity Range: 0~20mS/cm (Max.200mS/cm) Conductivity Accuracy: $\pm 0.5\%$ 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: $\pm 1\%$ Full Scale TDS Factor: 0.1~1.0 (Default 0.5) Temperature Range: 0~105°C, 32~221°F Temperature Accuracy: $\pm 0.5^\circ\text{C}$, $\pm 0.9^\circ\text{F}$ 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, 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</p>	02
38	<p>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 %</p>	02