

**PRICE BID FORMAT**

*(Bidders are requested to offer their price bid in the following format)*

Sr.No.	Item Description	Quantity	UOM	Currency	Unit Price	Total Price
1	Design, Fabrication and supply of Neutral Beam Injector (NBI) Cooling Water System (CWS) as per specification mentioned in the Tender Document.  <b>Provide price break-up as per Schedule of Quantity (SOQ) separately appended below the Price Bid format</b>	1	System			
2.	Assembly, installation, commissioning and testing charges (including acceptance tests, unloading, shifting, handling with accessories) <b>(Quote Lumpsum charge)</b>		Lumpsum			
3.	Other charges, if any					
	<b>Total</b>					

Description	<u>Indicate percentage except Freight</u>		
	Percentage	Included	Excluded
Packing and forwarding			
Excise Duty			
Sales Tax/VAT			
Insurance			
Service Tax on Sr.No.2 above			
Freight			

**PART-B**

<b>Description</b>	<b>Vendor Terms</b>
Delivery terms	
Warranty	
Payment	
Delivery schedule	
Validity	
Any other terms	

**Place:**

**Date :**

**Signature of Bidder with seal**

**SCHEDULE OF QUANTITIES (PRICE BID FORMAT)**

*(To be filled in completely by bidder and returned to IPR)*

**NOTES:**

1. All the items are broadly specified in SOQ, however for detail specifications refer to tender Section **4 & 5**.
2. No alteration what so ever is to be made to the text or quantities of this schedule unless such alteration is authorized in writing by IPR. Any such alterations, notes or additions shall, unless authorised in writing, be disregarded when tender documents are considered.
3. All the system parts, equipments shall be offered strictly as per the approved make only, deviation may be liable for rejection. The Bidder may additionally submit quotations for any alternative equipment proposed by them, however, prices for each items listed in this schedule must be clearly and completely filled in.
4. In the event of error occurring in the amount column of the schedule, as a result or wrong extension of the unit rate and quantity, the unit rate quoted by the Bidder shall be regarded as firm and the extensions shall be amended on the basis of the same rates.
5. **The rate of each item of work included in the Schedule of quantities shall, unless expressly stated otherwise, includes cost of**
  - All materials, fixing materials, accessories, operation, appliances, tools, plant, equipments, transport, labour and incidentals required in preparation for and in the full and entire execution, testing balancing, commissioning and completion of the work called for in the item and as per specifications and drawings.
  - Wastage on materials and labour.
  - Installation of free issued materials and equipments.
  - Loading, transportation, unloading, handling/double handling, hoisting to all levels, setting, fitting and fixing in position, protecting, disposal of debris and all other labour, necessary for the full and entire execution and to fully complete the job in accordance with contract documents, good practice and recognized principles.
  - Liabilities, obligations and risks arising out of conditions of contract.
6. The specifications and drawings wherever available, are to be read as complimentary to and part of the Schedule of quantities and any work called for in shall be taken as required.
7. In the event of conflict between Schedule of quantities and other documents including the specifications, the most stringent shall apply and the interpretation of the IPR shall be final and binding.
8. **All equipments, quantities and technical data indicated in this Schedule (SOQ) are requirement of IPR. These quantities shall be adjusted / amended after detail engineering and in accordance with the actual requirement after the approval of drawings and specifications. Vendor shall be paid for the actual quantity of work executed at site by him in accordance with the approved drawings at the contract rates.**

- 9. The systems are placed at various locations within the NBI Lab. at IPR. The main water-cooling supply & return headers are also located inside the NBI lab. The pipelines will need to follow complicated paths. The vendor has to prepare piping layout to suit the site conditions / system layout. The Bidder has to take into account the necessary bends, fittings like elbow, tees, reducers, welded hose nipples, etc. while submitting price bid. The sizes of welded hose nipple and quantity will be as per system requirement. The SS welded hose nipples to be considered while quoting for pipes. The SS mountings like nipple / coupling for thermowell / pressure sensor and other instruments should also to be considered while quoting for instruments.**
  
- 10. The vendor should visit the site to have an idea of the complexity involved in the system, prior to quote if they desire. However, all the systems may not be physically available to see.**
  
11. The vendor shall provide rates for all the items / sizes.

**SCHEDULE OF QUANTITY**  
(To be filled in by bidder and returned to IPR)

Sr. No.	Item Description	Qty.	Unit	Unit Rate (in Rs.)	Total Rate (in Rs.)
A	<b><u>LOOP OF NBI COOLING WATER SYSTEM</u></b> For details refer: 1. Dwg. No.: SST-1/WDS/NBI-REVISED/R2				
1.	<b><u>SS 304L PIPING:</u></b> Providing and fixing in position the following SS 304L pipes cut to required lengths and installed with all welded joints, necessary fittings, like elbows, tees, bends (Long/short radius), reducers, flanges, vent valve, drain valve, SS hose nipple, fasteners, PTFE / eq. gaskets (Sch-10 @ 3 mm) etc. Vent and drain point shall be provided at all top and bottom points respectively with isolation valves in piping system. Vent and drain line size should be of 15 NB and 25 NB/ suitable size respectively. Hose nipples should be welded with mating flange of required sizes for interconnection to the systems as per required by the subsystem connections. The cost of all drains / vent valves/ hose nipples will be included in piping works. This also includes some minor re-routing of existing piping of different sizes as per requirement <b><u>Pipe, fittings and flanges.</u></b>				
	(i) 200 NB (ERW pipe), Sch. 10	40	RMT		
	(ii) 80 NB (ERW pipe), Sch. 10	18	RMT		
	(iii) 65 NB (ERW pipe), Sch. 10	08	RMT		
	(iv) 40 NB (Seamless pipe), Sch. 40	40	RMT		
	(v) 25 NB (Seamless pipe), Sch. 40	08	RMT		
2.	<b><u>SS 316 PIPING:</u></b> Providing and fixing in position the following SS 316 pipes cut to required lengths and installed with all welded joints, necessary fittings, like elbows, tees, bends (Long/short radius), reducers, flanges, vent valve, drain valve, SS hose nipple, fasteners, PTFE / eq. gaskets (Sch-40 @ 3 mm) etc. Vent and drain point shall be provided at all top and bottom points respectively with isolation valves in piping system. Vent and drain line size should be of 15 NB and 25 NB/ suitable size respectively. Hose nipples should be welded with mating flange of required sizes for interconnection to the systems as per required by the subsystem connections. The cost of all drains / vent valves/ hose nipples will be included in piping works. This also includes some minor re-routing of existing piping of different sizes as per requirement.				
	(i) 65 NB (ERW pipe), Sch. 40	06	RMT		
	(ii) 40 NB (ERW pipe), Sch. 40	12	RMT		
	(iii) 25 NB (ERW pipe), Sch. 40	06	RMT		
	(iv) 15 NB (ERW pipe), Sch. 40	06	RMT		



	(iii) 40 NB x 1 m length	6	Nos.		
	(iv) 40 NB x 14 m length	2	Nos.		
	(v) 25 NB x 1 m length	2	Nos.		
8.	<p><b>WORKS FOR CONNECTION OF PIPES TO FOLLOWING SUB-SYSTEMS</b></p> <p><b>(A)</b> Supply and fixing of Expander, Reducer, Welding Neck RF flanges, SORF Blank Flanges, Teflon Gaskets, FRP/G10 Bushes, SS 304L Nuts, Bolts and washers as per attached drawing for electrical isolation. All flanges shall be required to be manufactured as per attached drawing. It also includes the supply of required quantity and sizes of metric thread stud-nut &amp; washer sets.</p> <p><b>These quantities shall be adjusted/ amended after detail engineering and as per actual requirements. Vendor shall be paid for actual quantity of work executed by him in accordance with the approved drawings at the contract rates.</b></p>	1	Job		
	<p><b>(B) V-Target (Ref. DWG: SST-1/NBI/CWS/Flange Connection 1 of 6)</b></p> <p>(i) SS304L Expander (65 NB to 100 NB): 1 No.</p> <p>(ii) SS304L 100NB Welding Neck RF Flange: 1 No</p> <p>(iii) Teflon Gasket : 1 Nos.</p> <p>(iv) SORF 100NB Blank Flange 1 No.</p> <p>(v) FRP/G10 Bush 8 Nos.</p> <p>(vi) SS304L M12 Nuts 8 Nos.</p> <p>(vii) SS304L M12 Bolts, L 94 mm 8 Nos.</p> <p>(viii) SS304L M12 Washer 16 Nos.</p> <p>(ix) SS304L braided hose, L1m 1 No</p>	2	Sets		
	<p><b>(C) Ion Dump (ID) (Ref. DWG: SST-1/NBI/CWS/Flange Connection 2 of 6)</b></p> <p>(i) SS304L 80NB Welding Neck RF Flange : 1 No</p> <p>(ii) Teflon Gasket 1 No</p> <p>(iii) SORF 80NB Blank Flange 1 No</p> <p>(iv) FRP/G10 Bush 4 Nos.</p> <p>(v) SS304L M12 Nuts 4 Nos.</p> <p>(vi) SS304L M12 Bolts, L 92 mm 4 Nos.</p> <p>(vii) SS304LL M12 Washer 8 Nos.</p> <p>(viii) SS304L briaded hose, L1 m 1 Nos</p>	2	Sets		
	<p><b>(D) Neutralizer-2 (Ref. DWG: SST-1/NBI/CWS/Flange Connection 3 of 6)</b></p> <p>(i) SS304L Expander (40 NB to 80 NB) 1 No</p> <p>(ii) SS304L 80NB Welding Neck RF Flange 1 No</p> <p>(iii) Teflon Gasket 1 No</p> <p>(iv) SORF 80NB Blank Flange 1 No</p> <p>(v) FRP/G10 Bush 4 No</p> <p>(vi) SS304L M12 Nuts 4 No</p> <p>(vii) SS304L M12 Bolts, L 92 mm 4 No</p> <p>(viii) SS304L M12 Washer 8 No</p> <p>(ix) SS304L braided hose, L1 m 1 No</p>	2	Sets		

	<p><b>(E) Beam Transmission Duct (Ref. DWG: SST-1/NBI/CWS/Flange Connection 4 of 6)</b></p> <p>(i) SS304L Expander (40 NB to 65 NB) 1 No</p> <p>(ii) SS304L 65NB Welding Neck RF Flange 1 No</p> <p>(iii) Teflon Gasket 1 No</p> <p>(iv) SORF 65 NB Blank Flange 1 No</p> <p>(v) FRP/G10 Bush 4 Nos</p> <p>(vi) SS304L M12 Nuts 4 Nos</p> <p>(vii) SS304L M12 Bolts, L 90 mm 4 Nos</p> <p>(viii) SS304L M12 Washer 8 Nos</p> <p>(ix) SS403L braided hose, L 1m 1 No</p>	2	Sets		
	<p><b>(F) Pre Duct Scrapper (PDS) and Shine Through (Ref. DWG: SST-1/NBI/CWS/Flange Connection 5 of 6)</b></p> <p>(i) SS304L Reducer (40 NB to 15 NB) 1 No</p> <p>(ii) SS304L 15NB Welding Neck RF Flange 1 No</p> <p>(iii) Teflon Gasket 1 No</p> <p>(iv) SORF 15 NB Blank Flange 1 No</p> <p>(v) FRP/G10 Bush 4 Nos</p> <p>(vi) SS304L M10 Nuts 4 Nos</p> <p>(vii) SS304L M10 Bolts, L 60 mm 4 Nos</p> <p>(viii) SS304L M10 Washer 8 Nos</p> <p>(ix) SS304L braided hose, L 1 m 1 No</p>	2	Sets		
	<p><b>(G) Magnet Liner (ML) (Ref. DWG: SST-1/NBI/CWS/Flange Connection 6 of 6)</b></p> <p>(i) SS304L Expander (25 NB to 80 NB) 1 No</p> <p>(ii) SS304L 80NB Welding Neck RF Flange 1 No</p> <p>(iii) Teflon Gasket 1 No</p> <p>(iv) SORF 80 NB Blank Flange 1 No</p> <p>(v) FRP/G10 Bush 4 Nos</p> <p>(vi) SS304L M12 Nuts 4 Nos</p> <p>(vii) SS304L M12 Bolts, L 92 mm 4 Nos</p> <p>(viii) SS304L M12 Washer 8 Nos</p> <p>(ix) SS304L braided hose, L 1 m 1 No</p>	2	Sets		
9.	<p><b><u>ON/OFF TYPE PNEUMATIC / SOLENOID OPERATED BALL VALVES:</u></b></p> <p>Providing and fixing in position, Solenoid cum pneumatic operated valves of SS 304L construction with required mounting accessories like actuator (Quarter turn pneumatic spring type, construction – double rack and pinion), Coil voltage 230 V AC, with limit switch (contact rating for 230 V AC), matching flanges, hard wares, Air filter regulator, insulation etc. for following pipe sizes. This also includes matching flanges, fasteners and PTFE gaskets</p> <p>(The valve should have manual on/off provision).</p>				
	40 NB, Class 150	2	Nos.		
	25 NB, Class 150	2	Nos.		
10.	<p><b><u>BUTTERFLY VALVES:</u></b></p> <p>Providing and fixing in position of following wafer type Butterfly valves with total SS 304L construction including body of class 150 with bubble tight shut off (leakage class-VI), replaceable Teflon / EPDM seat including matching flanges and fasteners. The MOC of disc &amp; stem should be SS 304L.</p>				
	(i) 200 NB, Class 150	5	Nos.		
	(ii) 65 NB, Class 300	4	Nos.		

11.	<b>BALL VALVES:</b> Providing and fixing in position of following three piece Ball valves with total SS 304L, Class 150/300 construction including body with bubble tight shut off (leakage class-VI), replaceable Teflon / EPDM seat. This also includes matching flanges, fasteners and PTFE gaskets.				
	(i) 40 NB, Class 300	8	Nos.		
	(ii) 25 NB, Class 300	9	Nos.		
	(iii) 25 NB, Class 150	7	Nos.		
	(iv) 15 NB, Class 300	4	Nos.		
12.	<b>NON RETURN VALVES:</b> Providing and fixing in position of wafer type Non Return Valves (Check valve) with total SS 304L, Class 150 construction including body with bubble tight shut off, replaceable EPDM O-Ring/ seat. This also includes matching flanges, fasteners and PTFE gaskets.				
	(i) 200 NB, Class 150	1	Nos.		
13.	<b>GLOBE VALVES:</b> Providing and fixing in position of following Globe valves with total SS 304L, Class 150/ Class 300 construction including matching flanges and fasteners.				
	(i) 65 NB, Class 300	2	Nos.		
	(ii) 40 NB, Class 300	2	Nos.		
	(iii) 25 NB, Class 300	1	Nos.		
	(iv) 80 NB, Class 150	1	Nos.		
	(v) 40 NB, Class 150	4	Nos.		
	(vi) 25 NB, Class 150	1	Nos.		
14.	<b>PRESSURE REDUCING VALVES:</b> Providing and fixing in position of following Self-acting Pressure reducing valves to control downstream pressure with total SS 304L, Class 150 construction, range (6 – 1 bar). The PRV should comprise ¼” pressure gauge connection, with one set of 2” dial type pressure gauge connected for downstream pressure measurement. <u>Technical data:</u> Inlet pressure: 4.0 to 6 bar Outlet pressure: 0 –6 bar adjustable				
	(i) 200 NB (Set Pressure- 5 bar), Class 150	1	Nos.		
15.	<b>INSTRUMENTS:</b>				
	<b>a) PRESSURE GAUGES:</b> Providing and fixing in position of glycerin filled water pressure gauges with all SS accessories like shutoff needle valve, siphon pipe, etc. with 1% accuracy. Range: 0-10 Bar. Dial size: 100 mm	4	Nos.		
	<b>b) TEMPERATURE GAUGES:</b> Providing and fixing in position of water temperature gauges with all SS accessories like thermo well etc. with 1% accuracy. Range: 0-100 °C. Dial size: 100 mm. Dial shall be screwed bezel rotatable on stem 90 degree.	2	Nos.		

	<p><b>c) RTD TEMPERATURE TRANSMITTER:</b>          Providing and fixing in position the PT-100 RTD sensor with aluminum head mounted temperature transmitter giving output of 4 – 20 mA to panel mounted display with retransmission facility to DACS with all SS mounting accessories. Range 0 - 100°C. Accuracy <math>\pm 0.5\%</math>.  <b>Note: The digital LCD display unit for above temperature sensors to be mounted on custom built single panel board at one place, as per IPR requirement.</b></p>	2	Nos.		
	<p><b>d) PRESSURE SENSOR CUM TRANSMITTERS:</b>          Providing and fixing in position, water pressure sensor cum transmitters (with LCD, backlit type) with all SS mounting accessories, needle isolation valve and 4 – 20 mA / suitable output to panel mounted display with retransmission facility to DACS. Range 0-20 bar. Accuracy <math>\pm 0.5\%</math>.  <b>Note: The digital LCD display unit for above pressure sensors to be mounted on custom built single panel board at one place, as per IPR requirement.</b></p>	5	Nos.		
	<p><b>e) FLOW METERS:</b>          Providing, fixing in position the flange ended turbine type water flow meter with <math>\pm 0.5\%</math> accuracy, SS 316 construction, maximum working pressure / temp. is 10 bar / 80 °C, with 4 digit LCD display, backlit type and suitable for 4 – 20 mA current output to Data Acquisition and Control System (DACS) for following sizes &amp; flow range. Cable length up to 10 m/ required length from flow meter sensor to junction box shall be included in the cost of each instrument / sensor. It also includes required sizes of the matching flanges, gaskets and fasteners. <b>The MOC of turbine rotor will be SS (Stainless Steel).</b>  <b><u>Line Size (NB) : Flow Range (LPM)</u></b></p>				
	(i) 80 NB: 300 – 1200, # 150	1	Nos.		
	(ii) 65 NB: 200 – 800, # 150	1	Nos.		
	(iii) 40 NB: 80 – 240, # 150	1	Nos.		
	(iv) 25 NB: 30 – 100, # 150	1	Nos.		
	<p><b>Note: The digital LCD display unit for above flow meter to be mounted on custom built single panel board at one place, as per IPR requirement.</b></p>				
16.	<p><b>INSTRUMENTATION CABLE &amp; CONTROL CABLE:</b> Supply, laying, termination, testing and commissioning of following signal cables and control cables for instruments like Flow meter, Pressure transmitter, Temperature transmitter, pH meter conductivity meter and pneumatic valves:</p>				
	i. 2C x 1.5 sq. mm / suitable Cu screened & shielded armoured instrumentation cable (includes power signal also).	200	RMT		
	ii. 2C x 1.5 sq. mm / suitable Cu armored control cable for pneumatic valves.	200	RMT		
17.	<p><b>JUNCTION BOX FOR DISPLAY PANEL:</b> Supplying, fixing, installation and testing of junction box made from 18 SWG CRC sheet, duly powder coated painted (Siemens Gray shade) of required sizes for fixing display panels of flow meter, pressure sensor and temperature sensors etc. It also includes the supply and fitting of required qty. of connector/ TB, MCB and 24 Volt SMPS for instruments.</p>	2	Nos.		

18.	<b>MS STRUCTURE WORKS:</b> Design, supply, fabrication, installation of minor/major Mild Steel (MS) structure work for all the applicable equipments covered under Schedule of quantity, supporting piping at the site to suit the system requirements with anchoring, including operating platform (If at all needed) within or outside the building with anti-corrosion painting as per IPR approved shade. • Minor MS support structure work for pipe laying including plates / channels / pipes etc. • Manufacturing of MS platform for human passage from NBI hall to SST hall as per attached drawing (DWG: IPR/15/A3/NBI/4032 Sheet 1 to 2) is in the scope of vendor. This platform could bear a load of 600 kg approximately.	1	Set		
<b>Total (Rs.):</b>					

**In words:** \_\_\_\_\_

***Important Note:***

- IPR reserves the right to add / delete any or all of the items mentioned in SOQ.
- Understand all the specifications, terms and conditions of this tender thoroughly, visit the site and contact the purchase officer for any clarification if necessary.
- **The bidder should sign all pages in token of acceptance of the terms and condition and return the same to us.**
- **Deviations if any shall be clearly specified on separate sheet with all details.**

**Place:**

**Signature of Bidder with seal**

**Date :**