Ref No: ITG-IT/1007/CARES-PROJECT/2023-24/ 2867
Date: 03/01/2024

CORRIGENDUM-I

Subject: "Supply, Delivery and Maintenance of Robotics Hardware Kits for implementation of Coding and Robotics Education in Schools (CARES) scheme in the State of Goa" on behalf of Directorate of Technical Education, Government of Goa".
Tender No. ITG-IT/1007/CARES-PROJECT/2023-24/2737 Dated: 20/12/2023

Following changes that are considered in the Tender Document.

Tender Document Page No	Tender Document Chapter No	Item No.	Present Clause Details	Changed Clause Details
11	Chapter 3: Scope Of work	**Sr. No. 2**	Total (No of Accessories Kits to be supplied) is 3136	Total (No of Accessories Kits to be supplied) is 3139
12	Chapter 3: Scope Of work	**Sr. No. 3 IV. Output Components sr. no.3**	Seven Seament Display	Seven Segment Display

13	**Chapter 3 : Scope Of work**	**Sr. No. 3 VI. Accessories**		

Sr. no.	Item name	quantity
1	Chassis	02
2	3220 points Solderless Breadboard	02
3	Wheels with rubber	06
4	Pulleys	02
5	Propellor	02
6	Jumper Connectors	50 each
7	Small size box with and without lid	03
8	Box/Ball Holder for the Chassis	02
9	USB Cable compatible for Programming the microcontroller board and charging the battery	02
10	Single strand wire suitable for breadboard connections provided	01
11	Plastic Material parts for Construction of robotic arm	01 set
12	Insulation tapes, color-red, black-16mmX7mX0.125mm	02 each
13	Interconnecting cables	20

Sr. no.	Item name	quantity
1	Chassis	02
2	3220 points Solderless Breadboard	02
3	Wheels with rubber	06
4	Pulleys	02
5	Propellor	02
6	Jumper Connectors	50 each
7	Small size box with and without lid	03
8	Box/Ball Holder for the Chassis with different friction levels at the base	02
9	USB Cable compatible for Programming the microcontroller board and charging the battery(1.5 metres minimum)	02
10	Single strand wire suitable for breadboard connections provided	01
11	Good quality and rigid Plastic Material parts for Construction of robotic arm	01 set

				12	Insulation tapes, color-red, black-16mmX7mX0.125mm	02 each
				13	Interconnecting cables	20
				14	Aluminium Screw Tray with Magnetic Plate for nuts and bolts to stick while working on it	01
				15	Castor wheel such that it is of dimension that makes the chassis inclination zero degree with respect to plane when wheels are attached to the robot	02
				16	4 x AA size battery holder with Sliding In connector compatible with the expansion board	02

<table>
<tr>
<td>13</td>
<td>Chapter 3 : Scope Of work</td>
<td>Sr. No. 3 VII. Tools</td>
<td>
<table>
<tr><th>Sr. no.</th><th>Item name</th><th>quantity</th></tr>
<tr><td>1</td><td>Multi-meter</td><td>01</td></tr>
<tr><td>2</td><td>Two in one Plus ‘+’, minus ‘-’, screwdriver</td><td>02</td></tr>
<tr><td>3</td><td>Crimping tool</td><td>01</td></tr>
<tr><td>4</td><td>Dupont 1x1 Pin Header with Female Crimp Pins for crimping</td><td>50</td></tr>
<tr><td>5</td><td>Dupont 1x1 Pin Header with male Crimp Pins for crimping</td><td>50</td></tr>
<tr><td>6</td><td>Wire stripper cum cutter</td><td>01</td></tr>
</table>
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<td>
<table>
<tr><th>Sr. no.</th><th>Item name</th><th>quantity</th></tr>
<tr><td>1</td><td>Multi-meter with battery and fuse included</td><td>01</td></tr>
<tr><td>2</td><td>Two in one Plus ‘+’, minus ‘-’, screwdriver</td><td>02</td></tr>
<tr><td>3</td><td>Wire stripper cum cutter</td><td>01</td></tr>
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</tr>
<tr>
<td>14</td>
<td>Chapter 3 : Scope Of work</td>
<td>Sr. No. 3</td>
<td>Reference Microcontroller Board Module:

Note: The below diagram is for reference purpose only.</td>
<td>Reference Microcontroller Board Module:

Note: The below diagram is for reference purpose only. The type of connector architecture (male/female) and rest all detailing should be referred from the technical specifications section.</td>
</tr>
</table>

59	Chapter 15: Technical Bid Format	Sr. No.2 **.Microcontroller Expansion Board** i). **Connectors** . g	**<u>02 x Input connectors.</u>** The Connector should be of 4 pins and should be of plug type with an architecture of 02x02 male pin headers or better. The 4 pins should be with arrangements such as VCC, Power, Signal, Ground. Naming Convention 'Input 1' & 'Input 2' (Placement as shown in reference diagram 1) VCC = +5VDC Power = +9VDC, which will be used to power the motors Signal = Input Pin of the Microcontroller (ADC Pin) Ground = Should be connected to the Common Ground Pin. These pins should be mounted horizontally on to the board. Sufficient spacing should be kept between two input connectors so as both the input connectors can be used at a time by the modules.	**<u>02 x Input connectors.</u>** The Connector should be of 4 pins and should be of plug type with an architecture of 02x02 female pin headers or better. The 4 pins should be with arrangements such as VCC, Power, Signal, Ground. Naming Convention 'Input 1' & 'Input 2' (Placement as shown in reference diagram 1) VCC = +5VDC Power = +9VDC, which will be used to power the motors Signal = Input Pin of the Microcontroller (ADC Pin) Ground = Should be connected to the Common Ground Pin. These pins should be mounted horizontally on to the board. Sufficient spacing should be kept between two input connectors so as both the input connectors can be used at a time by the modules.
59	Chapter 15: Technical Bid Format	Sr. No.2 **.Microcontroller Expansion Board** i).**Connectors** **.h**	**<u>02 x Output connectors.</u>** The Connector should be 4 pins and should be of plug type with an architecture of 02x02 female pin headers or better. The 4 pins should be with arrangements such as VCC1, VCC2, Signal & Ground. Naming Convention Output 1 & Output 2(Placement as shown in reference diagram 1) VCC1 = +5VDC Ground = Should be connected to the Common Ground Pin. Signal = PWM output pin of the microcontroller VCC2 = +3.3VDC	**<u>02 x Output connectors.</u>** The Connector should be 4 pins and should be of plug type with an architecture of 02x02 male pin headers or better. The 4 pins should be with arrangements such as VCC1, VCC2, Signal & Ground. Naming Convention Output 1 & Output 2(Placement as shown in reference diagram 1) VCC1 = +5VDC Ground = Should be connected to the Common Ground Pin. Signal = PWM output pin of the microcontroller VCC2 = +3.3VDC

60	Chapter 15: Technical Bid Format	Sr. No.2. **Microcontroller Expansion Board** ii) ***Components***	a.) Motor Driver IC arrangement such that at a time it should handle 04 motors connected to the expansion board. (Note: Motor Driver ICs present on the board can be more than one) b.) Any necessary Active Components, Passive components, accessories like ICs, Resistors, Capacitors etc can be included as per the requirements of the specifications of the Expansion board. **__Note__:- On every connector placed onto the expansion board (excluding the microcontroller connector) there should be the pin number printed besides it so as to understand which pin of the microcontroller is connected to the pins of the connector, incase of DC motor connectors such as M1,M2,M3 & M4 the pins going from the microcontroller to the motor driver controlling that dedicated motor should be printed.	a.) Motor Driver IC arrangement such that at a time it should handle 04 motors connected to the expansion board. (Note: Motor Driver ICs present on the board can be more than one) b.) Any necessary Active Components, Passive components, accessories like ICs, Resistors, Capacitors etc can be included as per the requirements of the specifications of the Expansion board. c.) Necessary hardware should be provided on the expansion board so that the four servo motors that will be connected to the expansion board should get sufficient amount of power when the servo will be operated in full load condition. **__Note__:- On every connector placed onto the expansion board (excluding the microcontroller connector) there should be the pin number printed besides it so as to understand which pin of the microcontroller is connected to the pins of the connector, incase of DC motor connectors such as M1,M2,M3 & M4 the pins going from the microcontroller to the motor driver controlling that dedicated motor should be printed. ** Motor driver IC circuit should be designed such that by changing the PWM value in the code we can adjust the speed of all 4 motors connected to the board.

				** Sensor connectors S1, S2, S3 signal pin should be given to the ADC pins of the microcontroller. ** On the sliding In and sliding Out connectors proper naming should be printed on the board so as to indentify which pin is VCC, GND, 3V3, 9V, Signal etc
60	Chapter 15: Technical Bid Format	**2. Input Components**	Sr. No. 2	Sr. No.3 (Correction in Sr. No.)
63	Chapter 15: Technical Bid Format	2. **Input Components** 8. **Push Button Switch Module**	**Push Button Switch Module** ***Specifications*** Button Style: Round Insulation Resistance: >=100MΩ Life Expectancy: 50,000,000 cycles	**Push Button Switch Module** ***Specifications*** Button Style: Round Size – 12x12x12 mm Insulation Resistance: >=100MΩ Life Expectancy: 50,000,000 cycles

63	Chapter 15: Technical Bid Format	2. **Input Components** **9. <u>Push To Lock Switch Module</u>**	**<u>Push To Lock Switch Module</u>** ***<u>Specifications</u>*** Button Style: Round Insulation Resistance: >=100MΩ Life Expectancy: 50,000,000 cycles ***<u>Connector Architecture</u>*** <u>Connector (Input)</u>: This connector will be mounted horizontally onto the board and will slide into any of the Modules <u>Connector2 (Output)</u>: This connector will be mounted horizontally onto the board and will slide into any of the Input pins of the expansion board. ** The switch when ON should make a contact between VCC and Signal.	**<u>Push To Lock Switch Module</u>** ***<u>Specifications</u>*** Button Style: Sliding Switch Insulation Resistance: >=100MΩ Life Expectancy: 50,000,000 cycles ***<u>Connector Architecture</u>*** <u>Connector1 (Input)</u>: This connector will be mounted horizontally onto the board and will slide into any of the Modules <u>Connector2 (Output)</u>: This connector will be mounted horizontally onto the board and will slide into any of the Input pins of the expansion board. ** The switch when ON should make a contact between VCC and Signal. ** The Connector1 architecture will be female type and the Connector2 architecture will be a male type.

64	Chapter 15: Technical Bid Format	2. **Input Components** **11. <u>Power Module</u>**	***<u>Specifications</u>*** Input type1: USB Charging Input Voltage1: +5VDC @ 500mA Input type 2: Barrel pin Connector Input Voltage2: +9VDC @ 1A Output Voltage: +5VDC and +9VDC Battery: Rechargeable Type: Li-Ion or Li-Po Battery Voltage: 6V to 12V Battery Capacity: 4000mAh or more ***<u>Connector Architecture</u>*** This connector will be mounted horizontally onto the board and will slide into any of the Input pins of the expansion board. The Connector should be of 4 pins and should be of plug type with an architecture of 02x02 male pin headers or better. The 4 pins should be with arrangements such as +5VDC, Ground, Ground, +9VDC. When plugged the Contact of the Power Module to the expansion board will be as follows. +5VDC of the Power module —> +5VDC of the Input connector	***<u>Specifications</u>*** Input type1: USB Charging Input Voltage1: +5VDC @ 500mA Input type 2: Barrel pin Connector Input Voltage2: +9VDC @ 1A Output Voltage: +5VDC and +9VDC Battery: Rechargeable Type: Li-Ion Battery Voltage: 6V to 12V Battery Capacity: 4000mAh or more ***<u>Connector Architecture</u>*** This connector will be mounted horizontally onto the board and will slide into any of the Input pins of the expansion board. The Connector should be of 4 pins and should be of plug type with an architecture of 02x02 male pin headers or better. The 4 pins should be with arrangements such as +5VDC, Ground, No Connection (open), +9VDC. When plugged the Contact of the Power Module to the expansion board will be as follows. +5VDC of the Power module —> +5VDC of the Input connector Ground of the Power module —> Ground of the Input connector

			Ground of the Power module —> Ground of the Input connector No Connection (open) —> Signal of the Input connector +9VDC of the Power module —> +9VDC of the Input connector ** when plugged should charge the battery and also provide necessary output on the output pins. ** Should have an efficient battery management system with all the necessary protection circuit. ** Output current should be capable of driving both the motors with full Load capacity. ** Including the batteries used in the power modules one more extra set of batteries to be included	No Connection (open) —> Signal of the Input connector +9VDC of the Power module —> +9VDC of the Input connector ** when plugged should charge the battery and also provide necessary output on the output pins. ** Should have an efficient battery management system with all the necessary protection circuit. ** Output current should be capable of driving all the motors (4xServo and 4xDC motors) with full Load capacity. ** Including the batteries used in the power modules two more extra set of batteries to be included ** The batteries included will be AA size and shouldn't be wrapped for series connection. ** Series connection of the batteries will be made when they will be put into the module
67	Chapter 15: Technical Bid Format	2. **Input Components** **18. <u>Radar (Motion Sensor) Module</u>**	**<u>Radar (Motion Sensor) Module</u>** ***<u>Specifications</u>*** Operating Voltage : 4-28V (typically 5V) Operating Current : 2.8mA (typical); 3mA (Max) Detecting Range : 5-9m ***<u>Connector Architecture</u>*** This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as VCC, Signal, Ground.	**<u>Radar (Motion Sensor) Module</u>** ***<u>Specifications</u>*** Operating Voltage : 4-28V (typically 5V) Operating Current : 2.8mA (typical); 3mA (max) Detecting Range : 5-9m ***<u>Connector Architecture</u>*** This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as VCC, Signal, Ground. ** The Connector 2 Architecture of all the input components will be male type.

67	Chapter 15: Technical Bid Format	**3. Output Components**	Sr. No. 3	Sr. No.4 (Correction in Sr. No.)
69	Chapter 15: Technical Bid Format	**3. Output Components** **7. Servo Motor Module**	**Servo Motor Module** ***Specifications*** Input Voltage: DC 4.8V to 6.5V Torque: 2.5kg/cm ***Connector Architecture*** This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as PWM, VCC, Ground. ** The Servo motor should be detachable from the module whenever required.	**Servo Motor Module** ***Specifications*** Input Voltage: DC 4.8V to 6.5V Torque: 20kg/cm ***Connector Architecture*** This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as PWM, VCC, Ground. ** The servo motor module will include a servo Motor ** The Servo motor should be detachable from the module whenever required.
70	Chapter 15: Technical Bid Format	**3. Output Components** **8. DC Motor Module**	***Connector Architecture*** This connector will be mounted vertically onto the board. The Connector should be of 2 pins and should only connect in one direction. The 2 pins should be with arrangements such as OUT_A, OUT_B. ** The DC motor should be detachable from the module whenever required.	***Connector Architecture*** This connector will be mounted vertically onto the board. The Connector should be of 2 pins and should only connect in one direction. The 2 pins should be with arrangements such as OUT_A, OUT_B. ** The DC motor module will include a DC Motor ** The DC motor should be detachable from the module whenever required.
70	Chapter 15: Technical Bid Format	**4. Interfacing Modules**	Sr. No. 4	Sr. No.5 (Correction in Sr. No.)

71	Chapter 15: Technical Bid Format	**4. Interfacing Modules 2 <u>AND,NOT, OR Modules</u>**	***<u>Connector Architecture</u>*** <u>Connector1:</u> This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as VCC, Signal, Ground. <u>Connector2</u>: a.)<u>Input Connector</u> This connector will be mounted horizontally onto the board on the left side of the module and will slide into any of the output pins of the expansion board or any other module. b.)<u>Output Connector</u> This connector will be mounted horizontally onto the board on the right side of the module and will slide into any of the input pins of the other module. **For AND gate & OR gate modules there should be two input connectors and one output connector per module	***<u>Connector Architecture</u>*** <u>Connector1(Input Connector):</u> a.)<u>Input Connector 1</u> This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as VCC, Signal, Ground. b.)<u>Input Connector 2</u> This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as VCC, Signal, Ground. <u>Connector2</u>: a.)<u>Input Connector 1</u> This connector will be mounted horizontally onto the board on the left side of the module and will slide into any of the output pins of the expansion board or any other module. b.)<u>Input Connector 2</u>

				This connector will be mounted horizontally onto the board on the left side of the module and will slide into any of the output pins of the expansion board or any other module. c.) Output Connector This connector will be mounted horizontally onto the board on the right side of the module and will slide into any of the input pins of the other module. **For AND gate & OR gate modules there should be two input connectors and one output connector per module

71	Chapter 15: Technical Bid Format	**4. Interfacing Modules** 3 **Sensor Base/Threshold Module**	**Sensor Base/Threshold Module** ***Specifications*** Supply voltage: 5 V Input Signal : Analog from the sensor Potentiometer for Sensor Threshold adjustment ***Connector Architecture*** Connector1: This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as VCC, Signal, Ground. Connector2: a.)Input Connector This connector will be mounted horizontally onto the board on the left side of the module and will slide into any of the output pins of the expansion board or any other module. b.)Output Connector This connector will be mounted horizontally onto the board on the right side of the module and will slide into any of the input pins of the other module.	**Sensor Base/Threshold Module** ***Specifications*** Supply voltage: 5 V Input Signal : Analog from the sensor Potentiometer for Sensor Threshold adjustment The Potentiometer used should be of 5 K ohms ***Connector Architecture*** Connector1: This connector will be mounted vertically onto the board. The Connector should be of 3 pins and should only connect in one direction. The 3 pins should be with arrangements such as VCC, Signal, Ground. Connector2: a.)Input Connector This connector will be mounted horizontally onto the board on the left side of the module and will slide into any of the output pins of the expansion board or any other module. b.)Output Connector This connector will be mounted horizontally onto the board on the right side of the module and will slide into any of the input pins of the other module. ** Should contain a necessary potentiometer to adjust the threshold ** Potentiometer value should be 5K OHM

				** Should contain the necessary electronic ICs to adjust the threshold
72	Chapter 15: Technical Bid Format	**4. Accessories**	Sr. No. 5	Sr. No.6 (Correction in Sr. No.)

72	Chapter 15: Technical Bid Format	**4. Accessories**	Sr. no.	Item name	quantity	Sr. no.	Item name	quantity
			1	Chassis	02	1	Chassis	02
			2	3220 points Solderless Breadboard that could easily fit the microcontroller provided and should have sufficient space on the breadboard for jumper wires to connect	02	2	3220 points Solderless Breadboard that could easily fit the microcontroller provided and should have sufficient space on the breadboard for jumper wires to connect	02
			3	Wheels with rubber for good traction (As per reference diagram 2)	06	3	Wheels with rubber for good traction (As per reference diagram 2)	06
			4	Pulleys (The size should be in proportion with the chassis provided in reference diagram 2)	02	4	Pulleys (The size should be in proportion with the chassis provided in reference diagram 2)	02
			5	Propellor (Max diameter including blades should be 5 cm and should be attachable-plug and play to fan module provided)	02	5	Propellor (Max diameter including blades should be 5 cm and should be attachable-plug and play to fan module provided)	02
			6	Jumper connectors (Male to Male, Female to Female, Male to Female)	50 each	6	Jumper connectors (Male to Male, Female to Female, Male to Female)	50 each

			7	Small size box with and without lid. (5cmx5cmx5cm)	03	7	Small size box with and without lid. (5cmx5cmx5cm)	03
			8	Box/Ball Holder for the Chassis (Max diameter of ball should be 4 cm)	02	8	Box/Ball Holder for the Chassis (Max diameter of ball should be 4 cm) with different friction levels at the base	02
			9	USB Cable compatible for Programming the microcontroller board and charging the battery	02	9	USB Cable compatible for Programming the microcontroller board and charging the battery (1.5 metres)	02
			10	Single strand wire suitable for breadboard connections provided (5 metres	01	10	Single strand wire suitable for breadboard connections provided (5 metres)	01
			11	Appropriate plastic material parts for construction of robotic arm - Base - Shoulder - Elbow - gripper ** compatible with the specifications of the servo motors provided above ** should be provided with proper nuts, bolts	01 set	11	Appropriate plastic material parts for construction of robotic arm - Base - Shoulder - Elbow - gripper ** compatible with the specifications of the servo motors provided above	01 set

		and corresponding tools ** Size should be in accordance to the size of the chassis as illustrated below such that it can be mounted on the chassis ** Proper manual should be provided for the construction of the robotic arm.	
12		Insulation tapes, colour- red,black- 16mmX7mX0.125mm	02 each
13		Proper interconnecting cables should be provided that will fit into the connectors provided on the boards and modules ** referring to the connectors that will only go in one direction on	20

	** should be provided with proper nuts, bolts and corresponding tools ** Size should be in accordance to the size of the chassis as illustrated below such that it can be mounted on the chassis ** Proper manual should be provided for the construction of the robotic arm.	
12	Insulation tapes, colour- red,black- 16mmX7mX0.125mm	02 each
13	Proper interconnecting cables should be provided that will fit into the connectors provided on the boards and modules ** referring to the connectors that will only go in one direction on	20

				14 Aluminum Screw Tray with Magnetic Plate for nuts and bolts to stick while working on it — 01 15 Castor wheel such that it is of dimension that makes the chassis inclination zero degree with respect to plane when wheels are attached to the robot — 02 16 4 x AA size battery holder with Sliding In connector compatible with the expansion board — 02
73	Chapter 15: Technical Bid Format	**6. Tools**	Sr. No. 6	Sr. No.7 (Correction in Sr. No.)

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<td>73</td>
<td>Chapter 15: Technical Bid Format</td>
<td>6. Tools</td>
<td>
<table>
<tr><th>Sr. no.</th><th>Item name</th><th>quantity</th></tr>
<tr><td>1</td><td>Multi-meter

<u>Minimum Specifications</u>

1.) Clear LCD Display Equipped with Comfortable Protective Cover

2.) Test Probe Holder 2 Metres Drop Test

3.) Two Pair of probes one red and other black

3.) Precision Protection

4.) Auto Power Off & Auto Backlight Off

5.) 80DB Buzzer Sound

6.) Knobs Shift Smoothly</td><td>01</td></tr>
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<td>
<table>
<tr><th>Sr. no.</th><th>Item name</th><th>quantity</th></tr>
<tr><td>1</td><td>Multi-meter with battery and fuse included

<u>Minimum Specifications</u>

1.) Clear LCD Display Equipped with Comfortable Protective Cover

2.) Test Probe Holder 2 Metres Drop Test

3.) Two Pair of probes one red and other black

3.) Precision Protection

4.) Auto Power Off & Auto Backlight Off

5.) 80DB Buzzer Sound

6.) Knobs Shift Smoothly</td><td>01</td></tr>
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				Minimum Functions 1.) DC Current, AC/DC Voltage 2.) Continuity Test, Diode PN junction Test 3.) Display Count:1999 Min 4.) DC Max Voltage: 250V Voltage Measure 5.) AC Max Voltage: 250V Current Measure 6.) Max Current: 10A Current Measure 7.) Resistance Measure Max: 0.2Gohm			**Minimum Functions** 1.) DC Current, AC/DC Voltage 2.) Continuity Test, Diode PN junction Test 3.) Display Count:1999 Min 4.) DC Max Voltage: 250V Voltage Measure 5.) AC Max Voltage: 250V Current Measure 6.) Max Current: 10A Current Measure 7.) Resistance Measure Max: 0.2Gohm ** with battery and fuse included	
				2	Two in one Plus '+', minus '-', screwdriver minimum 100 mm length Standard Piece	02		2	Two in one Plus '+' , minus '-' , screwdriver	02

		stainless steel with a good grip.			minimum 100 mm length Standard Piece stainless steel with a good grip.	
3	Crimping tool suitable for crimping dupont pins and more	01		3	Wire stripper cum cutter with suitable for the AWG standard wire provided with the kit	01
4	Dupont 1x1 Pin Header with Female Crimp Pins for crimping	50				
5	Dupont 1x1 Pin Header with male Crimp Pins for crimping	50				
6	Wire stripper cum cutter with suitable for the AWG standard wire provided with the kit	01				

73	Chapter 15: Technical Bid Format	**Note under Technical Bid Format**	**Note:** • All the sensor and push button modules (Input and output modules) should have max dimensions of 5cm*4cm. • All the output modules should support plug and play setup (directly connectable to input and output ports of microcontroller expansion board and sensor/servo/motor pins whichever is applicable) • The Microcontroller specifications and functionalities along with several input and output components specified above are intended to execute basic tasks as well as complex tasks such as drone applications with a small form factor of the microcontroller. • The Microcontroller expansion / layout board is designed symmetrically to allow learners to easily plugin the provided modules and understand pin connections of each module. • The Microcontroller provided by the vendor should be programmable via Arduino IDE with required packages and libraries. • The microcontroller board architecture should necessarily be Open Source and proper Schematic should be available. • The solder used on the boards should be lead free.	**Note:** • All the sensor and push button modules (Input and output modules) should have maximum dimensions of 5cm*4cm. More than this size can only be accepted in certain cases where smaller size sensors are not available within those dimensions • All the output modules should support plug and play setup (directly connectable to input and output ports of microcontroller expansion board and sensor/servo/motor pins whichever is applicable) • All the sliding in input connectors of the modules should be female and the sliding output connectors should be male. • The Microcontroller specifications and functionalities along with several input and output components specified above are intended to execute basic tasks as well as complex tasks such as drone applications with a small form factor of the microcontroller. • The Microcontroller expansion / layout board is designed symmetrically to allow learners to easily plugin the provided modules and understand pin connections of each module. • The Microcontroller provided by the vendor should be programmable via Arduino IDE with required packages and libraries. • The microcontroller board architecture should necessarily be Open Source and proper Schematic should be available. • The solder used on the boards should be lead

				free.

75	Chapter 15: Technical Bid Format	**Table B (List of Non-Consumables items)**	**Sr. No**	**List of Non-Consumables items**	**Sr. No**	**List of Non-Consumables items**
			1	ESP 32 (32 bit)	**1**	ESP 32 (32 bit)
			2	Microcontroller Expansion Board	**2**	Microcontroller Expansion Board
			3	IR Sensor Module	**3**	IR Sensor Module
			4	Ultrasonic Sensor Module	**4**	Ultrasonic Sensor Module
			5	Sound Sensor Module	**5**	Sound Sensor Module
			6	Light(Photoresistor) Sensor Module	**6**	Light(Photoresistor) Sensor Module
			7	Magnetic Sensor Module	**7**	Magnetic Sensor Module
			8	Color Sensor Module	**8**	Color Sensor Module
			9	Potentiometer(10KOhm) Module	**9**	Potentiometer(10KOhm) Module
			10	Push Button Switch Module	**10**	Push Button Switch Module
			11	Push To Lock Switch Module	**11**	Push To Lock Switch Module
			12	Limit Switch Module	**12**	Limit Switch Module
			13	Power Module	**13**	Power Module
			14	Power Adapter	**14**	Power Adapter
			15	Temperature Sensor Module	**15**	Temperature Sensor Module
			16	Moisture Sensor Module	**16**	Moisture Sensor Module
			17	Solar Panel Module	**17**	Solar Panel Module
			18	Vibration Sensor Module	**18**	Vibration Sensor Module
			19	Water Level Sensor Module	**19**	Water Level Sensor Module
			20	Radar(Motion Sensor) Module	**20**	Radar(Motion Sensor) Module
			21	LED Module	**21**	LED Module
			22	LED Matrix Module with Driver Chip	**22**	LED Matrix Module with Driver Chip
			23	Seven Segment Display Module	**23**	Seven Segment Display Module
			24	OLED Display Module	**24**	OLED Display Module
			25	Buzzer Module	**25**	Buzzer Module
			26	Fan Module with Driver	**26**	Fan Module with Driver
			27	Servo Motor Module	**27**	Servo Motor Module
			28	DC Motor Module	**28**	DC Motor Module

			29	Stepper Motor Module	**29**	Stepper Motor Module
			30	Nrf WiFi Module	**30**	Nrf WiFi Module
			31	AND, NOT, OR Modules	**31**	AND, NOT, OR Modules
			32	Sensor Base/Threshold Module	**32**	Sensor Base/Threshold Module
			33	Chassis	**33**	Chassis
			34	MultiMeter	**34**	MultiMeter
			35	Two in one Plus, minus Screwdriver	**35**	Two in one Plus, minus Screwdriver
			36	Crimping tool for crimping dupont pins	**36**	Wire Striper cum cutter
					37	Magnetic Aluminium Screw tray
			37	Wire Sripter cum cutter	**38**	Castor wheel
					39	AA size battery holder

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<td>Chapter 15: Technical Bid Format</td>
<td>Table B(List of Consumables items)</td>
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<tr><td>13</td><td>Interconnecting Cables</td></tr>
<tr><td>14</td><td>Dupont 1x1 Pin Header with Female Crimp Pins</td></tr>
<tr><td>15</td><td>Dupont 1x1 Pin Header with Male Crimp Pins</td></tr>
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76	**Chapter 15: Financial Bid Format**	Table-F1: - List of items per Robotics Hardware Kit (Indicative Format)	**Sr. No.**	**Item Description**	**Consumables / non-consumables**	**Qty per Robotics Hardware Kit**	**Sr. No.**	**Item Description**	**Consumables / non-consumables**	**Qty per Robotics Hardware Kit**
			I	**Microcontroller & Microcontroller Board**	Non-Consumables	02	**I**	**Microcontroller & Microcontroller Board**	Non-Consumables	02
			II	**Microcontroller Expansion Board**	Non-Consumables	02	**II**	**Microcontroller Expansion Board**	Non-Consumables	02
			III	**Input Components**			**III**	**Input Components**		
			1	IR Sensor Module	Non-Consumables	04	1	IR Sensor Module	Non-Consumables	04
			2	Ultrasonic Sensor Module	Non-Consumables	04	2	Ultrasonic Sensor Module	Non-Consumables	04
			3	Sound Sensor Module	Non-Consumables	02	3	Sound Sensor Module	Non-Consumables	02
			4	Light (Photoresistor Sensor)	Non-Consumables	02	4	Light (Photoresistor Sensor)	Non-Consumables	02
			5	Magnetic Sensor Module	Non-Consumables	02	5	Magnetic Sensor Module	Non-Consumables	02

			6	Color Sensor Module	Non-Consumables	02	6	Color Sensor Module	Non-Consumables	02
			7	Potentiometer (10K Ohm Linear Potentiometer) Module	Non-Consumables	04	7	Potentiometer (10K Ohm Linear Potentiometer) Module	Non-Consumables	04
			8	Push Button Switch Module	Non-Consumables	04	8	Push Button Switch Module	Non-Consumables	04
			9	Push To Lock Switch Module	Non-Consumables	04	9	Push To Lock Switch Module	Non-Consumables	04
			10	Limit Switch Module	Non-Consumables	04	10	Limit Switch Module	Non-Consumables	04
			11	Power Module (Inbuild-Battery)	Consumables	02	11	Power Module (Inbuild-Battery)	Consumables	02
			12	Power Adapter	Non-Consumables	02	12	Power Adapter	Non-Consumables	02
			13	Temperature Sensor Module	Non-Consumables	01	13	Temperature Sensor Module	Non-Consumables	01
			14	Moisture Sensor Module	Non-Consumables	01	14	Moisture Sensor Module	Non-Consumables	01
			15	Solar Panel Module with Solar Panel	Non-Consumables	02	15	Solar Panel Module with Solar Panel	Non-Consumables	02

			16	Vibration Sensor Module	Non-Consumables	01	16	Vibration Sensor Module	Non-Consumables	01
			17	Water Level Sensor Module	Non-Consumables	01	17	Water Level Sensor Module	Non-Consumables	01
			18	Radar (Motion Sensor) Module	Non-Consumables	01	18	Radar (Motion Sensor) Module	Non-Consumables	01
			IV	**Output Components**	Non-Consumables		**IV**	**Output Components**	Non-Consumables	
			1	LED	Non-Consumables	02	1	LED	Non-Consumables	02
			2	LED Matrix Module with Driver chip	Non-Consumables	01	2	LED Matrix Module with Driver chip	Non-Consumables	01
			3	Seven Segment Display	Non-Consumables	01	3	Seven Segment Display	Non-Consumables	01
			4	OLED Display	Non-Consumables	01	4	OLED Display	Non-Consumables	01
			5	Buzzer	Non-Consumables	02	5	Buzzer	Non-Consumables	02
			6	Fan Module with Driver	Non-Consumables	01	6	Fan Module with Driver	Non-Consumables	01

			7	Servo Motor	Non-Consumables	04	7	Servo Motor	Non-Consumables	04
			8	DC Motor	Non-Consumables	04	8	DC Motor	Non-Consumables	04
			9	Stepper Motor	Non-Consumables	02	9	Stepper Motor	Non-Consumables	02
			V	**Interfacing Modules**	Non-Consumables		**V**	**Interfacing Modules**	Non-Consumables	
			1	Nrf Wi-Fi	Non-Consumables	02	1	Nrf Wi-Fi	Non-Consumables	02
			2	AND.NOT.OR	Non-Consumables	01	2	AND.NOT.OR	Non-Consumables	01
			3	Sensor Base/Threshold	Non-Consumables	01	3	Sensor Base/Threshold	Non-Consumables	01
			VI	**Accessories**			**VI**	**Accessories**		
			1	Chassis	Non-Consumables	02	1	Chassis	Non-Consumables	02
			2	3220 points Solderless Breadboard	Consumables	02	2	3220 points Solderless Breadboard	Consumables	02
			3	Wheels with rubber	Consumables	06	3	Wheels with rubber	Consumables	06
			4	Pulleys	Consumables	02	4	Pulleys	Consumables	02

5	Propellor	Consumables	02	5	Propellor	Consumables	02
6	Jumper Connectors	Consumables	50 each	6	Jumper Connectors	Consumables	50 each
7	Small size box with and without lid	Consumables	03	7	Small size box with and without lid	Consumables	03
8	Box/Ball Holder for the Chassis	Consumables	02	8	Box/Ball Holder for the Chassis with different levels of friction at the base	Consumables	02
9	USB Cable compatible for Programming the microcontroller board and charging the battery	Consumables	02	9	USB Cable compatible for Programming the microcontroller board and charging the battery	Consumables	02
10	Single strand wire suitable for breadboard connections provided	Consumables	01	10	Single strand wire suitable for breadboard connections provided	Consumables	01
11	Small boxes/body of the robotic arm	Consumables	01	11	Small boxes/body of the robotic arm	Consumables	01
12	Insulation tapes, color- red, black- 16mmX7mX0.125mm	Consumables	02	12	Insulation tapes, color- red, black-	Consumables	02
13	Interconnecting cables	Consumables	20				

			VII	**Tools**				16mmX7mX0.125mm		
			1	Multi-meter	Non-Consumables	01	13	Interconnecting cables	Consumables	20
			2	Two in one Plus '+', minus '-', screwdriver	Non-Consumables	02	14	Aluminum Screw Tray with Magnetic Plate for nuts and bolts to stick while working on it	Non-Consumables	01
			3	Crimping tool	Non-Consumables	01	15	Castor wheel such that it is of dimension that makes the chassis inclination zero degree with respect to plane when wheels are attached to the robot	Non-Consumables	02
			4	Dupont 1x1 Pin Header with Female Crimp Pins for crimping	Consumables	50	16	4 x AA size battery holder with connector compatible with the expansion board	Non-Consumables	02
			5	Dupont 1x1 Pin Header with male Crimp Pins for crimping	Consumables	50	**VII**	**Tools**		
			6	Wire stripper cum cutter	Non-Consumables	01				
			VIII	**Kit Covering Box (durable) of plastic material for placing packaging all above items with form based**	**Non-Consumables**	**Per kit**				

				partitioned within box		

1	Multi-meter	Non-Consumables	01
2	Two in one Plus '+', minus '-', screwdriver	Non-Consumables	02
3	Wire stripper cum cutter	Non-Consumables	01
VIII	Kit Covering Box (durable) of plastic material for placing packaging all above items with form based partitioned within box	Non-Consumables	Per kit

79	**Chapter 15: Financial Bid Format**	**Table-F2: Financials Project (Tentative Format)**	**Table F2:-Financials Project (Tentative Format)**	**Refer Annexure-Y for revised Table F2:-Financials Project (Tentative Format) and Table F3: Financial Project of Consumables items (Tentative Format)**

79	**Chapter 15: Financial Bid Format**	**Table-F3: Financial Project of Consumables items of table-F1(Tentative Format)**	**Table F3: Financial Project of Consumables items (Tentative Format)**	

Note:

- The document uploaded/published on 20/12/2023 is final version of Tender Document & the watermark appearing as "Draft" be ignored.

1. All other terms and conditions remained unchanged.

2. No physical presence of any bidders will be allowed during opening of Eligibility bids. But interested bidders can request online VC link by sending mail to naik.sagar-itg@goa.gov.in, vishwas.kavthankar@nic.in and gaurav.naik@gov.in.

For and on Behalf of Info Tech Corporation of Goa Ltd.

Sd/-

Managing Director

Annexure-Y

Table F2: - Financials Project (Tentative Format)

Sr. No.	Item Description	Qty of Kits	Unit Base Price per Kit (INR Exclusive of taxes)	Total price of Kit (Exclusive of taxes)	@ GST (in INR)	Total (in INR + inclusive of taxes)
A	**B**	**C**	**D**	**E=C*D**	**F**	**G=E+F**
A.1	**01(Single) Robotics Hardware Kit with 03(three) year Warranty:** ❖ Microcontroller & Microcontroller Board ❖ Microcontroller Expansion Board ❖ Input Components ❖ Output Components ❖ Interfacing Modules ❖ Accessories ❖ Tools Details of items as per revised **table-F1**	***3139***				

Table F3: Financial Project of Consumables items (Tentative Format)

Sr. No.	Item Description	Qty.	Unit Base Price (INR Exclusive of taxes) per item	@GST (in INR)	Total (in INR + inclusive of taxes)
A	B	C	D	E	F=C*D+E
1	Power Module (Battery in Power Module is consumable)	1			
2	3220 points Solderless Breadboard	1			
3	Wheels	1			
4	Pulleys	1			
5	Propellor	1			
6	Jumper connectors	1			
7	Small size box with & without lid	1			
8	Box/Ball Holder for the Chassis with different levels of friction at the base	1			

9	USB Cable Compatible for Programming the microcontroller (1.5 metres)	1			
10	Single Strand wire for breadboard connections	1			
11	Small size plastic box 5cm X 5cm X 5cm made of plastic cut outs, for holding servo motors	1			
12	Insulation tapes	1			
13	Interconnecting Cables	1			
14	Kit Covering Box	1			