Appx

DRONE COMPETITION MARKING & ASSESSMENT CRITERIA
AIVSC - 2025

1. **Drone competition marking scheme.** The drone competition will carry a total weightage of 250 marks, distributed as follows.

Parameters	Marks	Details
Drone Assembly	70	Credits will be assessed on their ability to assemble a drone from components within a given time frame. Evaluation will focus on accuracy, efficiency, and the understanding of assembly protocols
Flying skills	70	This includes assessing the credits ability to operate drones effectively, perform maneuvers, navigate obstacles and demonstrate smooth takeoffs and landings
Written test	40	A theoretical examination covering the basics of drone sop, safety protocols and emergencies
Viva voice	20	Oral interaction to evaluate the carrot's depth of understanding, communication skills and ability to explain technical concepts confidently
Innovation and Design	50	Points will be awarded for presenting innovative ideas or modifications to enhance drone functionality. Get it can showcase new applications or technical improvements

2. Out of the existing strength of 38 cadets nominated for AIVSC from each directorate, this year, an additional component of drone competition has been introduced. As a part of this initiative 02 SD + 02 SW from each Directorate will participate in the drone competition, which will carry additional 200 marks . These marks will be considered for overall championship scoring and the competition will include events such as drone assembly, autonomous flying, written test, viva voice and innovation based tasks. This inclusion aims to promote technological skills and innovation among NCC cadets in alignment with emerging trends.

3. **Drone Assembly** (Total 70 marks). Cadets will be assist on their ability to assemble a drone from components within a given time frame. Evaluation will focus on accuracy efficiency understanding of Assembly protocols.

Assessment criteria	Marks
(a) Component identification and layout - Correctly identifying and organizing all drone components before assembly begins	15
(b) Frame assembly - Assembling the drone frame accurately and securely, as per standard guidelines (06 hours)	10
(c) Electronic integration - Proper and efficient installation of Motors, ESC wiring and power distribution (06 hours)	15
(d) Controller and receiver setup - Correct placement and connection of flight controller, receiver and ensuring system compatibility (06 hours)	15
(e) Overall build quality and Functional check - Neatness, cable management, structural integrity, basic functionality check post assembly (06 hours)	15

4. **Flying skills** (Total 70 marks). Credits will be evaluated on their piloting skills control precision, situational awareness and execution of specific flight tasks. The assessment will be carried out under supervised conditions with a standard course and timing.

Assessment criteria	Marks
(a) Pre flight procedures and safety checks - Ensuring all safety protocols, calibration, gps lock and system readiness before takeoff	10
(b) Take off and Hovering stability - Smooth and controlled takeoff, stable hover at fixed altitude and position	15
(c) Basic maneuvers - Execution of fundamental maneuvers like forward / backward, left / right, yaw rotation and altitude changes	15
(d) Advanced flight task - Completing predefined flight pattern (eg. figure of 8, square path) within time limit (15 minutes)	15
(e) Landing position and post flight handling - Controlled descent and accurate landing at marked Zone, followed by proper shutdown procedures	15

5. **Written test based on six page SOP.** (Total 40 marks). Cadets will be assessed solely on their understanding of content provided in the official 6 page Standard Operating Procedure. The test will comprise objective and short answer questions, focused on operational safety and procedural aspects of drone handling.

Assessment criteria	Marks
(a) Understanding of SOP (Objectives and Scope) - Key purpose, structure and importance of the SOP in Drone operations	8
(b) Preflight and Assembly protocols. - Procedures related to preflight checks, safety norms and basic assembly instructions as mentioned in the SOP	8
(c) Flight operation procedures - Steps and rules to be followed during takeoff, flying and landing phases	8
(d) Post flight procedures and Maintenance - Actions after flight, battery handling, inspection and storage as per SOP guidelines	8
(e) Emergency handling and Safety norms - Understanding of risk mitigation, emergency response and no fly rules covered in the SOP	8

6. **Viva voice** (Total 20 marks). Cadets will be assessed through an oral examination, their conceptual clarity, practical understanding and communication skills related to drone operations and technology.

Assessment criteria	Marks
(a) Knowledge of Drone components and Functions - Ability to explain the role and function of each part of the drone	4
(b) Understanding of Assembly and Configuration - Verbal explanation of the steps involved in assembling and setting up a drone	4
(c) Operational and safety procedures - Awareness of flight safety norms, emergency procedures and best practices	4
(d) Regulatory framework - Understanding of rules and regulations issued by dgca and other authorities related to UAV operation	4
(e) Confidence, Clarity and Communication skills - Overall articulation, clarity of thought, confidence in answering and technical accuracy	4

7. **Innovation and design.** (Total 50 marks). Cadets will be evaluated on their ability to conceptualize, design and present innovative drone based solutions or enhancements. Assessment will emphasize creativity, technical feasibility and potential real world application.

Assessment criteria	Marks
(a) Originality of concept - Uniqueness and creativity of the idea or design innovation proposed	10
(b) Technical feasibility - Practicality, functionality and viability of design or innovation	10
(c) Design detailing - Quality of diagrams, models, CAD designs and explanation of components or systems involved	10
(d) Application and impact - Relevance of the innovation in real world scenario (both civil and / or military) usefulness and scalability	10
(e) Presentation and justification - Clarity of presentation, logical reasoning and ability to defend the innovation through questions and answers	10

8. The following minimum infrastructural arrangements will be made by the conducting directorate for successful conduct of drone competition.

(a) Open space. A clear, obstruction free open ground of minimum 60 x 60 meters for safe flight operations, take offs and landing of drones.

(b) Individual tables. A minimum of 17 individual tables, each of at least 3 x 2 feet for participants to assemble, repair and manage their drone equipment.

(c) Drone Parts Area. Sufficient space adjacent to each table, to securely place drone components and supporting equipment.