



Government of Goa

DIRECTORATE OF SKILL DEVELOPMENT & ENTREPRENEURSHIP

Shramashakti Bhavan, 3rd Floor, Patto, Panaji-Goa, 403001

Tel.: (0832)2437059/60; Fax: (0832)2437060.

Website: www.dsde.goa.gov.in

Email: dir-sdct.goa@nic.in

Ref: . ITI/CAC/TRG/F-45/DP

Date 25.10.2024

BRIEF TENDER NOTICE
(e-TENDERING MODE ONLY)

The Director, Directorate of Skill Development and Entrepreneurship, Panaji-Goa, hereby invites bids/tenders on behalf of the Governor of Goa from eligible bidders through e-Tendering mode for procurement of Tools, Machineries and Equipments for trade Drone Pilot (Junior) at ITI Cacora:-

Sr. No.	e-Tender No.	Name of Work	Estimated Cost (Rs.)	EMD (Rs.)	Tender Form Fee (Non Refundable) (Rs.)	eTender Processing Fee (Non Refundable) (Rs.)
1	DSDE/Project/e-Tender/2024-25/005	procurement of Tools, Machineries and Equipments for trade Drone Pilot (Junior) at ITI Cacora	1,24,99,964.00	3,12,499.00	6,000/-	6,000/-

The Schedule of the e-Tender process and payment details are as below:-

Activity	Time lines
The last date of online submission of Tender	15/11/2024 upto 15:00 hrs.
The date and time of Opening of online Tender	18/11/2024 at 12:00 hrs as mentioned in e-Tender documents
Payment Details	Mode of Payment : ePayment Only
Tender Form Fee (Non Refundable)	<i>Mode of Payment towards Tender Document Fee(TDF), e-Tender Processing Fee(TPF) & Earnest Money Deposit(EMD) to be paid online through e-Payment mode via : (i) National Electronic Fund Transfer (NEFT) / Real-Time Gross Settlement (RTGS).Tenderer requires download pre-printed Challan towards credit of ITG available on e-tender website and make its payment through any of their Bank. (ii) Net Banking: Payment can be made through the Internet Banking of Any Bank.</i>
eTender Processing Fee (Non Refundable)	
Earnest Money Deposit (EMD) <i>As stated above.</i>	
	<i>Any Payments made through NEFT/RTGS will take 24 hours for its reconciliation. Hence the payments through NEFT/RTGS should be made at least TWO BANK WORKING DAYS in advance before any due date and upload the scanned copy of challans in the e-Tender website as a token of payment.</i>

For more details, please visit our website www.dsde.goa.gov.in and for participation in e-Tender please visit our e-Tender website <https://www.eprocure.goa.gov.in>

-Sd-

Director of Skill Development and Entrepreneurship
Panaji-Goa



Government of Goa
DIRECTORATE OF SKILL DEVELOPMENT & ENTREPRENEURSHIP

Shramashakti Bhavan, 3rd Floor, Patto-Plaza, Panaji, Goa 403 001

Ph:(0832)2437059/60 | Fax:2437060

Website: www.dsde.goa.gov.in

Email: procurement-sdct.goa@nic.in

Ref No: ITI/CAC/TRG/F-45/DP

Date: 25/10/2024

Tender Form & Specification of the Tender Item

TENDER NO. :- DSDE/Projects/e-Tender/2024-25/005

NAME OF THE WORK – procurement of Tools, Machineries and Equipments for trade Drone Pilot (Junior) at ITI Cacora.

ESTIMATED COST- Rs. 1,24,99,964/-

EMD - 3,12,499/-

TENDER SHALL REMAIN VALID TILL - 180 days

DELIVERY PERIOD –90 days from the date of issue of Supply Order

IMPORTANT : 1) Prescribed Tender Form should be submitted **ONLINE** to the Directorate of Skill Development & Entrepreneurship, Shrama Shakti Bhavan, 3rd Floor, Patto Panaji – Goa digitally signed by the tenderer, otherwise offer will be rejected.

2) Detailed Technical specifications are given below:-

Sr. No.	Description/Specification of Items	Qty.	Unit
	Refer Annexure –I and II		

(Signature of Tenderer)

TENDER SCHEDULE & IMPORTANT DATES

Please Note: All bid related activities (Process) like Tender Document Download, Bid Preparation, bid submission and submission of other documents will be governed by the time schedule given under Key Dates below:

Activity	Time Schedule
Online submission of Tender Document	25/10/2024 to 15/11/2024 up to 15:00 hrs
Pre-bid meeting	04/11/2024 at 12:00 hrs
Online opening of Technical bid	18/11/2024 at 12:00 hrs
Online opening of Financial bid	Will be communicated later

INSTRUCTIONS TO BIDDERS

1. GENERAL INSTRUCTIONS:-

- 1.1 To view- Tender Notice, Detailed Time Schedule, Tender Document for this Tender and subsequently purchase the Tender Document and its supporting documents, kindly visit following e-Tendering website of Government of Goa: <https://eprocure.goa.gov.in>
- 1.2 If any assistance is required regarding e-Tendering (registration / upload / download) please contact e-procure help desk on following numbers: 9834889836, 7972854213, 7822039673, 7972871944, e-tender.goa@gov.in
- 1.3 Bidders to quote for items of leading brand with ISO certification, wherever applicable.

2 PURCHASE AND DOWNLOADING OF TENDER FORM:-

- 2.1 The tender document is uploaded / released on Government of Goa, e-tendering website <https://eprocure.goa.gov.in>. Tender document and supporting documents have to be purchased on-line and downloaded from following link of Directorate of Skill Development & Entrepreneurship on e-Tendering website of Government of Goa, <https://eprocure.goa.gov.in> by making online payments for Tender document and tender processing fee.

Mode of Payment towards Tender Document Fee(TDF), e-Tender Processing Fee(TPF) & Earnest Money Deposit(EMD) to be paid online through e-Payment mode via : (i) National Electronic Fund Transfer (NEFT) / Real-Time Gross Settlement (RTGS). Tenderer requires download pre-printed Challan towards credit of ITG available on e-tender website and make its payment through any of their Bank (ii). Net Banking: Payment can be made through the Internet Banking of Any Bank. Any Payments made through NEFT/RTGS will take 24 hours for its reconciliation. Hence the payments through NEFT/RTGS should be made at least TWO BANK WORKING DAYS in advance before any due date and upload the scanned copy of challans in the e-Tender website as a token of payment.

- 2.2 Tender forms will not be sold / issued manually from Directorate of Skill Development & Entrepreneurship, Shram Shakti Bhavan, 3rd Floor, Patto Panaji – Goa.
- 2.3 Only those Tender offers shall be accepted for evaluation for which non-refundable Tender document Fee (non-refundable), Tender processing fee (non-refundable) and EMD (refundable) as mentioned in the tender document is received online on or before scheduled date given in TIME SCHEDULE AND IMPORTANT DATES of the tender.

3. SUBMISSION OF BIDS

- 3.1 Both the Bids (Technical and Financial) shall have to be submitted online **only**. Bids not submitted online will not be entertained.
- 3.2 **Bidder shall strictly quote for all the items with specified brand/ make OR equivalent brand as evaluation shall be done for Total Value of the bid and not item wise for award of contract.**
1. **Manufacturer Authorization:** Wherever Authorised Distributors/service providers are submitting the bid, Authorisation Form /Certificate with OEM/Original Service Provider details such as name, designation, address, e-mail Id and Phone No. required to be furnished along with the bid.
- 3.3 Bidders shall quote for the entire scope of contract on an “overall responsibility” basis such that the total bid price covers Bidder’s all obligations mentioned in the bidding documents in respect of providing the services.
- 3.4 The bidder should quote all the items as part of the BoQ.
- 3.5 The bidder should supply all the items as part of the BoQ and should be as per the specification mentioned in the tender.
- 3.6 Offer should be exclusive of GST. GST, as applicable will be considered extra.

- 3.7 Technical Bid shall contain following documents (in the form of PDF files / Scanned images). These documents need to be digitally signed by individual tenderer's digital signature and uploaded during online bid preparation stage: -
- 1) Submit all GST Returns i.e. 3B/ GST R1 along with Tax Challan for the Last three months.
 - 2) No Deviation Certificate in detail in the prescribed proforma should be submitted for each item separately, wherever there is no deviation.
 - 3) The Bidder should furnish **document** to support that he has the financial capacity to perform the contract. For this the bidder should have the minimum Average Turnover of **450 Lakhs** for the last three Financial years(i.e. FY 2021-22, FY 2022-23, FY 2023-24).
 - 4) Annual Turnover (Total of the last 3 years) shall be equal or more than 450 Lakhs.
 - 5) Manufacturer's Catalogue / Leaflet / Circuit-diagram / Layout-diagram for each equipment should be attached with the offer, wherever applicable.
 - 6) Valid registration Certificate of the company / firm.
 - 7) PAN CARD copy.
 - 8) The DGCA Approved Drones shall attach the following copy of the all Certificate along with the bid.
 - DGCA Approved Type Certificate
 - Air Vehicle Fuselage – NABL
 - NAL Reports for Flight Test Observations, Aural Signature test & High Temperature (Storage and operational)
 - 9) Partnership deed in case of partnership firm
 - 10) In case the bidder is a Proprietorship Firm : - Certified copy of Shop establishment/ Professional Tax Certificate
 - 11) Undertaking for service after sales and warranty for minimum **Two years** should be given along with tender.
 - 12) Undertaking of delivery period within 90days is to be submitted.
 - 13) Undertaking for providing validity of quoted rates for one year from the date of opening of bid.
 - 14) Undertaking for delivery at various institutes/Centres, including demonstration, installation, satisfactory trial at free of cost and service during warranty period.
 - 15) Undertaking duly signed by the tenderer regarding acceptance of penalty clause, risk purchase clause and fall clause.

- 16) Undertaking to provide AMC on demand.
- 17) Undertaking that Bidder has not been blacklisted for any default in supply by any Govt. agency. The bidder must have to submit a Declaration on INR 100 Judicial Stamp duly notarized for not having been debarred/blacklisted either by the any Bid Inviting Authority or by any organization functional under Central/ State government. The bid will be rejected without this document. This statement ought to be current as of the date the bid was published
- 18) An affidavit of non – bankruptcy insolvency of bidder, duly attested by the Notary public must be enclosed. Solvency Certificate from Bank not older than 3 months from the date of issue of the Tender.
- 19) Undertaking that the bidder is fully conversant with terms and conditions of tender for the supply of machinery / equipments / tools in ITI college Goa.
- 20) Affidavit: The bidder shall furnish an affidavit on stamp paper duly notarized having value of INR 100 to the effect that the correct information has been furnished in the tender and the bidder shall be solely responsible for furnishing wrong/false information in the bid. The bid will be rejected without this document.
- 21) The net worthy of the bidder in last financial year i.e. 2022-23, should be positive (document to support this).
- 22) The Bidder /OEM company shall be an ISO 9001:2015, 14001:2015, 45001:2018 certified company. A copy of valid ISO certifications should be enclosed with the bid.
- 23) Bidder may be called for technical presentation/demonstration for the offered products and services as per the date and time to be informed by purchaser. This presentation/demonstration will be part of technical evaluation. If bidder fail to give satisfactory presentation then respective bidder's bid will be treated as non responsive.
- 24) The bidder may have to submit samples of quoted items on demand and give demonstration in the prescribed time limit before opening of financial bid, this will be part of technical evaluation. In case the samples, are not produced in the prescribed time limit, then bid will be rejected and it shall be open to the Department to forfeit Earnest Money Deposited by the bidder. If the samples sent by the party are approved, the same and may be adjusted in regular supply and in the case of rejection, they will be returned back to the party at their cost.
- 25) DGCA Certified Pilot Training: The Training for a minimum of 1 No's of staff for Remote Pilot Licence Certificate (RPTO) training along with the certificate for 1 person should be provided. Bidder should submit a letter from a certified RPTO Centre

26) Onsite Training on the Operation of the DGCA Type Certified Drone to be given to the Staff

27) Experiencecriteria-

Bidder/ OEM should have regularly supplied same or similar Category Products to any Central / State Govt Organization during the last Financial year before the bid opening date. Copies of relevant contracts to be submitted along with bid in support of having supplied some quantity during each of the financial year.

For fulfilling the experience criteria any one of the following documents may be considered as valid proof

1. Purchase Order copy along with Invoice(s) with self-certification by the bidder that supplies against the invoices have been executed.
2. Execution / Completion certificate by client with order value

28) Past Performance:

The Bidder or its OEM themselves or through re-seller should have executed a single order up to the value of Minimum 60 Lakhs for same or similar Category Products and a Single Order of Minimum for 1 Cr for Drones from the OEM, before the bid opening Date to any Indian Defence/ Central / State Govt Organization / PSU . For fulfilling the Past Experience criteria any one of the following documents may be considered as valid proof like Execution/ Completion certificate by buyer.

1. Purchase Order copy along with Invoice(s) with self-certification by the bidder that supplies against the invoices have been executed.
2. Purchase Order copy along with Execution / Completion certificate by client with order value.

Buyer can ask to verify all the orders and received payment details which are submitted in the bid.

29) Bidder should submit the manufacturing documents of OEM- Factory Licence or equivalent, MSME Certificate, in absence of manufacturing documents the Bid will be rejected.

- 3.8 In case, during the scrutiny of the bids of any bidder, if it is revealed that the documents submitted by the bidder is/ are unauthentic, then such bid/s shall be summarily rejected and further course of action on the said bidder/s shall be initiated as per rules, including forfeiture of the EMD.
- 3.9 The bidders shall submit physical copies of above documents in sealed envelopes for verification, if required, during the bid evaluation process.
- 3.10 Bidder should have no legal / financial irregularity case pending against them for which charges stand framed and trial commenced in any court of law and affidavit to this effect shall have to be filled by the bidder.

Note: If, during online bid preparation, any need arises to upload additional documents, apart from the above mentioned documents, an option to upload additional documents has been provided in the e-Tendering software which will be available to bidders during online bid preparation stage.

4.0 COMMERCIAL BID :

1. All financial offers must be prepared and submitted online (An online form will be provided, during online bid preparation stage) and signed using individual's digital certificate.
2. The bidder should quote all the items of the Bid. **NQ or Zero** value entered will not be considered and bid will be rejected accordingly.
3. The bidder should not quote his offer anywhere directly or indirectly in Technical bidding failing which the Commercial bid shall not be opened and his tender shall stand rejected.

5.0 OPENING OF BID :-

5.1 TECHNICAL BID: Technical bid will be opened online through e-Tendering procedure, to verify its contents as per requirements, on the date specified in Tender document in presence of tenderer/s or their authorized Representative. Authorized Representative to produce letter of Authorization from the Company/Establishment during his presence.

If the various documents contained in this Technical Bid do not meet the requirements, a note will be recorded accordingly by the tender opening authority and the said tenderer's commercial bid will not be considered for further action but the same will be recorded. Decision of the tender opening authority shall be final in this regard.

5.2 COMMERCIAL BID:

The tenderers qualifying technically are only eligible for opening of commercial bid. The commercial bid will be opened in the presence of tenderer or their authorised representative at a date which will be notified later. **Authorized Representative to produce letter of Authorization from the Company/Establishment during his presence.** This bid shall be opened online through e-Tendering procedure only. The commercial bids shall not be opened till the completion of evaluation of technical bids by the Technical Bid Evaluation Committee. Commercial Bids of only technically qualified Bidders will be opened.

The Commercial bid must be filled online using individual's digital certificate. (An online form will be provided to bidders for Price Schedule during online bid preparation stage).

Offer should be exclusive of GST. GST, as applicable will be considered extra.

6.0 Evaluation of Bid:

Technical Evaluation Committee will evaluate Technical Bid first and only those bids which are Technically Qualified shall be considered for opening of Commercial Bid.

The bid will be evaluated for Total Value of the bid and the lowest bid (i.e. L-1) will be considered for placing supply order.

7.0 EARNEST MONEY DEPOSIT (EMD):

The tenderer shall have to furnish Earnest Money Deposit (E.M.D.) for an Amount of **Rs /-payable** through online payment Gateway on portal <https://eprocure.goa.gov.in>

Mode of Payment towards Tender Document Fee(TDF), e-Tender Processing Fee(TPF) & Earnest Money Deposit(EMD) to be paid online through e-Payment mode via : (i) National Electronic Fund Transfer (NEFT) / Real-Time Gross Settlement (RTGS). Tenderer requires download pre-printed Challan towards credit of ITG available on e-tender website and make its payment through any of their Bank (ii). Net Banking: Payment can be made through the Internet Banking of Any Bank. Any Payments made through NEFT/RTGS will take 24 hours for its reconciliation. Hence the payments through NEFT/RTGS should be made at least TWO BANK WORKING DAYS in advance before any due date and upload the scanned copy of challans in the e-Tender website as a token of payment.

The tenders without Earnest Money Deposit will summarily be rejected. The Earnest Money Deposit of unsuccessful tenderer shall be refunded. The E.M.D. of the successful tenderer will be refunded or adjusted against Security Deposit, after the tender is accepted and agreement is executed. The Earnest Money shall be forfeited to the Government Treasury in case of breach of any of the conditions governing the supply. If any tenderer withdraws the tender after submission, his / her EMD will be forfeited to Government Treasury.

8. JURISDICTION:

The legal jurisdiction is Panaji – Goa.

9. ACCEPTANCE / REJECTION OF BIDS:

The Directorate of Skill Development & Entrepreneurship reserves the right for any changes / cancellation / rejection of any/all offers, without assigning any reason whatsoever.

10. PRE-DISPATCH INSPECTION:

Pre-dispatch Inspection will be carried out from the representative of this Directorate, if required by the Department. However inspection charges will be borne by the tenderer.

11. SCHEDULE OF REQUIREMENTS :-

Bidder is required to undertake the scope of work for ITI as mentioned below. The scope of work of tender will include the supply of below listed machinery / equipments / tools in ITI.

12. DELIVERY OF GOODS :-

The successful tenderer shall arrange to supply the material at places mentioned in the supply order without any additional charges towards packaging, forwarding, freight, etc. The Tenderer should obtain acknowledgement and issue delivery challan for the material supplied.

13. TIME LIMIT FOR SUPPLY :-

The materials should be delivered within the stipulated period specified in the supply order or within short notice depending upon the situation. Any of the materials received in broken or damaged condition the same will have to be replaced by the successful tenderer without any additional cost & within the stipulated period. Any cost incurred on transportation of damaged goods will have to be borne by the supplier

14. INSTALLATION:

Installation and free working trial is to be given to all consignees at their sites, wherever applicable.

15. WARRANTY:

A Warranty to cover manufacturing and material defects should be for 02 years from the date of delivery and installation.

Note: Consumables – propellers, landing gears, batteries – are not be considered part of system warranty.

16. PAYMENT TERMS:-

100% of the payment shall be released immediately after acceptance, installation and commissioning of goods the equipments and Machinery.

17. PERFORMANCE GUARANTEE :-

Performance Guarantee / Security Deposit equivalent to 3% of the value of materials/equipment ordered to be submitted within 15 days of the date of supply order by way of Demand Draft/Bank Guarantee in favour of the Directorate of Skill Development & Entrepreneurship, payable at Panaji – Goa valid till a period of 60 days after the date of expiry of defect liability period or the guarantee/ warranty period, as the case may be.

Place : Panaji – Goa

-sd/-
Director,
Directorate of Skill Development & Entrepreneurship
Panaji-Goa

Sr No. 3 (3.7) (2)

No Deviation Certificate

Sr. No.	Specification of Equipment mentioned in Tender Enquiry	Specification of Equipment offered by the tenderer with make and model	Whether there are deviation from the tender specification Yes / No	If yes indicate clear which are the deviation

(Signature of Tenderer)

Sr No. 3(3.2)&(3.6)

PRICE STRUCTURE

Amount in Rs.

Sr No	Description of item offered	Make	Qty	Unit	Basic Rate	Total Amount

ANNEXURE - I

Procurement of Equipments			
Sr No	Description	Total Qty	Unit
1	General Tools & Consumables Set	01	Set
2	Drone Quad Copter(Un -Assembled) Kit includes (As per Qty of each items mentioned in the Detailed Tender Specification) a) Flight Controller Kit b) Drone Base/Frame c) BLDC Motors d) Propellers e) ESC (Electronic Speed Controller) f) FPV Video Transmitting Goggles g) Radio Transmitter and Receiver h) GPS Module i) LiPo Batteries j) Charger with Cable k) Power Module l) Power Distribution Board m) Landing Gear n) Lidar o) Video Transmitter and Receiver p) FPV Camera(Sensor) q) HD Camera/ Action Camera r) Gimbal	01	Set
3	Drone Battery Management Training WorkBench includes a) Battery b) High Precision Wattmeter and Power Analyzer c) Servo Tester d) ESC e) BLDC Motors f) Stand for Motor with Propeller	01	Set
4	Thrust Measurement System.	01	No
5	UAV inbuilt suitable for Mapping application with DGCA Approved Type Certification	01	No
6	Drone for Surveillance application (DGCA Type Certified)	01	No
7	RPA and spare parts kit	01	Set
8	Field Repair Kit	01	Set
9	Cloud drone operation platform	01	No
10	Simulator to Teach Drone Flying (Drone Simulator Software with Controller)	02	Nos
11	Drone Agriculture Spraying - DGCA Type Certified	01	No
12	AMC Charges for 1st year after Warrenty	01	Per year

ANNEXURE-II

Detail Specifications of Item

Sr. No.	Name of the Tools And Equipment	Specification	Quantity
1. General Tools & Consumables Sets consisting of			01 Set
a.	Pliers	Standard Make	3
b.	Soldering Station	Standard Make	3
c.	Multi meter	Standard Make	3
d.	Tweezers	Smart SMD tester tweezer resistance capacitance, auto power off low battery indication.	3
e.	Binoculars	Binoculars Technical specifications: <ul style="list-style-type: none">• Portable, Hand held type.• Range Min 2000 meters,• Zoom 8X40,• Wide angle Lens• HD View• Water resistant protection• Adjustable lens for clear vision,• Carry case, secured lens caps and neck strap	3
f.	Anemometer	Digital Display Air Flow: 1-25m/s Functions : m/s, Ft/min, Knots , Km/h, MPH,CFM	3
g.	Magnifier	Hand Held Device , 3 X Magnification , 270 degree foldable design,	3
h.	First Aid Kit	Standard Make First Aid Box	3
02.	Drone Quad Copter (Un-Assembled) Kit includes: <ol style="list-style-type: none">1. Flight Controller2. Drone Base/Frame3. BLDC Motors4. Propellers5. ESC (Electronic Speed Controller)6. FPV Video Transmitting Goggles7. Radio Transmitter and Receiver8. GPS Module	The Unassembled Micro Drone Quad Copter Training System should have the Following Features: <ol style="list-style-type: none">1. Arm® Cortex®-M7 processor STM32H753IJK6 and coprocessor STM32F103 with Floating Point Unit (FPU), 480MHz high-speed operations and 2MB flash.2. Facility for more complex algorithms and models.3. 3 TELEMETRY Ports with full flow control, 4 power input ports - 2 for Drone CAN power inputs and 2 for SMBUS/I2C power inputs,4. An independent LDO powers every sensor set with independent power control.5. A vibration isolation System to filter out high-frequency vibration and reduce noise to ensure accurate readings, allowing vehicles to reach better overall flight performances6. 1 UART4(Serial and I2C)7. Lidar Sensor for distance measurement.8. 2.4GHz remote module System, Frequencies-Hopping	01 Set

<p>9. LiPo Batteries 10. Charger with Cable 11. Power Module 12. Power Distribution Board 13. Landing Gear 14. Lidar 15. Video Transmitter and Receiver 16. FPV Camera(Sensor) 17. HD Camera/ Action Camera 18. Gimbal</p>		<p>and Low Power Consumption with Throttle curves, Pitch curves, Endpoint adjustments and Servo reversing</p> <p>Un-Assembled Quad copter kit includes</p> <p>•GPS Module (4 no.) : Concurrent GNSS: up to 10 Hz. Adv GPS Module (1 No):GNSS U-BLOX M9N CAN BUS is a new product from CUAUV brand. NEO 3 Pro continues the hardware design of NEO V2, upgrade the GNSS module to Ublox NEO M9N, supports Beidou, Galileo, Glonass and GPS receive the same time, and the horizontal positioning accuracy is up to 0.7m. Integrated with safety swith, buzzer, RGB light.</p> <p>•Propellers (50 nos.) : Length: 10",Pitch: 4.5" •Frame (10 no.) : Wheel Base 450mm, Material Glass Fiber + Polyimide Nylon, Motor Mounting Hole Dia.: 3 mm, Arm Size: 220 x 40 mm.</p> <p>Landing Gear (10 Nos): Compatible to the Frame specification •BLDC Motors (50 nos.) :Brushless 920 RPM Voltage: 7.2v~11.1v / 2s~3s Lipo, Shaft Length : 10mm or more, Max Watts: 260W,Minimum 900 KV or more ,Screw Size : M3 •Electronic Speed controllers (50 nos.) : Brushless ESC,30A up to 2-4S Brushless ESC,BEC output : 5V 2A. •FCB (Flight Controller Board) (4no.): Up to 14 PWM / servo output, Bus interface (UART, I2C, SPI);,Provide redundant power input, Multicolor LED lights, Provide a multi-tone buzzer Interface/Motor Winding Tone. FCB (Flight Controller Board) (1 no.): Up to 16 PWM / servo output, Triple redundant IMU & double redundant barometer on separate buses, Integrated Microchip Ethernet PHY for high-speed communication, dual processor, 2x I2C ports for external compass, airspeed sensor, etc. on GPS connector, PPM/SBUS input, DSM/SBUS input, 2 x CAN port, 8x UARTS 6 Available for customer use, Dual SMBUS/I2C Power Module Inputs •FPV Camera (Sensor) (5 no.):Image Sensor: CCD, Power: DC 5-36V.,Operating Current: 5V@60mA; Horizontal Resolution : 600TVL. FPV Live video transmitting goggles -Receiver (2 no.) : Varifocal 5.8G 40CH Diversity FPV Goggles, Varifocal lenses for adjustable focus, catering to individual eyesight needs 5.8Ghz frequency with 40 channels for stable and interference-free FPV transmission, Diversity feature for enhanced signal reception, reducing signal loss and improving image quality ,Built-in DVR (Digital Video Recorder) for recording flight footage directly onto a micro SD card, Large 5-inch HD LCD screen for immersive FPV experience Camera Transmitter (5 no.) : Channels: up to 40CH,Frequency: 5.6GHz-5.9GHz,Antenna: RP-SMA Male RF Transmitter and receiver (5 pair) : 10 channels, 2.40 - 2.48 GHz frequency ,Power ; 12V,Battery 8 AA; Telemetry (5 Nos) : 915 MHz , Mavlink Protocol, Receiver Sensitivity: -121dBm , Transmit Power upto 20dBm Lidar (2 Nos) : Operating Range: 0.2m~8m(90%reflectivity,Accuracy: ±6cm@(0.2m-3m), ±2%@(3m-8m), Distance resolution(cm): 1 Gimbal (5 Nos) 2 Axis Brushless Gimbals, Carbon Fiber Material, Motor drivers, Onboard MPU.</p>	
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		<p>HD Camera/ Action Camera: (5 Nos): 3840 X 2160 Resolution, 4K 30fps , SD Card Support, 90min run time, SONY 8MP sensor lens.</p> <p>01 Set of Development Kit consisting of .</p> <ol style="list-style-type: none"> 1. Control Unit with integrated gyro Sensor and Ethernet UDP Data Communication. 2. Should be supplied with an Embedded Computer Quad core Cortex-A72 (ARM v8) 64-bit SoC, 2.4 GHz and 5.0 GHz IEEE 802.11ac wireless, Bluetooth 5.0, BLE, Gigabit Ethernet, 2 USB 3.0 ports; 2 USB 2.0 ports, 2 × micro-HDMI® ports (up to 4kp60 supported), 3. Sensor Board incorporating four toroidal optic sensor modules with an infra-red optimized housing and carbon fiber mounting plate. 4. The software package should include algorithms, host processing SDK, demonstration software and visualization tools. 5. Set of IR Sensors and controller board for indoor environment testing 6. SENSOR MODULE : The sensor unit should have the facility to be installed on the drone in a position providing field of view to landing beacons on the ground. 7. BEACON INSTALLATION: The beacons should be possible to be installed on the ground or a moving target, aimed upward. For full 6dof tracking, the beacons should include one high powered beacon and 4 lower powered beacons. Each beacon should have a unique code. 8. FIELD OF VIEW : The sensor should have a 120-degree field of view. Line of sight between sensor and beacon is required. 9. RANGE : up to 30m in full sunlight. 10. ALGORITHM SOFTWARE: Lightweight, capable of running on a embedded computer 11. HIGH SPEED Tracking speeds up to 400 Hz 12. HARDWARE INTERFACE: UDP RJ45 Connection between sensor board and embedded computer. 13. SOFTWARE INTERFACE SDK and API should be available for data interface 14. Performance Parameter <ul style="list-style-type: none"> • Absolute Angular Accuracy <0.2 over 120 Degree FoV • Absolute Positional Accuracy: As low as <1cm • Repeatability² <0.5 cm lateral, <0.1 Degree rotational • Sensitivity³ <0.2 cm lateral, <0.05 Degree rotational • Field-of-view 120 Degree x 120 Degree • Operating light levels 10 – 100,000 lux • Interface Ethernet (UDP) • Power supply from USB host (5v 200mA = 1W) • Raw measurement frequency Over 10,000 FPS <p>Capture latency <2ms</p>	
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		<p>Power Distribution Board with Power Module – 10 Nos Mission Planning Software for Configuration and Calibration of the Drones Facility to interface the GCS over a Smartphone or Computer Accessories: Lipo Battery – 20 Nos and Charger -10 Nos , USB Cable – 5 Nos, Lipo Checker- 10 Nos Operating Manual with Details of Assembly, Configuration and Programming.</p>	
03.	<p>Drone Battery Management Training workBench includes</p> <ol style="list-style-type: none"> 1. Battery 2. High Precision Wattmeter and Power Analyzer 3. Servo Tester 4. ESC 5. BLDC Motors 6. Stand for Motor with Propeller 	<p>The Battery Management Training System should have features to monitor Cell Balancing, Changing and Discharging of Batteries, Endurance Testing of Drone with Specific LiPo Battery and Motor Combination and Calculation of C Rating for an LiPo Battery</p> <p>Battery capacity : 16,000mAh , 6 S, 24 V</p> <p>High Precision Wattmeter and Power Analyzer with Facility to Measure. 8 parameters to serve as a key to electric power safety & performance. Measuring Voltage (V), Current (A), Power (W), Capacity (Ah), and Energy (Wh), Minimum Voltage (Vm), Peak Current (Ap), and Peak Power (Wp).</p> <p>Servo Driver/ Tester : To control the speed of the Motor</p> <p>ESC: Constant Current (A) : 80, BEC : Yes (5V/5A)</p> <p>BLDC Motor, Speed : 18000 rpm +/- 10% , Propeller : 16 “: Diameter: 16 “ , Pitch: 5.5 “</p> <p>BLDC Motor and Propeller System mounted on a Stand acting as a Load to the Battery Management Training System</p> <p>Set up should be provided with work table as per below specifications:</p> <ul style="list-style-type: none"> • Working bench of dimension (LxWxH) : 4 x 2.5 x 3 (ft.) approx.. • Base structure made with 38X38X1.5 mm CRC Epoxy coated pipes and top made of 19mm thick plywood with edge bidding. • MS drawers 03 numbers with handle & lock on drawer. • Two Pole MCB (16A Good quality ISI mark) to be provided for safety of work table. <p>Workbench should be provided with Anti-static mat, castor wheel and multiple sockets/ Switches for external use</p>	1 Set
04	<p>Thrust Measurement System.</p>	<p>This System should have the facility to characterize and evaluate the performance of BLDC motors and propellers by measuring thrust, torque, RPM, current, voltage, temperature, propeller efficiency and motor efficiency.</p> <p>SPECIFICATIONS:</p> <ul style="list-style-type: none"> • Measuring the Thrust Range -5 to 5 Kgf and Torque Range (-2to 2 Nm) of the Motors • Measuring the Electrical Current 0 to 55A and Voltage (0 to 50 V) , • Measure the Motors Angular Rotation Speed upto 190K eRPM <p>Coil Resistance : 0.003 - 240 Ohms</p> <p>The Software should be capable to control the system manually and view live data as it is recorded.</p> <ul style="list-style-type: none"> • Facility to control the entire system from a Python API is provided • Facility to upload the .CSV files from the flight controller to perform flight replay tests 	1 No

		<ul style="list-style-type: none"> • Facility to Plot Real time Graphs, Manual Motor Control, Manual Servo Control . • Facility for Automated Tests like Ramps, Steps, Measure (Kv), measure no of poles etc. <p>Accessories: Optical RPM Probe, No-Solder Board,5 Propellers of different sizes (7.0"x 4.0"), (8.0" x 4.0"), (8.0" x 6.0"), (8.0" x 8.0"), and (9.0" x 4.0"). 2 motors with ratings: at 1500Kv and 2300Kv, respectively Motor Controller ESC.</p>	
05	UAV inbuilt suitable for Mapping application with DGCA Approved Type Certification	<ol style="list-style-type: none"> 1.DGCA Type Certified for Small Category Drone 2.UAV Weight with standard payloads: < 3 Kg 3.UAV Size with Propeller: < 90 cm x 90 cm 4.Propeller dimensions: Diameter – 16", Pitch – 6.1", Maximum RPM -6200 as per type certificate 5.Endurance/ Flight time (Upto 1km AMSL): 40 mins 6.Range: greater than or equals to 2 Kms 7.Battery Capacity: 9900 mAh 8.Operating altitude (AGL): 500m AGL (Above Ground Level) Maximum launch altitude (AMSL): 3500m AMSL 9.Wind Resistance: Minimum 10 m/s 10.Obstacle Avoidance: Omni-directional obstacle detection & avoidance 11.Failsafe features: <ul style="list-style-type: none"> •Return to Home on communication failure •Return to Home/Land on low battery or battery issues •Return to home on high winds •Multiple GPS on-board for GPS failure redundancy 12.Autonomy Fully autonomous from Take-off to Landing without using any R/C controller 13.Enabled with PPK/RTK 14.Mapping Payload: <ul style="list-style-type: none"> •Type: 1-Axis (Tilt) stabilized still imaging RGB camera with 1080p live stream to GCS •Lens: 16mm (Default) •Resolution: 24 MP •Horizontal Field of View: 72.73° •Data Storage: 64 GB SD card for image storage 15. GCS: Handheld Controller with Display <ul style="list-style-type: none"> •Specification: AMD Ryzen™ Z1 Processor ("Zen4" architecture with 4nm process, 6-core /12-threads, 22MB total cache, up to 4.90 Ghz boost) RAM - 16GB LPDDR5 on board (6400MT/s dual channel) Storage - 512GB PCIe® 4.0 NVMe™ M.2 SSD (2230) •7-inch FHD (1920 x 1080) 16:9 •Touch Screen (10-point multi-touch) Refresh Rate: 120Hz •Battery Usage: 40WHrs, 4S1P, 4-cell Li-ion - Approx 2 Hours in ideal condition 16. EMI/EMC Compliance: Compliant as per EN IEC 61000-4-3:2020 standards (certified by NABL accredited laboratory) Compliant as per FCC standards: 15.247, 15.209, 15.205 (certified by NABL accredited laboratory) 	1 No

06	Drone for Surveillance application (DGCA Type Certified)	<ol style="list-style-type: none"> 1. DGCA Type Certified for Small Category Drone 2. UAV Weight with standard payloads: < 3 Kg 3. UAV Size with Propeller: < 90 cm x 90 cm 4. Propeller dimensions: Diameter – 16”, Pitch – 6.1”, Maximum RPM -6200 as per type certificate 5. Endurance/ Flight time (Upto 1km AMSL): 40 mins 6. Range: greater than or equals to 2 Kms 7. Battery Capacity: 9900 mAh 8. Operating altitude (AGL): 500m AGL (Above Ground Level) Maximum launch altitude (AMSL): 3500m AMSL (Above Mean Sea Level) 9. Wind Resistance: Minimum 10 m/s 10. Obstacle Avoidance: Omni-directional obstacle detection & avoidance 11. Failsafe features: <ul style="list-style-type: none"> • Return to Home on communication failure • Return to Home/Land on low battery or battery issues • Return to home on high winds • Multiple GPS on-board for GPS failure redundancy 12. Autonomy Fully autonomous from Take-off to Landing without using any R/C controller 13. Day Payload: <ul style="list-style-type: none"> • Type: Color Electro Optic (EO) Payload for Day HD Payload 1280X720p,10X Optical Zoom Video Resolution • Stabilization: Mechanical gimbal stabilization on all three axis for smooth video • Resolution: 1920x1080p • Pan control: 360 degrees continuous • Tilt control: -45 degrees (looking forward) to 90 degrees (looking down) • Zoom: 10x optical zoom, 4x digital zoom • Horizontal Field of View: 54° (Wide end) to 4.9° (Tele end) <p>GCS:Handheld Controller with Display</p> <ul style="list-style-type: none"> • Specification: AMD Ryzen™ Z1 Processor ("Zen4" architecture with 4nm process, 6-core /12-threads, 22MB total cache, up to 4.90 Ghz boost) RAM - 16GB LPDDR5 on board (6400MT/s dual channel) Storage - 512GB PCIe® 4.0 NVMe™ M.2 SSD (2230) • 7-inch FHD (1920 x 1080) 16:9 • Touch Screen (10-point multi-touch) Refresh Rate: 120Hz 	1 No
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		<ul style="list-style-type: none"> Battery Usage: 40WHrs, 4S1P, 4-cell Li-ion - Approx 2 Hours in ideal condition <p>14. EMI/EMC Compliance: Compliant as per EN IEC 61000-4-3:2020 standards (certified by NABL accredited laboratory)</p> <p>15. Compliant as per FCC standards: 15.247, 15.209, 15.205 (certified by NABL accredited laboratory)</p> <p>16. Navigation Lights for night flying</p>	
07	RPA and spare parts kit	The Drone Spare kit should have the following minimum spare parts for the DGCA Approved Mapping and Surveillance Drones 1. Batteries – 2 Nos 2. Propeller – 2 pair 3. Landing Gear -2 nos 4. Charger – 1 No	1 Set
08	Field Repair Kit	Drone Field Repair Kit includes drone-specific tools and items necessary to repair simple issues swiftly and with ease. Items included in the Drone Field Repair Kit, depending on kit purchased are: <ul style="list-style-type: none"> ALLEN KEY SET – 1 No SCISSORS – 1 No SOLDERING IRON – 3 Nos DE-SOLDERING PUMP – 3 Nos SOLDER WIRE – 500 gm FLUX Box – 3 Nos 3M DOUBLE TAPE – 3 Nos CABLE WIRES (28 AWG) – 3 meter XT60 Connectors (Male and Female) – 20 Nos Heat sink – 50 Nos 	1 Set
09	Cloud drone operation platform	Should provide Platform-as-a-Service for the DGCA Approved Drone mentioned in Sr No 5 and 6 for planning, flying, visualising and analysing data captured with 2 Years Subscription. Secure cloud software application that can be accessed from a browser on any device - with ability to visualize and annotate data, generate reports, project management, and drone asset management. 1. One (01) Administrator, FOUR (04) users accounts/log-ins 2. 100 GB storage 3. 12500 images for Orthophoto generation Features: <ol style="list-style-type: none"> Mission Planning through cloud-based platform with facility to Assign Project name, Site, Date & time, UAV Type and Payload based on the mission. Facility to define flight Type as 2D or 3D, define Flight Path for Grid, Spiral, Corridor, Crosshatch or Free Flying. Facility to set Adv, Parameters like AGL , Speed, Overlap % and Sidelap %. This module should have facility to Generate a Flight Plan and should estimate the following flight parameters like Ground sampling distance, estimated flight time, No. of Batteries required, Area, No of images , Trigger Interval, distance between line etc. This should also have a Pilot Application which should be synchronised with the Cloud platform so that all the 	1 No

		<p>data set on Mission Module can be seen on the Pilot App and the Students can execute the mission within the stipulated time. This App should have the facility to Quality Check for the data captured and upload it to Cloud Platform ,</p> <ul style="list-style-type: none"> e. Geo-tagging of the images captured f. This Module should have the facility to generate Orthomosaic images followed by Digital Surface Model (DSM) and Digital Terrain Model (DTM). Advance Parameters like blending mode and Quality of output should be available g. Facility to Generate Report with details like Orthomosaic, Survey Data, Camera Calibration, Camera location, Digital Elevation model and processing parameter. h. Facility to Analyse the processed Data for Creation of contour lines , Generate Rooftop Segmentation & creation of point, line & polygon features on the processed output should be available i. Overlay and compare current and historical topography using images from two different timestamps. j. Live transmission of feed from drone to a remote location on real-time basis 	
10	Simulator to Teach Drone Flying (Drone Simulator Software with Controller)	<p>Suitable for Learn to fly and practice new maneuvers with the intuitive simulator. Should feature Game-like challenges that make flight training fun and interactive. Should include software and controller.</p> <p>Should be Compatible with windows 7/8/10. Software should be VR compatible 75 or more flying sites to give training in maximum types of environments 18 or more types of drones Ability to edit and custom import aircrafts into software Controller specifications – 15 channels USB plug for PC compatibility Toggle switch for 4 different types of flight operating modes Gimbals with adjustable spring and throttle tension</p>	2 Nos
11	Drone Agriculture Spraying – DGCA Type Certified	<p>Drone certifications: Must be DGCA approved and Type Certified with UIN Enabled. Classification / Class: Small Category/Sub-category: Multi-Rotor Drones, Rotorcraft/ Remotely piloted aircraft system (RPAS) No. of rotors: Hexa-copter (6 rotors) Flight modes: Manual, Autonomous, A-B mode Tank capacity: 10 litres Maximum flying speed : 15 m/s Maximum height of flying: 100 m / 328.1 ft Total take-off weight: Less than 25 Kg Minimum payload capacity: 10 Kg Endurance with maximum take-off weight (while working): Min. 22 minutes Hovering time (without payload) : 25.0 min Material : Carbon fiber and aviation Aluminium</p>	1 No

		<p>Flight range : Minimum 1 km within the line of sight Compact frame design : Foldable arms Overall dimensions (l x b x h) in mm : 1932.0 x 1750.0 x 580.0 Diagonal wheelbase of Frame: 1300 to 1500 mm</p> <p>Spraying System Tank material: HDPE, PP or other corrosion-resistant material Connecting tube material: HDPE, Fibre, PVC or better or other corrosion-resistant material Nozzle mounting : On boom or below the propeller Length of boom (for boom mounted): 1.75 ~ 2.0 m No. of nozzles: 4 Type of nozzle: Flat fan spray nozzles Spray width/swath: 3.0 ~ 5.0 m Spray flow: 1.2 to 4.0 lit/min Droplet size: Minimum 100 µm</p> <p>Battery Type: Preferably Lithium Polymer Capacity: Minimum 16,000 mAh Charging time: 60 min, Voltage: 22-50 Volts</p> <p>Control Unit Suitable flight controller CPU, compatible to be above specifications and as per DGCA guidelines. Max Transmission Distance (Communication distance between GCS and flying Drone (Km)- minimum 1 km. Inclusive of charger</p> <p>Failsafe Features</p> <ul style="list-style-type: none"> • Return to home in case of: Low battery, Loss of communication, Manual RTL, Wind, Empty tank and other fail-safe features. • Global navigation satellite system (GNSS)/ Global Positioning Systems, Geo-fencing capabilities. • Map-based auto Navigation/ Spraying. <p>Terrain following radar system The drone shall be equipped with terrain following radar (height sensor, terrain following sensor) to keep certain desired height above crops when spraying and in turn detects variable height of crop canopy to enable to spray uniformly across the crop canopy.</p> <p>(Detect and Avoid Capability should be available as per DGCA approved Type Certificate)</p> <p>Other Specifications Hovering accuracy (horizontal and vertical): Compatible with the above specifications Wind resistance: 10 m/s Working temperature: 0 – 55 Degree Centigrade Working humidity: 0-90% Integrated with 2MP front Camera: Should be Available Flashing anti-collision strobe lights: Should be Available Geo-fencing Capability: Should be Available Return Home : Should be Available Intended Applications: The Drone Must be DGCA Type Certified for multipurpose agriculture UAS mainly for agrochemical Spraying and granules Broadcasting.</p>	
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