Annexure-1

Technical Specifications for Stand Alone Differential Scanning Calorimeter (DSC)

S. No.	Feature	Specifications
1	General description	State-of-the-art stand-alone differential scanning calorimeter, capable of measuring normal DSC and specific heat capacity (Cp).
2	Sensor type	Heat flux sensor/sensors capable of measuring the temperature range given in Sl. No. 3.
3	Temperature range	-180℃ to 700℃ or higher (desirable)
4	Temperature accuracy	± 0.1℃ or better
5	Temperature repeatability or precision	± 0.05℃ or better
6	Enthalpy precision	± 0.1% or better
7	Enthalpy accuracy	< 1% or better
8	Heating/Cooling rate	0.001 to 200℃ (K) per min or better
9	DSC measuring range	±350mW or better
10	Heat flow resolution	0.25 µW or better
11	Calorimetric sensitivity	3.0 µV/mW or better
12	Segment types	Static (Isothermal) and dynamic
13	Gas atmospheres	Inert, oxidising and reducing conditions
14	Mass flow controller	Capable of independent control of protective and purge gases
15	Standards for Cp measurements	Set of Sapphire standards to be provided
16	Cooling system and accessories	Liquid Nitrogen Dewar (50 L or higher) with supply system , sealing press/crimping tool, cleaning brush and tweezers Provision for LN_2 and GN_2 is mandatory.
17	Sample pan	Aluminium pans and lids (1000 pcs; 25µl or better), Alumina pans and lids (25 pcs, 25µl or better)
18	Software	Capable of measuring and evaluating melting,

		crystallinity, polymorphism, phase transitions, liquid crystal transitions, solid-liquid ratio, glass transition and specific heat capacity.
19	Optional items	a) PC and Printer: Desktop PC with latest technical configurations compatible with instrument to be provided. b) Heat flux sensor (additional) to cover the temperature range -180°C to 700°C c) Alumina crucible (25 Nos.) d) Platinum crucible (5 Nos.) e) Autosampler for 50 or more samples f) Add on software for measuring thermokinetics, peak separation and purity determination.
20	General terms and conditions	1. Price should be quoted on Ex-works and CIP Chennai basis (stating the cost of the equipment, insurance, freight separately) and indicating the mode of shipment. 2. Price for optional items should be indicated separately. 3. Standards for calibration (Temperature and Sensitivity), for the entire range should be provided. 4. Three years' warranty from the date of installation/ acceptance, covering all the units of the instrument. 5. Indicate the AMC cost after the expiry of the warranty period. 6. List of spares needed for each year along with cost and discounted rates should be provided along with an undertaking to be provided by the supplier assuring that they will supply all the spares for the equipment supplied for a period of 5 years' after the warranty period. Alternatively 5 years' warranty on DSC cells may be provided. 7. Complete technical details along with hard and soft copies of the manual should be provided. 8. Software upgrade should be incorporated by the vendor as and when the new versions are released at no additional cost. 9. Onsite training for at least 2 persons in the operations and general maintenance should be given. 10. List of installations in India for the last 2 years to be provided.