DEPARTMENT OF CHEMICAL ENGINEERING
UNIVERSITY OF CALCUTTA

NOTICE

Ref: no. CHE-ENG/WB DST-FIST/Mtd/03/2018-19 **date** 7.06.18

Quotations are invited within fifteen (15) days from the date of notice, in duplicate, from vendors for purchase of Stationery/ Electrical Goods/ Chemicals / Glass Goods / **Lab. Instrument & Equipment**/ Wooden & Steel Furniture/ Computer & Accessories/ A.C Machine, Refrigerator & Similar other Machines. (tick the applicable one)

The quotations should accompany copies of valid trade license, GST certificates as applicable, PAN and other relevant documents as per University Purchase Rules

7/6/18

Faculty member

Head of the Department
Prof. & Head
Dept. of Chemical Engineering
University of Calcutta
92, A. P. C. Road,
Kolkata - 700 009

List and specification of the items required

B. Tech Fuel Lab Equipments

1.

PETROLEUM DISTILLATION APPARATUS:

Conforming to: - IP – 123; ASTM D – 86; IS: 1448

The apparatus comprising of: -

DISTILLATION UNIT:

Comprises a rust proof shield made of sheet steel duly painted incorporating a spiral type heating element fitted on a refractory base and mounted on a shield and window for easy viewing of the sample. The height adjustment of the support is controlled by a gear mechanism in conjunction with convenient knob on the front.

CONDENSER UNIT:

Consisting of rigid supported stainless steel tank with condenser tube. Condenser tube is set in the cooling tank that at least 15.6 inch is direct contact with cooling medium.

DISTILLATION FLASK :
Made of borosilicate glass is specified dimension. Capacity: 125 ml.
GRADUATED RECEIVER: Capacity : 100 ml. sub-division 1 ml. the cylinder is made of heat resistance borosilicate glass.
FLASK SUPPORT ASSEMBLY BOARD: Three asbestos board on each with centre hole 32 mm, 37.5 mm and 50 mm. are provided.
TEMPERATURE CONTROLLER: By solid state variable heat controller.
Complete Apparatus as described above but supplied with 3 Nos. flask support boards and glassware for operation on 220/230 V, 1ph, 50 c/s, A.C. mains.
SPARES FOR ABOVE DISTILLATION APPARATUS:
1. Distillation Flask, borosilicate glass, Capacity : 125 ml. packet of 2(two) pieces.
2. Receiver, 100 ml. packet of 2(two) pieces .
3. Thermometer : Mercury-in-Glass, with NABL Certificate
IP – 5C, packet of two pieces.; IP – 6C, packet of two pieces; ASTM – 7C, packet of two pieces.
ASTM – 8C, packet of two pieces.
4. Heating Element, packet of two pieces. ……..
5. Flask support plate, packet of one each (Total 3 nos.)
32 mm. Centre Hole; 37.5 mm. Centre Hole; 50 mm. Centre Hole

2.
FLASH POINT PENSKY MARTENS (CLOSED)
CONFORMS TO : IS: 1448 & 1209 – 58, IP: 34, ASTM: D-93
SPECIAL FEATURES:
Cup & Cover with ebonite handle for operating at high Temperature. For determining the flash point of petroleum products having a flash point above 120º C (48.89º F). The instrument which will give trouble free service under continuous operating conditions. The cast iron air bath is fitted with heaters for uniform heating. An enclosed safety type heater made of nichrome heating element. Temperature is controlled by Digital Temperature Indicator cum controller which ensure smooth and easy control of the temperature. The cast iron air bath is covered with Polished Stainless steel top. The cup and lid are made of brass and ebonite handle which remains cool even at highest operating temperature. The cup cover or lid are provided with a gas test jet and shutter mechanism which is designed for smooth working and is operated by a convenient knurled knobs. Stirring by means motorized stirrer unit fitted with a gear box and operate at 105 +- 5 RPM. The motorized stirrer ensures uniform stirring and for routine work obviates tedious hand operation.
Temp.Control Stirrer
HMPM/D-100M PID Tem. Indicator Motorised Cum Controller
THERMOMETERS **:** ASTM 9C and 10C one each.
Complete set.

3.
SAYBOLT VISCOMETER:
Conforming to: ASTM D – 88 ; D – 117; D – 803 ; AASHOT – 72 ; IS : 1448
For the empirical measurement of Saybolt Viscosity of Petroleum products as specified temperature between 15.4°C to 104°C. The apparatus comprising of a constant temperature viscometer bath, features a new streamlined designed many mechanical refinements. The interior of the bath is made of stainless steel and exterior is made of steel properly painted. The draft shield covers the back and both side and

prevents draft from effecting the oil thread. The unit is equipped with two pilot lights one signals operation of the quick heater. An externally mount indication motor drives the stainless steel propeller stirrer, insuring through circulation of the oil without excessive agitation. The viscometer Bath is supplied complete as describe above and includes with bath heater, draft shield base and foot pads, control box, corks with pull chains for tubes, cooling coil for passing cold water to obtain 15°C bath temperature. For operation on 220 / 230 volts, single phase, A.C. mains. For Single Tube Bath.

4.

REDWOOD VISCOMETER NO. : I

Conforming to: IP: 70

For determining the viscosity of all oils in which the temperature of test does not exceed 2000 seconds. The Viscometer arranged for electrical heating and consists of a heavily silver-plated brass oil cup with a precision 18/8 stainless steel jet in its base, assembled in a copper bath fitted with immersion heater. The oil cup is surrounding by a removable cylinder provided with vanes for stirring the bath liquid. The iron stand with leveling screws to support and align the bath. Inside of the iron stand is white screen painted and having opening 9 cm. wide from top to the bottom. An energy regulator is provided with apparatus for precise temperature control of the bath. The viscometer as stated above complete with oil cup, thermometer clip, cup cover, ball valve, circular spirit level and stainless steel jet. For operation on 220 / 230 volts, 1 ph, A.C. mains.

5.

GLASS CAPILLARY KINEMATIC VISCOMETER TUBES.

Conforming to: IS : 1448

IP : 71 (Method Group-A)

ASTM : D-445 (Method Group-A)

D-446 (Method Group-B)

BS : 188 (Method Group-A & C)

These viscometers are used for the determination of the Kinematic Viscosity of liquid with flow in Newtonian Manner. The Viscometer are made of heat resistant borosilicate glass and supplied with works. Test certificate for 'C' constant at 40 deg. C. and 100 deg. C.

a) UBBLHODE (SUSPENDED LEVEL) VISCOMETER FOR TRANSPARENT LIQUIDS (BS/IP/BL TYPE)

Size: 1, 1A, 2, 2A, 3, 3A, 4, 4A & 5 ; Packet of two pieces.

b) UBBLHODE (SUSPENDED LEVEL) VISCOMETER FOR TRANSPARENT LIQUIDS (BS/IP/MSL TYPE)

Size: 1, 2, 3, 4, 5, 6 and 7 ; Packet of two pieces. Any size…

c) UBBLHODE (SUSPENDED LEVEL) VISCOMETER FOR TRANSPARENT LIQUIDS: (BS/IP/SL/S TYPE

METHOD GROUP 'A' & 'B' BS-188

Size : 1, 2, 3, 4, 5, 6 and 7 ; Packet of two pieces. Any size…

d) CANON-PENSAKE VISCOMETER: REVERSE FLOW TYPE : FOR OPAQUE LIQUIDS : METHOD GROUP 'A' 'B' & 'C'

Size : 25, 50, 75, 100, 200, 300, 350, 400, 450, 500 and 600 ; Packet of two pieces. Any size….

e) CANON-PENSAKE VISCOMETER: (FOR TRANSPARENT LIQUIDS) : METHOD GROUPS 'A' & 'B' BS : 188

Size: 25, 50, 75, 100, 150, 200, 300, 350, 400, 450, 500 and 600. Packet of two pieces. Any size….

f) UBBELHODE VISCOMETER (FOR TRANSPARENT LIQUIDS)
METHOD GROUPS: 'A' & 'B'
Size : 0, OB, OC, 1, 1B, 1C, 2, 2B, 2C, 3, 3B, 3C, 4B and 5 ; Packet of two pieces. Any size....
g) OSTWALD BS-U-TUBE VISCOMETER REVERSE FLOW FOR OPAQUE LIQUIDS : TYPE : BS/IP/RF
Size : 1, 2, 3, 4, 5, 6, 7, 8 and 10 ; Packet of two pieces. Any size....
h) OSTWALD BS-U-TUBE VISCOMETER FOR TRANSPARENT LIQUIDS: TYPE : BS/U
Size: A, B, C, D, E, F, G, AND H.; Packet of two pieces. Any size.

6.

ORSAT GAS ANALYSIS APPARATUS: (FOUR ABSORPTION APPARATUS)

Designed for determining of Carbon Monoxide, Carbon Dioxide, Oxygen, Hydrogen and Hydrocarbon Gases, saturated and unsaturated in flue gases, producer and blast furnace gases, etc. Nitrogen can be determined by difference.

The apparatus consists of a series of Absorption Pipettes capacity 230 ml. approx. Two absorption pipettes are filled with glass tubes and one is filled with glass tubes and copper wires. The absorption tubes are connected through a glass capillary manifold with four stop cocks and a three-way stopcock at one end for gas sample inlet and purging, the other end for connecting to gas burette, measuring gas burette is 100ml. capacity, graduated to 30ml. in 0.2ml. The gas burette is enclosed with a water jacket connected to gas burette by a rubber tube. All glass parts are made of Borosillicate glass. Complete with rubber aspirator. The glass parts assembly is fitted with clamp and support properly and assembled in a portable wooden case with a front and black opening sliding door.

MODEL –with 4 ABSORPTION PIPETTES, 1 COMBUSTION PIPETTE and Rheostat.

7.

DIGITAL BOMB CALORIMETER :

Complete unit comprises of the followings :-
a) The Bomb made of Stainless steel. …. 1 No.
b) Calorimeter Vessel. …. 1 No.
c) Static Water Jacket (Stainless Steel) with motorized stirrer unit. …. 1 No.
d) Oxygen filling tube with fine adjusting valve with pressure gauge. …. 1 No.
e) Holder for supporting bomb head. ….. 1 No
f) Firing Outfit for operation on 220/230 Volts, A.C. mains. ….. 1 No.
g) Fuse Wire, nickel Chromium. ….2 Meter long.
h) Pellet Press with large handle. ….. 1 No.
i) Digital Differential thermometer 0.01 deg. C. ….. 1 No
j) Benzoic Acid Powder(Lab ,regent grade) ……1 Phial
k) Schrader type valve 'O' ring for bomb, 'O' ring for bomb valve. ….. 3 Nos.
l) Valve key, bomb lifting hook. ..…1 No.
For operation on 220/ 230 volts, single phase, A.C. mains but without oxygen cylinder.

SPARES FOR ABOVE :

a) Fuse Nichrome Wire, 1 M, packet of four pieces.
b) Torriodal 'O' Ring for Bomb, packet of 4(four) pieces.
c) 'O' Ring for Schrader Valve, packet of 4(four) pieces..
d) Schrader Type Valve for Bomb, packet of six pieces.