

BIRLA INDUSTRIAL AND TECHNOLOGICAL MUSEUM
(National Council of Science Museums, Ministry of Culture, Govt. of India)
19 A, Gurusaday Road, Kolkata-700019

NOTICE INVITING E-TENDER

TENDER No: BM-47(31)/PUR/2022(17)

Online digitally signed e-tenders under two bid systems are invited from reputed manufacturers/ agencies for **Supply, Installation, Testing, Commissioning and Setup of a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.)** at **Regional Science Centre, Potta P.O., Near Panambilly College, Chalakudy, Thrissur District, Kerala, PIN - 680722**, a unit under Kerala State Science & Technology Museum, supporting development by Birla Industrial and Technological Museum. Agencies having proven experience and capability of executing the order and to render maintenance and run the system for next one year after successful installation may submit their tenders online after downloading the tender paper from Central Public Procurement Portal (CPPP): <https://eprocure.gov.in/eprocure/app> or from Museum's website <https://bitm.gov.in/> as per the following schedule:-

Bid Document Published Date and time	28/04/2022 (As per portal time)
Bid Document Download Start Date and time	28/04/2022 (As per portal time)
Bid Submission Start Date and time	29/04/2022 (As per portal time)
Bid Submission End Date and time	12/05/2022 (As per portal time)
Technical (Techno-commercial) Bid Opening Date	13/05/2022 at 12:30 AM
Financial Bid Opening date and time	Intimated later
Completion time of Project	30 (Thirty) days

The on-line bid both Technical (Techno-commercial) Bid and Financial bid duly furnished in COVER-I & COVER-II respectively should be uploaded by the due date and time as per the above schedule. Off line tenders shall not be accepted and no request in this regard will be entertained whatsoever. On line Technical (Techno) Bid will be opened at the first instance in this office at **12:30 AM on 23/05/2022** for technical evaluation as well as selection of techno- commercially acceptable offers and at the second stage, the Financial Bids of only the selected and techno-commercially acceptable offers will be opened at (Will be intimated later). Decision of the Museum regarding selection of eligible & qualified agencies/vendors/firms for opening the Financial Bid shall be final and binding on the bidders. Bidders may be present during opening of tender, if desired. BITM reserves the right to accept or reject any or all the tenders in full or in part without assigning any reason whatsoever.

Special Conditions

1. The instruction given herein will be strictly binding on the tenderers and deviation, if any will make the tender or tenders liable to be considered invalid. Tenders incorporating additional conditions by the tenderer are liable for rejection.
2. Bids shall be submitted online only at CPPP website: <http://eprocure.gov.in/eprocure/app>. Manual bids shall not be accepted.
3. The instructions given in “Annexure –A” for “**Instruction for Online Bid Submission**” must be strictly followed during submission of the Bid.
4. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
5. **Validity of Bids:** The bids must remain valid for 90 days from the date of bid opening.
6. **Rejection of Bids:** Canvassing by the Bidder in any form, unsolicited letter and post- tender correction may invoke summary rejection. Conditional tenders will be rejected. Non- compliance of applicable Special Condition will disqualify the Bid.
7. The tenderers shall fill up the prescribed format for submission of Technical (Techno- commercial) Bid as per Annexure “F” duly signed by the authorized signatories.
8. The tenderers must have Digital Signature Certificate (DSC) for filling up the bids. The person signing the tender documents must be authorized for submitting the on line e-tender.
9. Tender must be uploaded online by the bidder in two separate covers marked **COVER-I** And **COVER-II**. The contents of COVER-I and COVER-II shall be as follows:-

COVER-I

General Terms & Conditions (as detailed in Annexure-B format) shall be duly signed & Stamped as a token of acceptance and uploaded online by the bidder in **COVER-I** along with the self attested and stamped scanned copies of the following documents: -

- (i) Technical (Techno-commercial) Bid as per Annexure “B” format duly filled in and signed by the authorised signatory along with supporting documents duly signed by the authorised signatory.
- (ii) Copy of the current and valid Trade License.
- (iii) Scanned Copy of the current and valid GST Registration Certificate indicating GST number duly self attested with official stamp. (Please note that Provisional GST Registration Certificate is also acceptable for the time being)

- (iv) The Technical Specifications as per Annexure "C" format duly filled in and signed by the authorised signatory as a token of acceptance for delivery of materials in accordance to the museum's specifications.
- (v) The " Declaration" (as detailed in Annexure "D").
- (vi) The Special Terms and Conditions (STC) as per Annexure "E" & 'F: duly signed and stamped by the authorised signatory.
- (vii) The Technical Specifications Annexure "C" (as a token of acceptance for delivery of materials in accordance to the museum's specifications).

In case the bidder fails to submit any of the documents as stated above, the other part of their tender i.e. "COVER-II" shall not be considered for further download and shall be rejected straightway without any further reference. The Technical Bids and other documents i.e. "COVER-I" will be downloaded and evaluated at the first stage to select the techno-commercially capable and competent bidders. At the second stage, Financial/Price Bid i.e. COVER-II of only the techno-commercially acceptable offers will be downloaded and evaluated for further ranking before awarding the contract. After opening of COVER-I, if all the Bids are found techno-commercially unacceptable, the Financial (Price Bid) i.e. COVER-II submitted by the bidders against this tender shall not be opened/downloaded for obvious reasons.

COVER-II

- (i) The Financial Bid (as per Annexure-G format) i.e. Schedule of Price Bid in the form of attached BOQ Proforma shall be duly filled in, digitally signed and uploaded online by the bidder.

10. The authority of Birla Industrial and Technological Museum, who does not bind themselves to accept the lowest tender, reserves the right to reject or accept any or all tenders wholly or partially without assigning any reason whatsoever.

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INSTRUCTION FOR ONLINE BID SUBMISSION

1. The bidders are requested to submit soft copies of their bids electronically on the CPP portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, Prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.
2. More information useful for submitting online bids on the CPP Portal may be obtained at <http://eprocure.gov.in/eprocure/app>

REGISTRATION

1. Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: <http://eprocure.gov.in/eprocure/app>) by clicking on the link **“Online bidder Enrolment”** on the CPP Portal which is free of charge.
2. As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
3. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
4. Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. sify/nCode/eMudhra etc.), with their profile.
5. Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC’s to others which may lead to misuse.
6. Bidder then logs in to the site through the secured log-in by entering their user ID/Password and the password of the DSC / e- Token.

SEARCHING FOR TENDER DOCUMENTS

1. There are various search options built in the CPP Portal, to facilitate bidders to each active tenders by several parameters. These Parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization Name, Form of Contract, Location Date, Other keywords etc. to search for a tender published on the CPP Portal.
2. Once the bidders have selected the tenders they are interested in, they may download the required documents/ tender schedules. These tenders can be moved to the respective "My Tenders" folder. This would enable the CPP Portal to intimate the bidders through SMS/e-mail in case there is any corrigendum issued to the tender documents.
3. The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification/help from the Helpdesk.

PREPARATION OF BIDS

1. Bidder should take into account any corrigendum published on the tender documents before submitting their bids.
2. Please go through the tender advertisement and the tender documents carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents including the names and content of each of the documents that need to be submitted. Any deviations from these may lead to rejection of the bid.
3. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document/schedule and generally, they can be in PDF/ XLS/ RAR/ DWF/ JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
4. To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, audit certificates etc.) has been provided to the bidders. Bidders can use "My Space" or "Other Important Documents" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

1. Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
2. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender documents.
3. A standard price Schedule Format (BOQ) has been provided with the tender document to be filled by the all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BOQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BOQ file, open it and complete the **blue colored** (Unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.
4. The server time (which is displayed on the bidders "dashboard") will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
5. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secure socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid opener's public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorised bid openers.
6. The uploaded tender documents become readable only after the tender opening by the authorised bid openers.
7. Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid No. and the date & time of submission of the bid with all other relevant details.
8. The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

1. Any enquiries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
2. Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal helpdesk. The contact number for the helpdesk is 1800233 7315.

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TENDER No. : BM-47(31)/PUR/2022(17)

GENERAL TERMS & CONDITIONS (GTC) FOR SUBMISSION OF TENDER FOR SUPPLY, INSTALLATION, TESTING, COMMISSIONING AND SETUP OF A) 5 FEET AI BASED INTERACTIVE HUMANOID WHEELED ROBOT (QTY-01 NO.) AND B) 1.8 FEET AI BASED INTERACTIVE HUMANOID ROBOT (QTY-01 NO.) AT REGIONAL SCIENCE CENTRE, POTTA P.O., NEAR PANAMBILLY COLLEGE, CHALAKUDY, THRISSUR DISTRICT, KERALA, PIN - 680722, STRICTLY AS PER MUSEUM'S SPECIFICATIONS

1. Bidder should have necessary infrastructure and facilities so as to take up the job of supply of the tendered items strictly as per enclosed Technical Specifications with required financial capability and to render after sales service at site(s).

2. **PRICE**

The prices and rates indicated/quoted shall be inclusive of cost of materials, supply, installation, commissioning, training, maintenance for one year of "a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) and b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.)" at Digital Adventure Gallery of Regional Science Centre Chalakudy, Kerala.

The rate of GST to be imposed on the rate shall be clearly mentioned. Prices and rate quoted shall be firm and fixed for the entire period of execution of the order and no escalation of rate on any ground whatsoever shall be applicable.

3. The successful bidders shall submit the following documents within 7 (seven) days from the date of placement of the order :-

- (i) Duplicate copy of the order duly signed and stamped as a token of acceptance of the order.
- (ii) Agreement on non-judicial stamp paper of appropriate value.

4. **DELIVERY/COMPLETION SCHEDULE :**

The entire job should be complete within 30 days from the date of placement of work order. The successful bidder shall take all steps to maintain this delivery/completion time as *Time is essence of this contract.*

In case the successful bidder fails to complete the job at any stage within the period stipulated above for completion and unless the extension of the same is granted, the authority (Purchaser) will have the liberty (decision of the purchaser shall be binding in this respect) either to

- A. Entrust the job to the other eligible bidder without further notice and no claim for the materials or cost of the partly supplied items/job done will be entertained at the option treating the fault as a breach of contract and cancel the contract.

- B. to levy liquidated damages @ 1% per week beyond the period of delivery subject to a maximum of 10% of the contract value

You are requested to inspect the site prior to quote the rates. Any deviation from the terms and conditions as mentioned in the tender document shall result in cancellation of the order. Decision in this regard taken by the Museum/Centre shall be final and binding.

5. **Payment terms:** No advance payment shall be made by this Museum on any circumstances.

6. **DEFECT LIABILITY PERIOD:**

One Year from the date of completion of work. The bidder shall be responsible for making good all defects of materials/items including defective workmanship, use of defective materials etc. for the entire Defect Liability Period of above from the date of completion of the work.

7. The item / materials to be supplied by the bidder shall conform to the specifications given by the Museum. Sub-standard quality of materials & Workmanship will not be accepted.

8. Bad workmanship will not be accepted and if carried out is liable to be rejected and shall be rectified / replaced by the supplier at his own cost & risk as per specifications and directions given by the authorized representative of the Museum.

9. If it is noticed that the item(s) supplied do not conform to the specifications of the order, the Museum shall have the right to reject the item(s) in part or full. The supplier shall be liable to replace the rejected item(s) within the stipulated time. Till the replacement is done, the rejected materials shall be lying at the risk, cost and responsibility of the supplier. If the supplier do not arrange to replace the rejected materials within the stipulated time, the same may be disposed off at the risk of the supplier and in the manner which the Museum will deem fit. The Museum shall be entitled to retain the proceeds of the disposal either in part or in full towards expenses incurred on storage, handling and disposal of the materials. The Museum shall also be entitled to recover the expenses made by them on account of storage & handling of such rejected goods till the goods are removed from the premises of the Museum.

10. In case the bidder refuses or fails to start the Project work within 20 (thirty) days from the date of placement of the order as per the finalized and accepted terms & conditions, the order shall be cancelled forthwith.

11. The authorities of the Birla Industrial and Technological Museum (BITM) reserves the right to amend, alter or modify the terms & conditions mentioned above if necessary from time to time.

12. The authorities of Birla Industrial and Technological Museum (BITM), who do not bind themselves to accept the lowest tender, reserve the right to reject or accept any or all tenders wholly or partially without assigning any reason whatsoever.

13. All disputes and differences between the successful bidder and the Museum of any kind except quality of workmanship and materials whatever arising out of or in

connection with the order on carrying out the supply (whether during the progress of the work or after their completion and whether before or after the determination, abandonment or breach of the Terms & Conditions of the order) shall be referred to the sole arbitration of a person nominated by the Director General, National Council of Science Museums, whose decision in this regard will be final and binding on both the successful bidder and the Council/Museum.

The provision of the Arbitration and Reconciliation Act 1996 or any statutory modification or re-enactment thereof and of the rules made there under for the time being in force shall apply to arbitration's proceedings under this Clause.



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TENDER No. : BM-47(31)/PUR/2022(17)

Technical Specifications

Technical Specification for "a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) and b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.)"

Overview of Works

Scope of work includes but is not limited to the Supply, Installation, Testing, Commissioning, Setup "a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) and b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.)" at Digital Adventure Gallery at RSC, Chalakudy, Kerala.

General

- 1 The system shall be designed by selecting high-grade components of proven quality and proper design of system electronics to ensure minimum down time.
- 2 The successful Bidder must be completed the total project within thirty days after receiving the order copy.
- 3 **Commissioning Spares:** All commissioning spares required for installation, testing and commissioning of system shall be at bidder's scope
- 4 **Warranty Spares:** All spares required for maintaining the complete system during the warranty period of 12 months shall be at bidder's scope.
- 5 **Operating terms:** The Successful Bidder should maintain the whole system on an ongoing basis, during warranty period of One year. **During warranty period all materials / parts / services as required to maintain the system on an ongoing basis is included in the scope of the job and no extra payment will be made by RSC Chalakudy, Kerala/BITM**
- 6 Provide minimum three year service support during business hours, if and when required, besides such other support like a 24/7 telephonic assistance etc., as may be required so that the system operates on a continuous basis.

7. UPGRADES

Any upgrades to software with respect to firmware and revisions during the period of contract and warranty should be provided by the successful bidder at no extra cost to RSC, Chalakudy, Kerala/BITM

8. SYSTEM ACCEPTANCE CRITERIA

The system will be accepted by BITM, Kolkata based on the following criteria: All systems to be verified operational as defined in the Scope of Work above. a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) and b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.) system installed and functioning, as described specification. All manuals and drawings, password, software dongle wiring diagram are, delivered to RSC, Chalakudy, Kerala.

9. Technical Specifications.

Specification	Details
Scope of work	The work includes but not limited to the Supply, Installation, Testing, Commissioning and Setup of a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.) at Digital Adventure Gallery at site location.
Site Location	Regional Science Centre, Potta P.O., Near. Panampilly Memorial Government College, Chalakudy, Thrissur District., Kerala Pin. 680722
Make	Reputed brand with presence across India service network for immediate service.
Product (Detailed Specification mentioned in 9A and 9B)	a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) – [SAYA BOT Std or NINA bot or equivalent or better] b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.) – [Nao robot or NINO V3 or equivalent or better]
Condition of product	New
Warranty	1 Year onsite warranty or more
Tenure of Support	Minimum 3 years of service support
Software Warranty	Lifetime (All software must be legally installed with lifetime validity. The copy of the software and other related documents must be submitted.)
AMC service availability	Yes
Service Support	Provide service support during business hours, if and when required, besides such other support like a 24/7 telephonic assistance etc., as may be required so that the system operates on a continuous basis.
Software Updates	Any upgrade to software with respect to firmware and revisions during the period of contract, warranty and AMC should be provided by the successful bidder at no extra cost.

Spare part availability	All spares required for maintaining the complete system for next few years (minimum three years) period shall be available with the bidder.
Note	<ul style="list-style-type: none"> • Damaged, malfunctioning, refurbished and used products will be summarily rejected. • The system shall be designed by selecting high-grade components of proven quality and proper design of system electronics to ensure minimum down time. • Commissioning Spares: All commissioning spares required for installation, testing and commissioning of system shall be at bidder's scope. • Warranty Spares: All spares required for maintaining the complete system during the warranty period shall be at bidder's scope. • SYSTEM ACCEPTANCE CRITERIA: All systems to be verified operational as defined in the Scope of Work above, system installed and functioning, as described in specification. All manuals and drawings, password, software dongle, wiring diagram, all software licenses, etc are delivered to BITM/ KSSTM Authorities.

9A). Specification sheet for 5 feet AI based interactive Qty - 1 humanoid wheeled robot.

Features

Voice Recognition & Voice Assistant	<ul style="list-style-type: none"> • Automated Speech Recognition (ASR) • Voice commands • Voice identification • Text to speech
Face Recognition	<ul style="list-style-type: none"> • Auto face Recognition.
App	<ul style="list-style-type: none"> • Android app (Intuitive app for control)
Firmware Update	<ul style="list-style-type: none"> • Over network • Over internet • Over USB
Connectivity	<ul style="list-style-type: none"> • Wi-Fi - 2*2 802.11n
Navigation	<ul style="list-style-type: none"> • Autonomous navigation (eg: QR-Code based)
Ask Anything	<ul style="list-style-type: none"> • Search internet and respond (Weather reports, spellings, countries, cities, capitals, etc)

	<ul style="list-style-type: none"> • Learn and construct FAQ
Network Setup	<ul style="list-style-type: none"> • Self-built network
Ability to work without Internet	<ul style="list-style-type: none"> • Yes

Detailed Technical Description

Components	Description	Quantity
1. Height	5 Ft +/- 5%	
2. DOF (Degrees of Freedom)	20 DOF or more	
3. Motors	Dynamixel MX-64 or equivalent	4
	Dynamixel MX-28 or equivalent	7
	BLDC Motor	2
4. Controller	CPU Board	1
	Power I/O Board	1
	Raspberry Board or equivalent	2
	DC To DC converter	6
	BLDC Motor driver	2
5. Camera	Monocular High Resolution Camera module 1080x720 or higher resolution	2
6. Microphone	Far Field Echo cancelled Microphones	3
7. Speaker	Speaker Sets 1.5W, 4Ohm Speaker drive or better	1
10. Eye LED	Mono/ Multicolour Colour-LED	8
11. Battery	Lithium Ion Battery Packs 30000 mAh. 22.2V/ more	1
12. Power Supply	14.6A SMPS, 26V +/- 5%	1
13. Operating Temperature	-5- 70 degrees Celsius	
14. Dimension	5ft x 1.8ft x 1.5ft +/-20%	
15. Weight	20 to 30 kg	
16. Workspace	10ft x 10ft x 10ft	
17. Material	• Aluminium Sheet metal (Grade: 5052, 4mm)	
	• 3-D Printed PLA/ABS Gripper	
18. Connectors	Set of Daisy Chain UART Motor Connectors	
19. Screws	M6/ M3/M2.5/M2 assorted	
20. Manufacturing Procedures used	LaserCutting, CNC Bending, Buffing, 3-D Printing, Self Clinching	

21. Software Support	C#, Android, Python, MATLAB, VREP, TensorFlow	
22. Tablet	10 inch Tab	1

Controller Specification

Components	Description	Qty
1. CPU	<ul style="list-style-type: none"> ● Embedded MIPS24KEc (580 MHz) with 64 KB I-Cache and 32 KB D-Cache ● 2T2R 2.4 GHz with 130 Mbps PHY data rate ● Legacy 802.11b/g and HT 802.11n modes ● 20 MHz channel bandwidth ● Reverse Data Grant (RDG) ● Maximal Ratio Combining (MRC) ● Space Time Block Coding (STBC) ● 16-bit DDR2 64 Mbytes ● Serial Flash 16 Mbytes ● SPI, SD-XC ● 1x USB 2.0 ● An optimised PMU ● Intelligent Clock Scaling (exclusive) ● DDR2: ODT off, Self-refresh mode ● I2C, I2S, SPI, UART, JTAG, GPIO ● I2S interface supports 16-bit/96kHz (slave mode) ● Hardware NAT with IPv6 ● WEP 64/128, TKIP, AES, WPA, WPA2, WAPI ● QoS: WMM, WMM-PS ● WPS: PBC, PIN 	
2. Peripheral Ports	<ul style="list-style-type: none"> ● UART Servo Motor Ports (Extensible to 254 motors) ● I2C Ports ● H-Bridge Motor Driver PWM 2-pin ports ● Power output ports (12V, 5V, 5V,3V) ● Analog Input Ports ● Digital I/O Ports ● Speaker Port ● Battery Charging Port ● USB Debug Port ● Power Switch 	<p>6</p> <p>6</p> <p>4</p> <p>4</p> <p>4</p> <p>4</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
3. Battery	<ul style="list-style-type: none"> ● Lithium Ion Battery Pack 30000mAh,22.2V 	1

9B). Specification sheet for 1.8 feet AI based interactive humanoid robot.

Qty - 1

Features

Basic Bot Functionality	<ul style="list-style-type: none"> ● Programmable Actions ● Walk ● Bow ● Clap ● Confused ● Fall/Get-up ● Default state ● Sit and Get-up
Voice Recognition & Voice Assistant	<ul style="list-style-type: none"> ● Automated Speech Recognition (ASR) ● Voice commands ● Voice identification ● Text to speech
App	<ul style="list-style-type: none"> ● Android app (Intuitive app for control)
Power Save Mode	<ul style="list-style-type: none"> ● Deep sleep ● Standby ● Wake-on-events
Music	<ul style="list-style-type: none"> ● Stream from phones/devices ● Stream from Cloud
Dance	<ul style="list-style-type: none"> ● Random moves ● Dancing for the song
Firmware Update	<ul style="list-style-type: none"> ● Over network ● Over internet ● Over USB
Connectivity	<ul style="list-style-type: none"> ● Wi-Fi - 2*2 802.11n
Ask Anything	<ul style="list-style-type: none"> ● Search internet and respond (Weather reports, spellings, countries, cities, capitals, etc) ● Learn and construct FAQ
Network Setup	<ul style="list-style-type: none"> ● Self-built network
Ability to work without Internet	<ul style="list-style-type: none"> ● Yes

Detailed Technical Description

Components	Description	Quantity
1. Height	55 cm +/- 10%	
2. DOF (Degrees of Freedom)	20DOF or more	
3. Motors	Dynamixel MX-28 or equivalent	12
	Dynamixel AX-12A or equivalent	8
4. Controller	CPU Board	
	Power I/O Board	1
5. Camera	Monocular High Resolution Camera module 1080x720	1
6. Microphone	Far Field Echo cancelled Microphones	1
7. Speaker	Speaker Sets 1.5W, 4Ohm Speaker drive or better	3
8.Touch Sensor	Capacitive Touch Sensor AT42QT2120 equivalent	1
9.Inertial Measurement Unit	6-DOF MPU9250	1
10. Eye LED	LCD-Display	1
11. Battery	Lithium Ion Battery Packs 3200 mAh, 11.1V each	2
12. Power Supply	12V, 10A SMPS	1
13. Operating Temperature	-5- 70 degrees Celsius	
14. Dimension	490mm x 240mm x 160mm +/- 10%	
15. Weight	4100g +/- 20%	
16. Workspace	490mm x 490mm x 490mm +/- 20%	
17. Material	Aluminium Sheet metal (Grade : 5052, 4mm or better) • 3-D Printed PLA/ABS Gripper	
18. Connectors	Set of Daisy Chain UART Motor Connectors	
19. Screws	M3/M2.5/M2 assorted	
20. Manufacturing Procedures used	LaserCutting, CNC Bending, Buffing, 3-D Printing, Self Clinching	
21. Software Support	C#, Android, Python, MATLAB, VREP, TensorFlow	
22. Add on Hardware	<ul style="list-style-type: none"> • Motor Driver Shield (L298N Based) • I2C SHARP Distance Sensors • Time of Flight Distance Sensor • Generic I2C Sensors and Actuators 	

Controller Specification

Components	Description	Qty
1.CPU	<ul style="list-style-type: none"> ● Embedded MIPS24KEc (580 MHz) with 64 KB I-Cache and 32 KB D-Cache ● 2T2R 2.4 GHz with 130 Mbps PHY data rate ● Legacy 802.11b/g and HT 802.11n modes ● 20 MHz channel bandwidth ● Reverse Data Grant (RDG) ● Maximal Ratio Combining (MRC) ● Space Time Block Coding (STBC) ● 16-bit DDR2 64 Mbytes ● Serial Flash 16 Mbytes ● SPI, SD-XC ● 1x USB 2.0 ● An optimised PMU ● Intelligent Clock Scaling (exclusive) ● DDR2: ODT off, Self-refresh mode ● I2C, I2S, SPI, UART, JTAG, GPIO ● I2S interface supports 16-bit/96kHz (slave mode) ● Hardware NAT with IPv6 ● WEP 64/128, TKIP, AES, WPA, WPA2, WAPI ● QoS: WMM, WMM-PS ● WPS: PBC, PIN 	
2. Peripheral Ports	<ul style="list-style-type: none"> ● UART Servo Motor Ports (Extensible to 254 motors) ● I2C Ports ● H-Bridge Motor Driver PWM 2-pin ports ● Power output ports (12V, 5V, 5V,3V) ● Analog Input Ports ● Digital I/O Ports ● Speaker Port ● Battery Charging Port ● USB Debug Port ● Power Switch 	<p>6</p> <p>6</p> <p>4</p> <p>4</p> <p>4</p> <p>4</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
3. Battery	<ul style="list-style-type: none"> ● Lithium Ion Battery Pack 3200mAh,11.1V 	<p>1</p>

Special terms and conditions:

- 1) The bidder has to produce relevant list of successful implementation of similar work done in last 3 years along with user performance certificate.
- 2) Loading and unloading of materials is the responsibility of the bidder and any charges in this regard to be borne by the bidder.
- 3.(a)) The warranty of all quoted items shall start from the date of commissioning and acceptance.
3. (b) Bidder shall provide comprehensive on-site warranty for hardware for minimum 1 year for all items/equipment supplied and lifetime warranty support for software from the date of acceptance by the purchaser.
4. (a) GST invoice should be produced
4. (b) All applicable taxes, duties and levies shall be shown separately
4. (c) Charges towards freight, forwarding, transit insurance, installation & support shall be included in the quoted price
4. (d) TDS as applicable will be deducted.
4. (e) The rates quoted by the bidder shall be firm. Any revision/change in the rate of Taxes, Duties, levies etc or introduction of new taxes/duties/levies by government shall be considered.

Date:

Signature of the tenderer with office seal

BIRLA INDUSTRIAL AND TECHNOLOGICAL MUSEUM

(National Council of Science Museums,
Ministry of Culture, Govt. of India)
19A, Gurusaday Road, Kolkata-700019

TENDER No. : BM-47(31)/PUR/2022(17)

DECLARATION

We do hereby accept the "General Terms & Conditions (GTC)" as provided by the Birla Industrial and Technological Museum (BITM) along with the Tender documents for supply, installation, set up of necessary hardware, software for "a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) and b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.)" inside Digital Adventure Gallery at RSC, Chalakudy, Kerala - 680722, strictly as per the specifications of Birla Industrial and Technological Museum (BITM) as provided along with the tender documents, in the event of placement of any order on us. The Council/Museum shall be at liberty to cancel the order in full or in part in the event of failure of any of the above declaration made by us.

Signature of the Bidder / Constituted Attorney With office Seal

Birla Industrial & Technological Museum
(National Council of Science Museums,
Ministry of Culture, Govt. of India)
19A, Gurusaday Road, Kolkata-700019

TENDER No. : BM-47(31)/PUR/2022(17)

SPECIAL TERMS AND CONDITIONS (STC)

Standard Warranty and Prompt after sale service as applicable.

1.0 VALIDITY OF PRICE:

The price/rate shall remain firm and fixed up to the entire period of execution of the job and no escalation of rates/price shall be considered during the period for any reason whatsoever.

2.0 TAXES AND DUTIES

Percentage of GST or any other Charges, if any should be mentioned clearly.

3.0 DELIVERY/COMPLETION SCHEDULE

Supply, Installation, Testing, Commissioning and Setup of a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) and b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.) at Digital Adventure Gallery at Regional Science Centre, Potta P.O., Near. Panampilly Memorial Government College, Chalakudy, Thrissur District., Kerala, Pin. 680722, should be completed within **30 days** from the date of placement of order. The contractor shall take all steps to maintain this delivery/completion time as ***Time is essence of this contract.***

In case the contractor/supplier fails to complete the job at any stage within the period stipulated above for completion and unless the extension of the same is granted, the authority (Purchaser) will have the liberty (decision of the purchaser shall be binding in this respect) to **entrust the job to the other eligible bidder without further notice and no claim for the materials or cost of the partly supplied items/job done will be entertained at the option treating the fault as a breach of contract and cancel the contract.**

4.0 PAYMENT TERM

No advance payment shall be made by BITM on any circumstances. The payment shall be released within 30 days from the date of receipt of final bill duly supported by receipted challan and inspection certificate from the competent authority regarding satisfactory completion of the entire job.

I/we hereby declare that the above information is true to the best of my/our knowledge and belief and nothing has been concealed herein.

Date:

Signature of the Bidder / constituted attorney with official seal

Birla Industrial & Technological Museum
(National Council of Science Museums,
Ministry of Culture, Govt. of India)
19A, Gurusaday Road, Kolkata-700019

TENDER No. : BM-47(31)/PUR/2022(17)

TECHNICAL (TECHNO-COMMERCIAL) BID

1. Name, Address & Tele No. of the Agency :
2. Back ground details of the firm (state Whether original manufacturer/direct dealer of the manufacturer :
3. Manpower set up of the firm & qualification of professionals :
4. Past experience in such business for last 3 years giving details of establish clients especially Govt. office. Submit satisfactory certificate issued by such clients & Govt. offices :
5. i) Whether capable to supply, installation of the tendered items i.e. supply, installation, set up of necessary system (hardware & software), for the a) 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) and b) 1.8 feet AI based interactive humanoid robot (Qty-01 No.)" inside Digital Adventure Gallery of RSC, Chalakudy, Kerala **as per enclosed technical Specifications** (Please mention "Yes" or "No") :
ii) If it is mentioned "No" above, submit details deviation to be made from the enclosed technical specifications (Extra sheet may be attached, if required) :
(iii) If it is mentioned "Yes" above, state the name of the manufacturer and the "Model Number" of the product offered along with the copies of the product brochure as a proof of their statement:
6. **Submit the documentary evidence regarding execution of latest contract of similar nature and magnitude of minimum single order value of Rs. 17,00,000/- :**
7. Proof of financial status of the company/audited balance sheet for last 1 year indicating total turnover as well (submit documentary evidence) :
8. State detail address and set up link where from support of maintenance during warranty & post warranty period shall be offered by the agency :
9. Minimum down time to handle breakdown call and or any sort of emergencies :
10. Mention *GST Registration* Number and attach Current valid *GST Registration* certificate :

I/We hereby declare that the above statements are true. I/We also declare that the decision of Birla Industrial & Technological Museum regarding selection of eligible agencies for opening of financial Bid (Part-II) shall be final and binding on me/us.

Date :

Signature of the Bidder / constituted attorney Office Seal

ANNEXURE- "G"

Birla Industrial & Technological Museum

(National Council of Science Museums,

Ministry of Culture, Govt. of India)

19A, Gurusaday Road, Kolkata-700019

TENDER No. : BM-47(31)/PUR/2022(17)

Consider following items at the time of filling BOQ

Sl. No.	Description of Items	Quantity	Make and Model No. of Hardware & Software used for various parts as per specification with full technical description	Make and Model no	Remarks
01	Supply, Installation, Testing, Commissioning and Setup of " 5 feet AI based interactive humanoid wheeled robot (Qty-01 No.) " as per specification along with touch control panel at Digital Adventure Gallery at Regional Science Centre, Chalakudy, Kerala, Pin. 680722	01			
02	Supply, Installation, Testing, Commissioning and Setup of " 1.8 feet AI based interactive humanoid robot (Qty-01 No.) " as per specification along with touch control panel at Digital Adventure Gallery at Regional Science Centre, Chalakudy, Kerala, Pin. 680722	01			

The work, being integrated in nature, cannot be split under any circumstance.

Date:

Office Seal

Signature of the Bidder / Constituted attorney