MATH & SC.

S.No.	Name of the course	Year of starting the course	Name of Laboratory	Total quantity required
1	Ist Semester Common	1962	Physics & Chemistry Lab.	1.Potentiometer 2.Meter Bridge 3.Digital Electronic Balance 4.Gas connection 5.Resonance tube apparatus

Table – 8

Tentative Equipment (+Furniture) Requirement (MECHANICAL ENGG. DE

S.No.	Name of the course	Year of starting the course	Name of Laboratory	Total quantity required
1	Diploma in Mechanical & Engg.	1962	Heat Power Lab	NIL
			Mechanical Lab	NIL
			Autocad Lab	Computer latest version Software (Autocad)

No of each item

All items are Vetted

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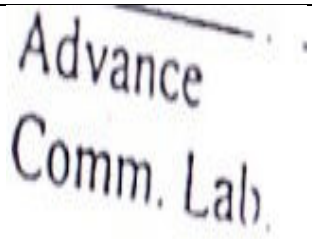
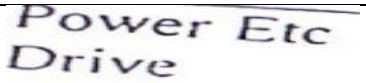
Sl. no	Name of Equipment	Description/specification (Mechanical Engg)
01	Desktop computer	Minimum requirements: Intel core I5 3.3GHZ,RAM-4GB-DDR3,capacity-500GB,intel HD graphics, monitor-LCD/LED/TFT OS-windows 7/8 USB keyboard/mouse Built in wireless networking
02	Network all in one printer	Minimum requirement: Laser 1200x1200 print resolution 1200x1200dpi scan resolution 32mb memory
03	Inverter With battery	10 KVA
04	Online UPS	5 kva
05	Projector (to be fixed on the ceiling)	Minimum requirements: Digital LCD Illumination-3000 Contrast ratio-3000:1 Aspect ratio-4:3
06	server	Intel wood crest 2x3 Ghz i5 8GB memory Gigabit network adaptor for wireless LAN Windows server operating system
07	LAN	Wireless LAN configuration of minimum 70 computers in a room of size: 50x30 sq feet. (for existing 30 (Pentium 4 and core 2 duo)+new 40 computers

E&TC

Sl no	Name of the Laboratory	Equipment specification
01		Microwave test bench for measuring microwave parameter Optical fiber & laser trainer Digital modulation trainer kit PCM,PAM,PPM,PSK,PWM,FSK, ASK, QPSK ,Delta modulation & demodulation SSB/DSB transmitter trainer SBB/DSB receiver trainer RADAR Trainer SATELITE communication trainer AM/FM modulator/demodulator FM receiver trainer Antenna trainer for antenna measurement
02		SMPS Regulator TRIAC/DIAC trainer CVT Stabilizer Servo stabilizer Drive circuit for TRIAC/SCR using DISC Battery charger Solar battery & charger PLC programming trainer & kit
03	ETC Measurement Lab	Trainer for measurement of transmission line parameter AC/DC bridge circuit trainer Trainer for hysteresis & BH curve

4			Analong Etc Lab	1.Voltage controlled Osc using IC 566 2.Phased cocked loop using IC 565 3.Upto electronics application using IC 741 & 555 4.U.J.T. trainer kit
5			Digital Etc & Mic roprocessor lab	1.8085 Microprocessor based trainer kit 2.8086 Microprocessor based trainer kit 3.ADC kit 4.DAC kit 5.Multiplexer/Demultiplexer kit 6.Mircocontroller 7.E.E.—PROM and EE PROM programmer 8.Microprocessor Interface module (i)Triftic light control (ii)Stepper motor control
6			Hardware Maintenance Lab	(i)Demonstration kits for hardware maintenance (ii)Desktop Computer (iii)Laptop (iv)Work bench

ELECTRICAL

Sl no	Name of the Laboratory	Equipment specification
01	Machine lab	1. Parallel operation of Alternators:- a. Alternator, 3-phase, 440 volt, star, 5kva with Panel board b. D.C compound motor 5 HP, 220v(DC) with starter & field regulator c. Synchronizing panel with all accessories 2. Parallel operation 3-phase transformer • 3-phase transformer, 5 kva, 440/250 volt (Delta/star) • Synchronizing panel with all accessories • PLC (suitable to control up to 5 HP motor) • Universal motor 1 HP • Servo meter wit microprocessor control
02	Measurement Lab	Current transformer for lab use Potential transformer for lab use Maxwell bridge for measurement of inductance Schering bridge for measurement of capacitance Digital 3-phase energy meter Digital multimeter
03	Power Lab	Working model of low voltage transmission with converter & inverter arrangement Over current relay Reverse power relay Static relay
04	Electrical W Practice	Cable jointing apparatus Sodium vapor lamp with complete set H.P.M.P lamp with complete fittings

SPECIFICATIONS OF MACHINES & EQUIPMENTS OF METALLURGICAL ENGG DEPTT.

SL NO	NAME OF THE ITEMS	SPECIFICATION
01	Hot isolatic specimen mounting press for metallographic study:-	5 ton with pressure gauge & digital timer
02	Dry & wet metallographic linisher/belt grinder	Single phase, table top model
03	Automatic metallographic disc polishing machine	Double disc with independent drive & variable speed
04	Metallurgical electro polishing & etching system machine	-
05	Electric muffle furnace	Temp- 1400^0 c Ceramic wool insulation Chamber size 8" x 8" x 24" Digital control system
06	Computerized Rockwell cum Brinell hardness Tester	250 kgf (with all standard accessories)
07	Automatic micro hardness Tester	- 10 gf- 1000 gf computerized imagining attachment & machine control on PC
08	LCD Projector	
09	Digital impact testing machine with charpy & Izod test attachment	
10	High power metallurgical microscope with image analysis system software	Magnifier=1200 x

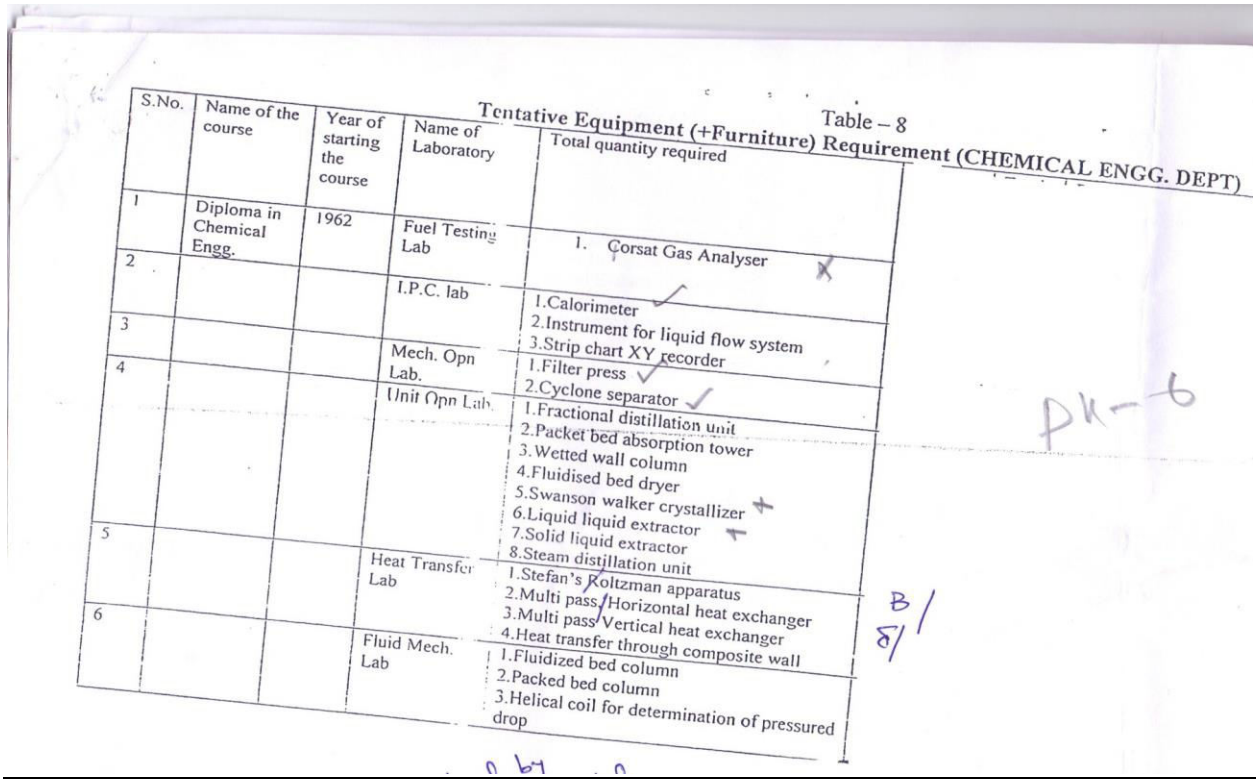
NB:- For all the equipments soft/hard versions will manual containing instructions for operation & maintenance should be provided.

WORKSHOP

S.No.	Name of the course	Year of starting the course	Name of Laboratory	Total quantity required
2	Diploma in Mechanical Engg.	1962	Machine & Turning shop	1.Lathe 2.Radial Drilling Machine 3.Shaping Machine & Stroke size 12" 4.Hydraulic hacksaw machine(size 7) 5.Surface Grinders 225x350mm(Magnetic table traked 6.Vernier caliper 8" 7.Vernier Height gauge 14" 8.Bevel Proctor
3			Fitting Section	1.Steel Almirah(size 6'6"x3'x1'7") 2.Fitting bench(8'x4'x3') 3.Flat file 12" 4.Flat file 10" 5.Hand hacksaw frame fixed 6.Bench vice
4			Blacksmithy Section	1. Steel Almirah(size 6'6"x3'x1'7") 2.Anvil with stand weight 50 kgs 3.Round Tong ½" 4.Round Tong ¾" 5.Flat Tong ½"
5			Sheetmetal Section	1. Steel Almirah(size 6'6"x3'x1'7") 2.Wooden table(4'x3'2'6") 3.Wooden chair with arm 4.Steel rule 12" size 5.Steel Squarel 'L' square 3' size 6.Centre punch 7.Scratch anvil or scrifer 8.Steel tape 5 m length 9.Spring type divider 8" 10.Riveting hammer 11.Setting hammer 12.Snip Big size 16" or 18" 13.Bick iron 14.Hatcheht stake 15.Half moon stake 16.Funnel & side stake 17.Hatchet type soldering iron(small) 18.Electric soldering iron 80watt 19.Hatchet Bar 5' and 4' long

				20.Rail line Bar 4' & 3' long 21.Working bench(wooden)8'x4'x3' 22.Iron soldering table 23.Surface plate 4'x3' 24.Setting hammer 25.Guillotine shears 26.Shearing machine
6			Pattern Making shop	NIL
			Carpentry shop	NIL
7			Welding Section	1.Wooden working bench 8'x4'3' 2.Steel Almirah 6'6"x3'x1'7" 3.Fitting bench vice jaw 6" 4.Fixed hacksaw frame J.K.Brand 5.Insulated Plier 8"(Taparia) 6.Flat file 12" 7.Slywrench(Taparia) 12" 8.Screw driver 6" (Taparia) 9.Screw driver 12" (Taparia) 10.Steel rule 12"

CHEMICAL ENGG



Tentative Equipment (+Furniture) Requirement (CHEMICAL ENGG. DEPT)

Table – 8

S.No.	Name of the course	Year of starting the course	Name of Laboratory	Total quantity required
1	Diploma in Chemical Engg.	1962	Fuel Testing Lab	1. Corsat Gas Analyser
2			I.P.C. lab	1.Calorimeter 2.Instrument for liquid flow system 3.Strip chart XY recorder
3			Mech. Opn Lab.	1.Filter press 2.Cyclone separator
4			Unit Opn Lab	1.Fractional distillation unit 2.Packet bed absorption tower 3.Wetted wall column 4.Fluidised bed dryer 5.Swanson walker crystallizer 6.Liquid liquid extractor 7.Solid liquid extractor 8.Steam distillation unit
5			Heat Transfer Lab	1.Stefan's Boltzman apparatus 2.Multi pass Horizontal heat exchanger 3.Multi pass Vertical heat exchanger 4.Heat transfer through composite wall
6			Fluid Mech. Lab	1.Fluidized bed column 2.Packed bed column 3.Helical coil for determination of pressured drop

Laboratory wise equipments with all accessories

CERAMIC TECHNOLOGY

Sl No	Name of the items	Specification
01	Laboratory size Pug mill	Extrusion type with all accessories
02	Vibration compaction machine for molding refractory castables shapes	Table size 50 x 50 x 50 complete with all accessories
03	Infrared moisture balance	To determine moisture content of ceramic material. Temperature ranges 50-160^{0}c, readable moisture content .01%. minimum sample weight 5 gms complete with all accessories
04	Lab-type ultrafine grinder	For grinding ceramic raw materials, dry attriter types of grinding. Capacity minimum 1 ltr complete with all accessories
05	Compressive strength measuring machine	To determine the compressive strength of ceramic & refractory materials complete with all accessories. Minimum load capacity 500 kg per cm^2

06	Modules of rupture testing machine	To test green and fired samples of ceramic products. Direct display of load and auto stop on completion of the test.
07	RUL testing furnace	For testing refractory samples temperature 1500^0c complete with all accessories
08	PCE testing furnace	For testing the refractoriness of ceramic materials temperature up to 1800^0c complete with all accessories
09	Hot MOR furnace	Temperature up to 1600^0c, loading range 0 to 380kgs complete with all accessories
10	Small Glass melting furnace lab type	Temperature 1300^0c & above complete with all accessories. Capacity minimum 5 ltrs.
11	T.G.A Apparatus	Thermo Gravimetric Analysis up to 1500^0c with PC interface facilities & software for charts & graphs, complete with all accessories

Sd/-

Principal,

U.G.I.E, Rourkela