

## Appendix-I

Sr. No.	Item with Specification	Qty.
1	<b>Electric Furnace with atmosphere control</b>	<b>1 Unit</b>
	<ul style="list-style-type: none"> <li>• Electrical heating type furnace with 1000 degree C maximum temperature</li> <li>• Thyristorised control with digital microprocessor based PID action controller: Temperatures up to 1000°C over 6" axial longitudinal zone, accuracy of at least 0.1% or <math>\pm 1^{\circ}\text{C}</math> and resolution of 0.1 degree C. Fast response temperature indicator and temperature vs time profile PID controller of size 96 mmx96 mm with digital communication such as RS232/RS485 and software, 2 programs of 8 steps each. Profile should be programmed independent of each other; each profile should have parameters for linking; Auto start &amp; program repeat cycles. Other features to include deviation, hold, auto ramping, &amp; power down resume function. Display: 7 Segment LED for process variable and SV;PV &amp; SV Display: Process volume &amp; mode display 4 digital LED &amp; Setting volume 4 digital LED. Output: PID + Fuzzy logic feature selectable. One programmable alarm.</li> <li>• Vertical 8" diameter cylindrical or 8"x 8" rectangular chamber having approx. 20" length, high quality ceramic wool-board insulation, stainless steel external body with double walled construction (skin temperature not exceed max 40 degree C) (<b>spare muffle with wound heating element- one no.</b>)</li> <li>• Chromel-alumel (type K) thermocouples with suitable ceramic sheath to withstand about 800°C when immersed in melts for 30 minutes. (Quantity-10 nos)</li> <li>• Furnace Atmosphere Control Facilities: The chamber should be capable of being closed at both the ends with detachable ceramic wool board refractory supports/covers. Chamber is accessed by top or bottom with manually operated lifting mechanisms; work load (3 kgs) may be raised and lowered with convenience. Bottom detachable refractory support should have a hole of 12 mm diameter for inserting stainless steel tube. Top detachable support will have a co-axial 30 mm hole to accept a probe (3 kgs) suspended from top- there should be guide bars on the frame at the top to enable smooth raising and lowering of the probe using lever or preferably rack and pinion arrangement, and another eccentric 12.5 mm diameter hole to accept another stainless steel pipe. All the gas flow pipes will be made of austenitic stainless steel (AISI 304/316 type), about 12.5 mm OD, 10.5 mm ID. This gas flow circuit will be equipped with a gas flow meter (specify make).</li> <li>• Argon gas Cylinder filled with Argon gas (01 No.) Cylinder description: steel cylinder size L (47 L WC) with valve, Gas Purity: 99%, with argon gas regulator double stage ISI marked, Outlet Assembly: 1/4th inch Tube Fitting, suitable length of flexible tube for making connections.</li> <li>• A 30" tall support for the furnace fabricated from suitably strong MS channels.</li> <li>• Furnace Interfaced PC specifications: Intel core 2 duo processor E7500, 4 GB DDR2 SDRAM, 500 GB hard disk drive, keyboard and mouse, CD-RW drive, 47 cm widescreen flat panel monitor.</li> <li>• Warrantee: one year</li> </ul>	