

Certificate of Competency: Practical Training Notes



The FPV UK *Certificate of Competency: Practical* is a basic proficiency achievement for members.

The remote pilot can gain this qualification either by:

A: self study/practice (with or without the help of a local mentor) and then passing a practical flight skills test conducted by an approved FPV UK examiner, or:

B: completing an 'FPV UK Certificate of Competency' course with an FPV UK approved training provider, which includes a practical flight skills test.

Successful attainment of the qualification shows on the member's account, membership certificate, and on their plastic membership card (if they have one).

The member must have completed the forty question FPV UK *Certificate of Competency: Drone Law* online before taking the *Certificate of Competency: Practical* test. This can be confirmed at <https://members.fpvuk.org/membership-check> (Or from within the examiner's *Training* menu).

Practical Exercise Notes

- The aircraft must be suitable for the exercises and conditions.
- Dual control systems may not be used.
- Stabilisation and GPS position hold modes may be active during the test.
- Exercises can be flown using an FPV system if desired, with the examiner acting as the Competent Observer (properly briefed by the member undertaking the test).
- The member may safely land the aircraft and change batteries at any point during the test. They should then re-start from the beginning of the current exercise.
- The take off position can be marked with a plastic marker or similar if desired.
- In the case that the member undertaking the test has special physical needs, it is acceptable for a helper to assist them in carrying and setting up the aircraft under direct instruction from the member. The exercises must be flown entirely by the member.
- Members under 18 years of age must be accompanied by a parent or guardian.

DRONE FLYING CHECKLIST

AT HOME

- FIRMWARE / APP - LATEST VERSION
- SD CARD - FORMATTED
- BATTERY (DRONE / CONTROLLER) - FULLY CHARGED
- WEATHER - SUITABLY LIGHT WINDS AND NO RAIN FORECAST
- DRONE ASSIST - NO NOTAMS / CONTROLLED AIRSPACE / HAZARDS
IN YOUR CHOSEN FLYING LOCATION

AT THE FIELD

- DAMAGE - CHECK DRONE IS FULLY INTACT
- PROPELLERS - FREE OF DAMAGE AND INSTALLED CORRECTLY
- BATTERY - INSTALLED PROPERLY AND NOT TOO COLD
- GPS - SOLID FIX / HOME POINT SET
- GIMBAL CLAMP - REMOVED
- LENS CAP - REMOVED
- SD CARD - INSTALLED
- COMPASS - CALIBRATED
- WIND - SUITABLE FOR YOUR DRONE
- DRONE ASSIST - FINAL CHECK FOR CONTROLLED AIRSPACE / NOTAMS /
HAZARDS AND LOG YOUR FLIGHT
- LOCATION - OBSTACLES, GOOD VIEW OF THE SKY, NOT NEAR AN AIRPORT.
- PEOPLE - HELPERS / FRIENDS ARE BRIEFED AND
MEMBERS OF THE PUBLIC ARE A SAFE DISTANCE AWAY

DRONE CODE

- KEEP YOUR DRONE IN SIGHT AT ALL TIMES
- KEEP 50M (150FT) FROM PEOPLE AND PROPERTY
- STAY BELOW 121M (400FT)
- STAY AT LEAST 5KM (3.1 MILES) FROM AN AIRPORT
- KEEP 150M (500FT) FROM CONGESTED AREAS
- AVOID AIRCRAFT. IF IN DOUBT LAND YOUR DRONE

YOU ARE LEGALLY RESPONSIBLE. YOU COULD FACE LIFE IMPRISONMENT.

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1 - Pre-flight Checks

Confirm that the weather and the flying location are suitable: Flying here will be safe and compliant with the law/Drone Code and local rules and bye-laws. Identify any areas to avoid flying over and any potential risks.

(Examination note: If applicable, explain to your examiner the risks you have identified and how you will mitigate them. E.g. if you have identified a footpath, you may mitigate the risk of conflicting with walkers by avoiding that area.)

Check your aircraft for any signs of damage. Particularly check the propellers are in good condition. If in doubt, swap it out. (A propeller disintegrating in flight would not end well). Also, check the battery is in good condition and has sufficient charge. Lookout for any signs of puffiness. If in doubt, swap it out. (Exploding or prematurely depleting batteries are not good things). Make sure that the ambient temperature is within the batteries' operating parameters (or you have a battery heater to keep the batteries at a suitable temperature).

(Examination note: As you check each element of your aircraft, tell your examiner what you are doing and why. Tell the examiner as you check off each element. E.g. "Checking propellers for damage in case of failure in the air; they all look good. "Checking battery; fully charged".)

Position your aircraft

Orient the aircraft with its front facing away from you, and its rear facing towards you (tail in). Power on the aircraft safely (controller first) and then stand approximately five metres behind it.

If telemetry is present, check battery level, radio control signal level, GPS signal, compass, etc are all at suitable levels for flying. If GPS is present, wait for a GPS position lock.

Check again that the area is safe (no people, or animals have appeared in your flying area).

(Examination note: As you confirm each element, tell your examiner what you're doing - e.g. "GPS home position lock confirmed, battery level good, no warning messages, flying area clear".)



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2 - Take off and Hover in Default Position

Take off positively and smoothly and ascend straight up to approximately 2.5 metres height.

Hover at approximately 2.5 metres height, tail in. If applicable check your mobile device/telemetry to check the aircraft is functioning correctly; battery level, height, radio signal and GPS signal should all still be indicating sufficient levels. No warnings (e.g. compass calibration or radio interference) should be showing. If in doubt, land the aircraft.

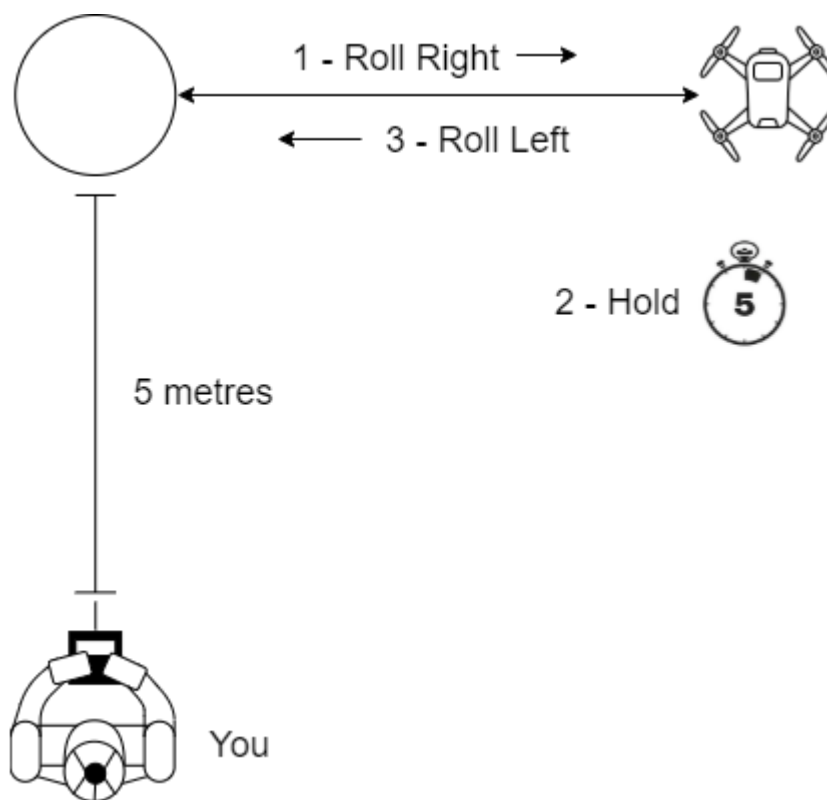
This spot (five metres straight ahead of you and tail in) will act as your Default Position for the following exercises.

(Examination note: Once you are happy that the aircraft is stable and working correctly, tell your examiner and move on to Roll Control.)

3 - Roll Control

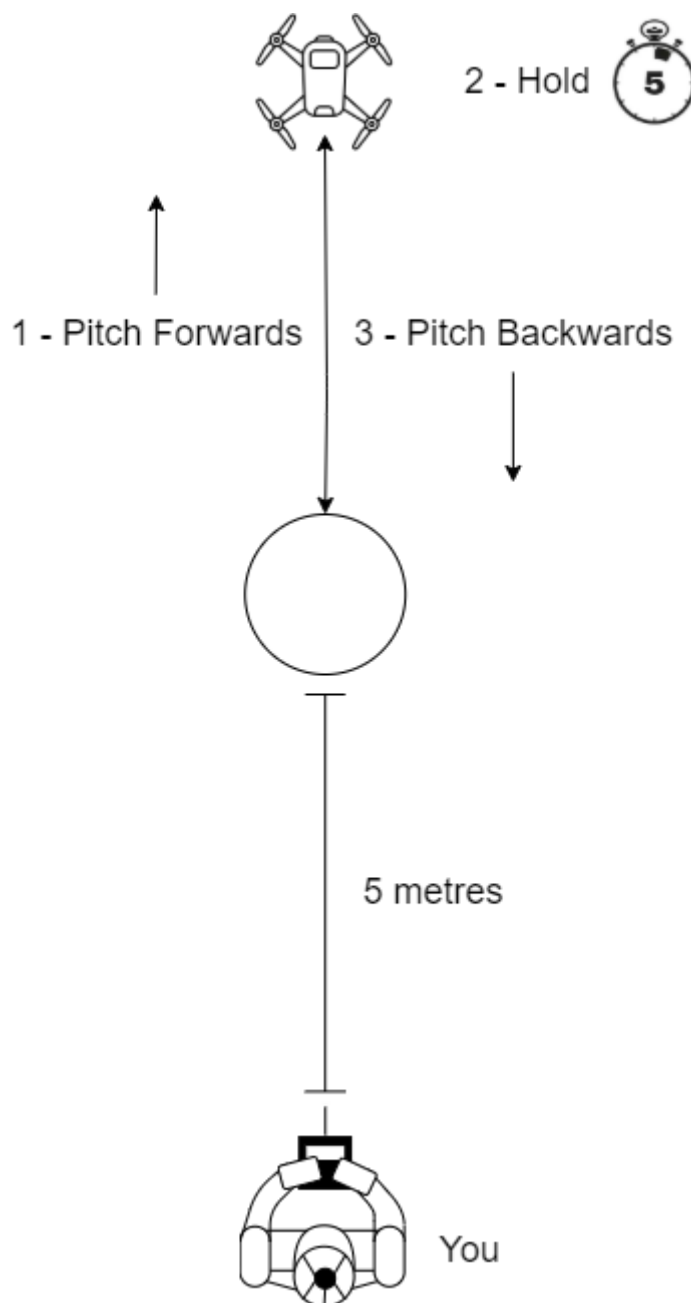
Maintaining 2.5 metres height, and keeping the nose pointing in the current heading, move the aircraft five metres to the right. Hold position for five seconds, then return the aircraft to the default position (directly ahead, tail in, 2.5 metres height).

With a quick glance check telemetry/mobile device for any warning messages, battery condition, signal strength, etc. Visually check the flying area is safe.



(Examination note: If it is, tell your examiner that everything is good and safe and you are proceeding to the next exercise: Pitch Control.)

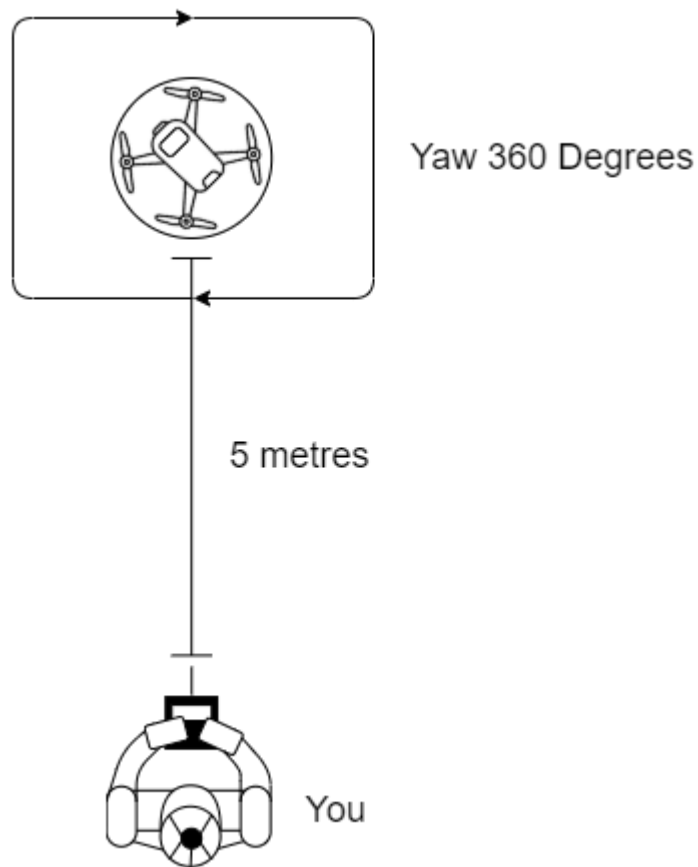
4 - Pitch Control



Maintaining 2.5 metres height, and keeping the nose pointing in the current heading, move the aircraft forward, approximately five metres. Hold position for 5 seconds, then reverse the aircraft to the default position.

With a quick glance check telemetry/mobile device for any warning messages, battery condition, signal strength, etc. Visually check the flying area is safe. **(Examination note: If it is; tell your examiner that everything is good, and that you are proceeding to Yaw Control).**

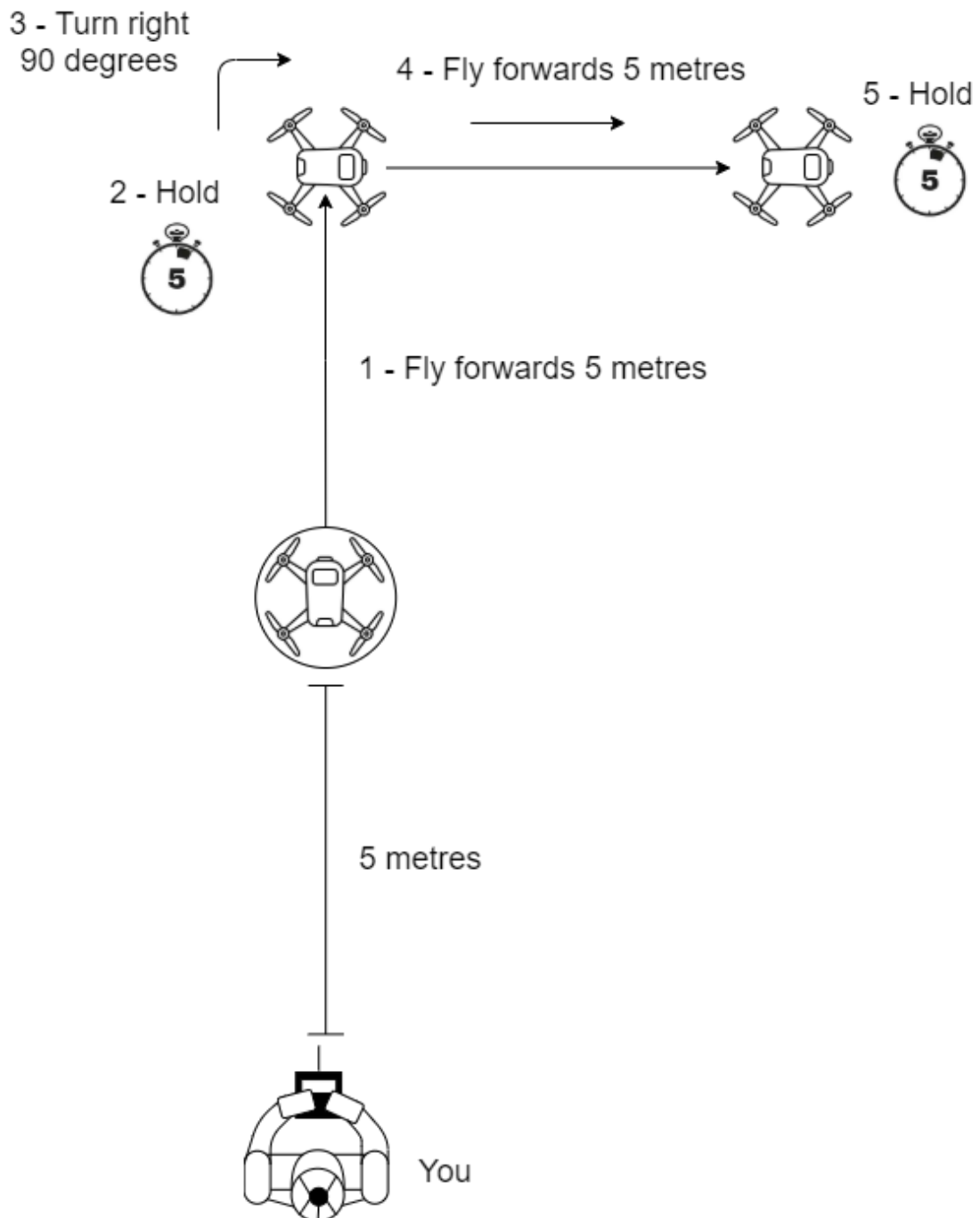
5 - Yaw Control



Maintaining the default position and 2.5 metres height, slowly turn the aircraft in a completely flat 360 degree turn. When complete the aircraft should be back at your default position (tail in, about 2.5 metres height and about five metres in front of you).

With a quick glance check telemetry/mobile device for any warning messages, battery condition, signal strength, etc. Visually check the flying area is safe. (**Examination note:** *If it is, tell your examiner that everything is good, and that you're progressing to Flying a T Shape*).

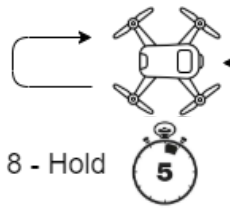
6 - Flying a T Shape



Maintaining approximately 2.5 metres height, at a slow walking pace, fly the aircraft in a T shape as follows:

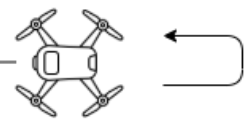
1. Fly the aircraft forward around five metres.
2. Hold for five seconds.
3. Turn the aircraft right ninety degrees.
4. Fly the aircraft forward (to your right) five metres.

9 - Turn right 180 degrees

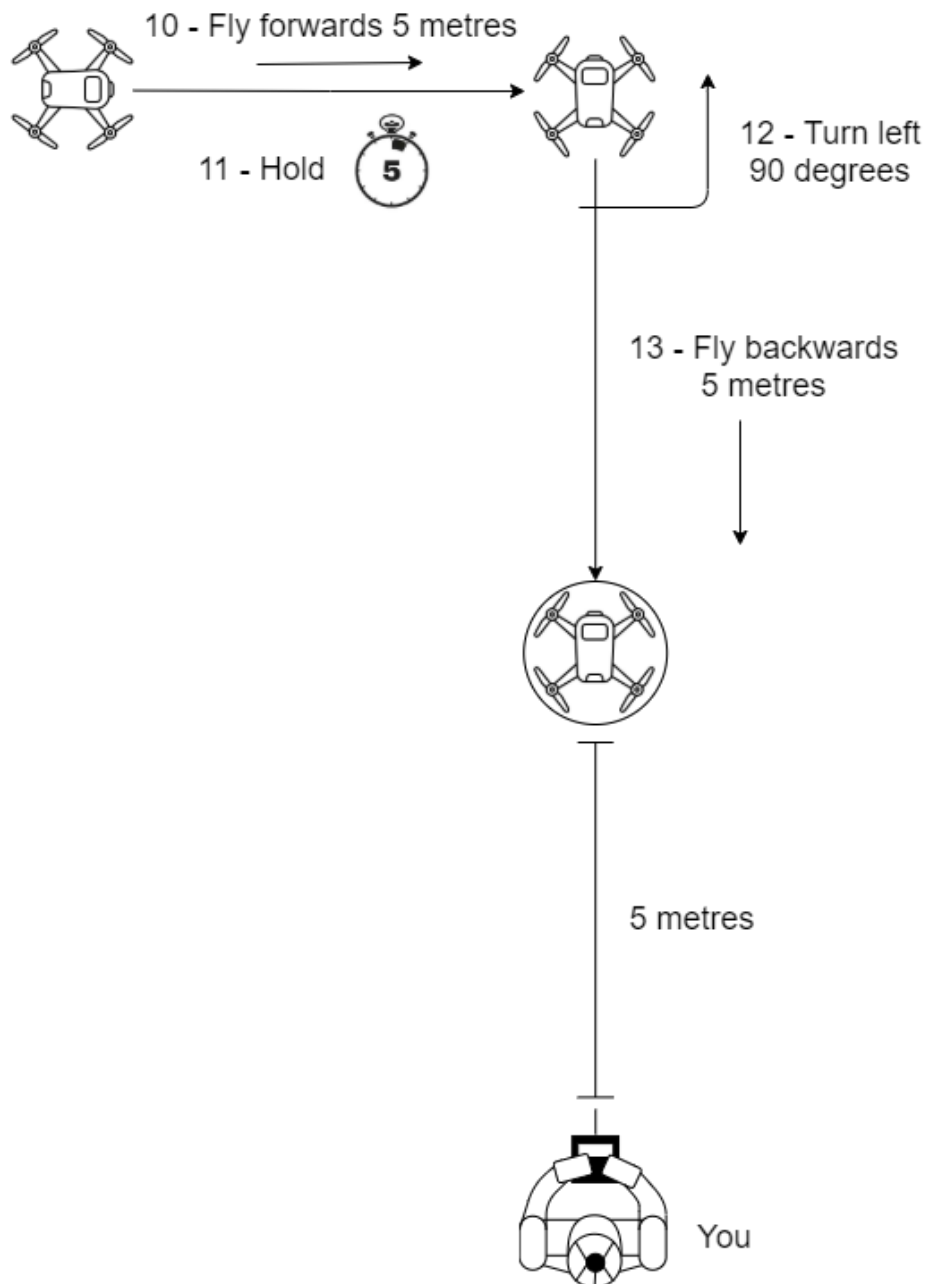


7 - Fly forwards 10 metres

6 - Turn 180 degrees left



5. Hold for five seconds.
6. Turn the aircraft left 180 degrees so that its nose is facing to your left.
7. Fly the aircraft forward (to your left) ten metres.
8. Hold for five seconds.
9. Turn the aircraft right 180 degrees to face to your right.



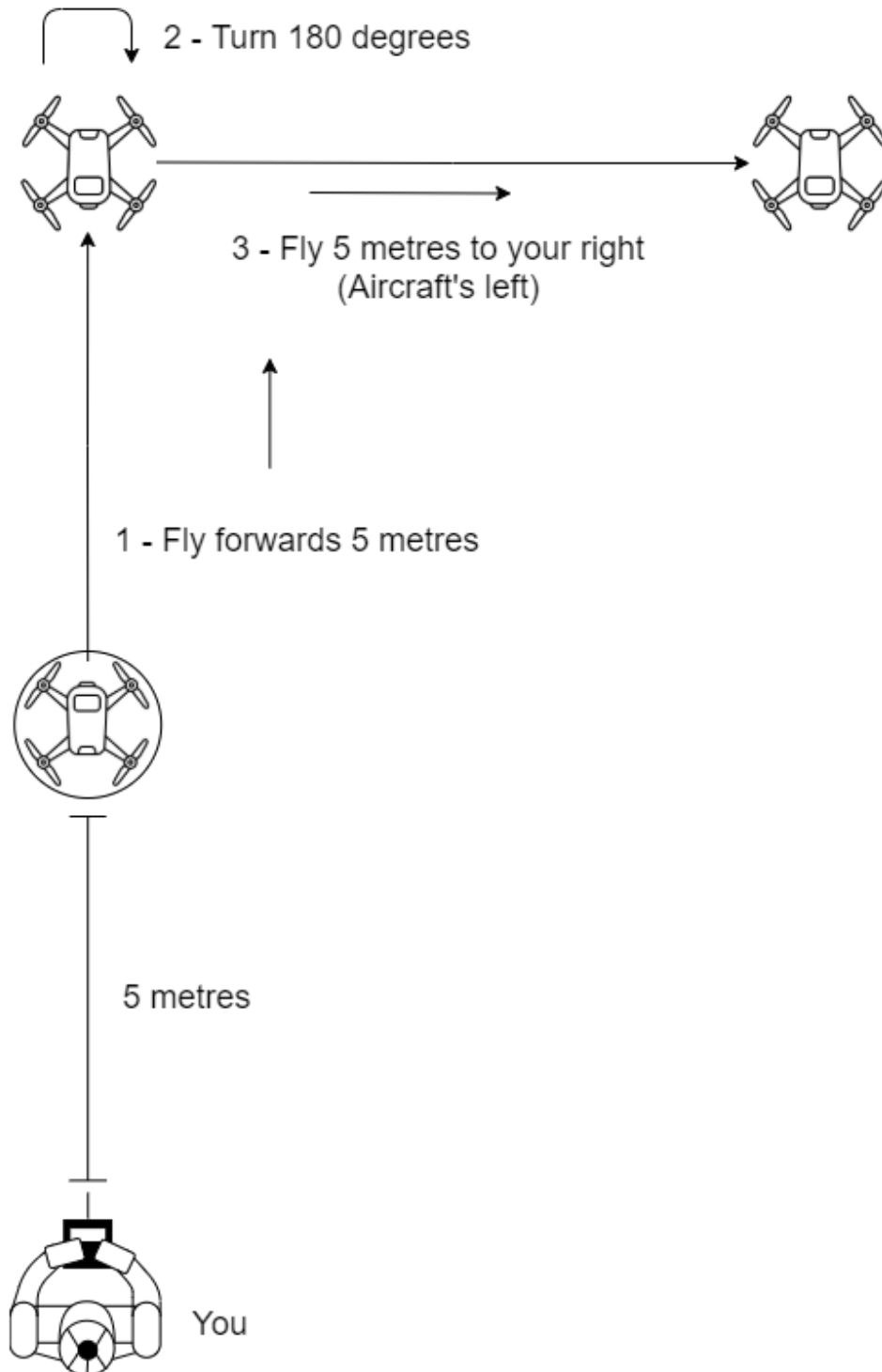
10. Fly the aircraft forward five metres so that it is approximately ten metres ahead of you.
11. Hold for five seconds.
12. Turn the aircraft 90 degrees left so that it is tail in and 10m ahead of you.
13. Fly the aircraft backwards 5m to return it to the Default Position (tail in, 2.5m height, 5m away from you).

With a quick glance check telemetry/mobile device for any warning messages, battery condition, signal strength, etc and visually check the flying area is safe.

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Now is a good time to land and change the battery if required. (**Examination note:** *If it is, tell your examiner that everything is good and move onto Reversed Controls*).

7 - Reversed Controls



Be aware that when the aircraft is facing you, its controls are effectively reversed!

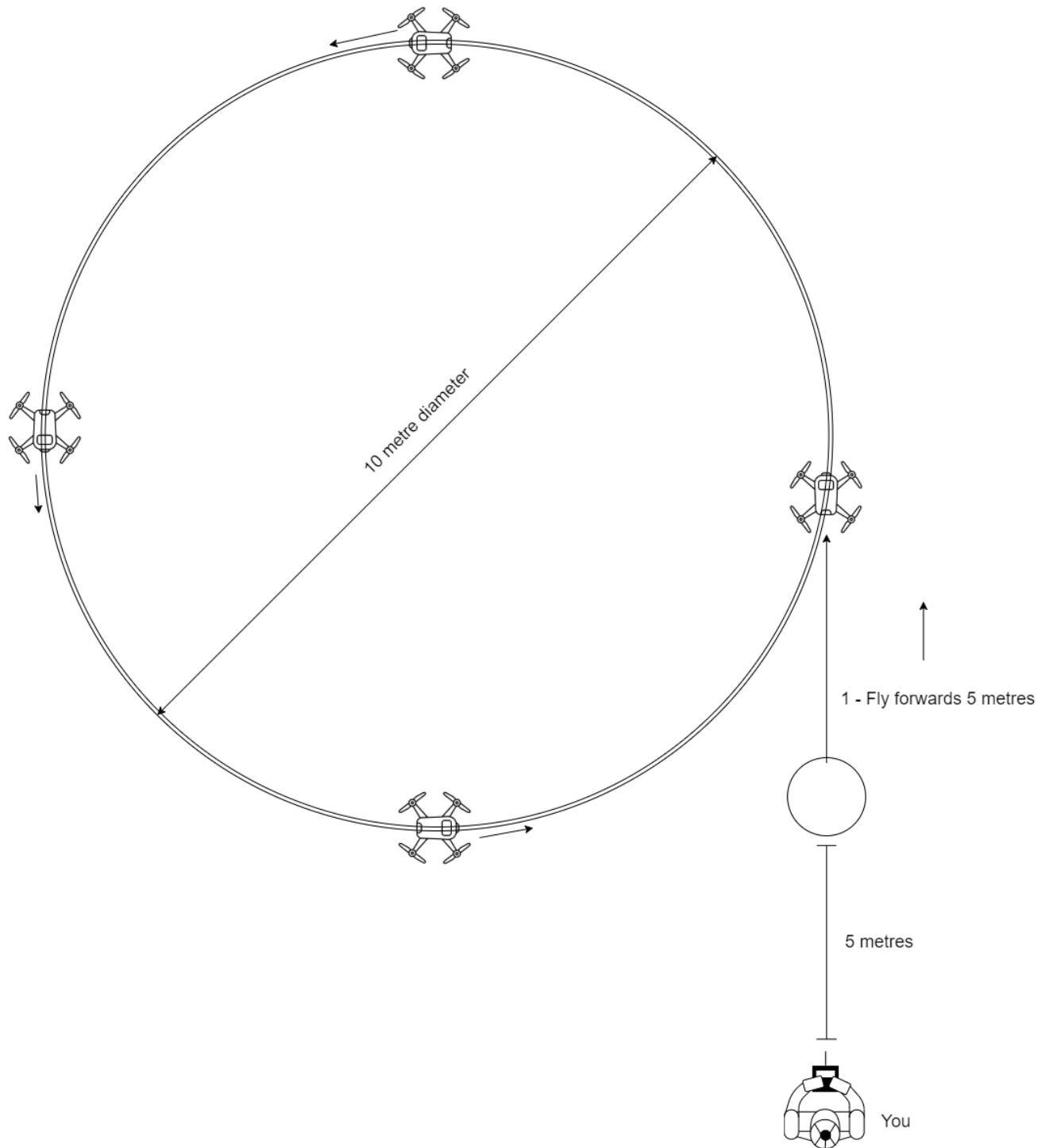
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- 1 - From the default position fly the aircraft forward 5m.
- 2 - Turn the aircraft 180 degrees to face you.
- 3 - Fly the aircraft 5m to your right (its left).
- 4 - Hold position for five seconds.
- 5 - Fly the aircraft back to centre/directly ahead of you.
- 6 - Hold for twenty seconds.
- 7 - Return the aircraft to the Default Position (tail in, 2.5 height, 5m away from you) by flying the aircraft forward (towards you) 5m and yawing it 180 degrees to face away from you.

With a quick glance check telemetry/mobile device for any warning messages, battery condition, signal strength, etc. Visually check the flying area is safe. (**Examination note:** *If it is; tell your examiner that everything is good, and you're moving onto Circles*).

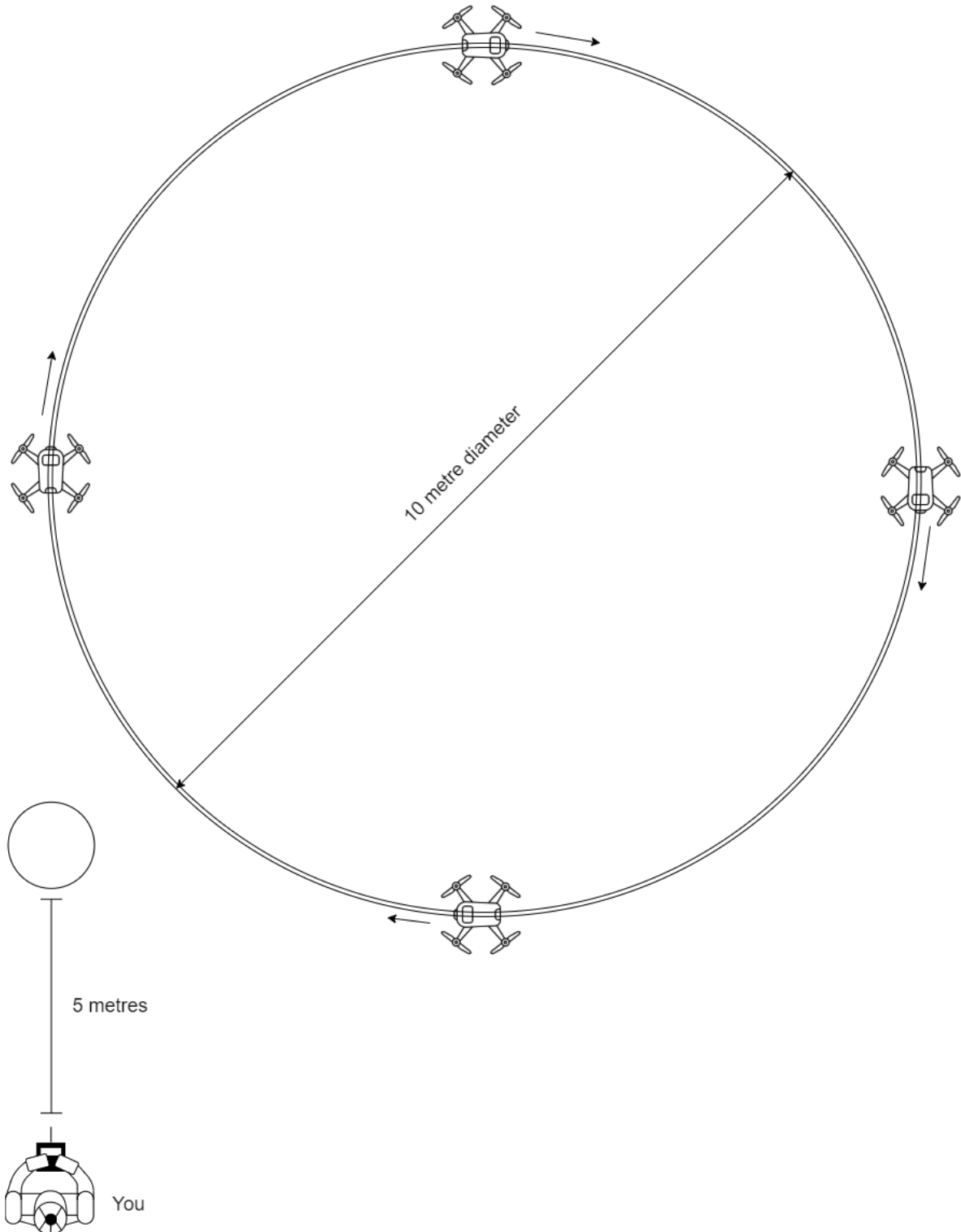
8 - Circles



From the Default Position; fly the aircraft forward 5m whilst ascending the aircraft to a safe altitude of around 20m (65 feet). Then smoothly fly two left hand circles with approximately 10m diameter. Passing above a point 10m to the left of the starting point and directly overhead the starting point on each circle.

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Note that the aircraft should maintain forward flight throughout, it must be pointing tangentially to the circle perimeter (ie its nose facing where it's going) and not flying "tail in" or sideways.



As the aircraft comes back to the starting point (10m directly in front of you) after its second circle switch direction and fly two right hand circles.

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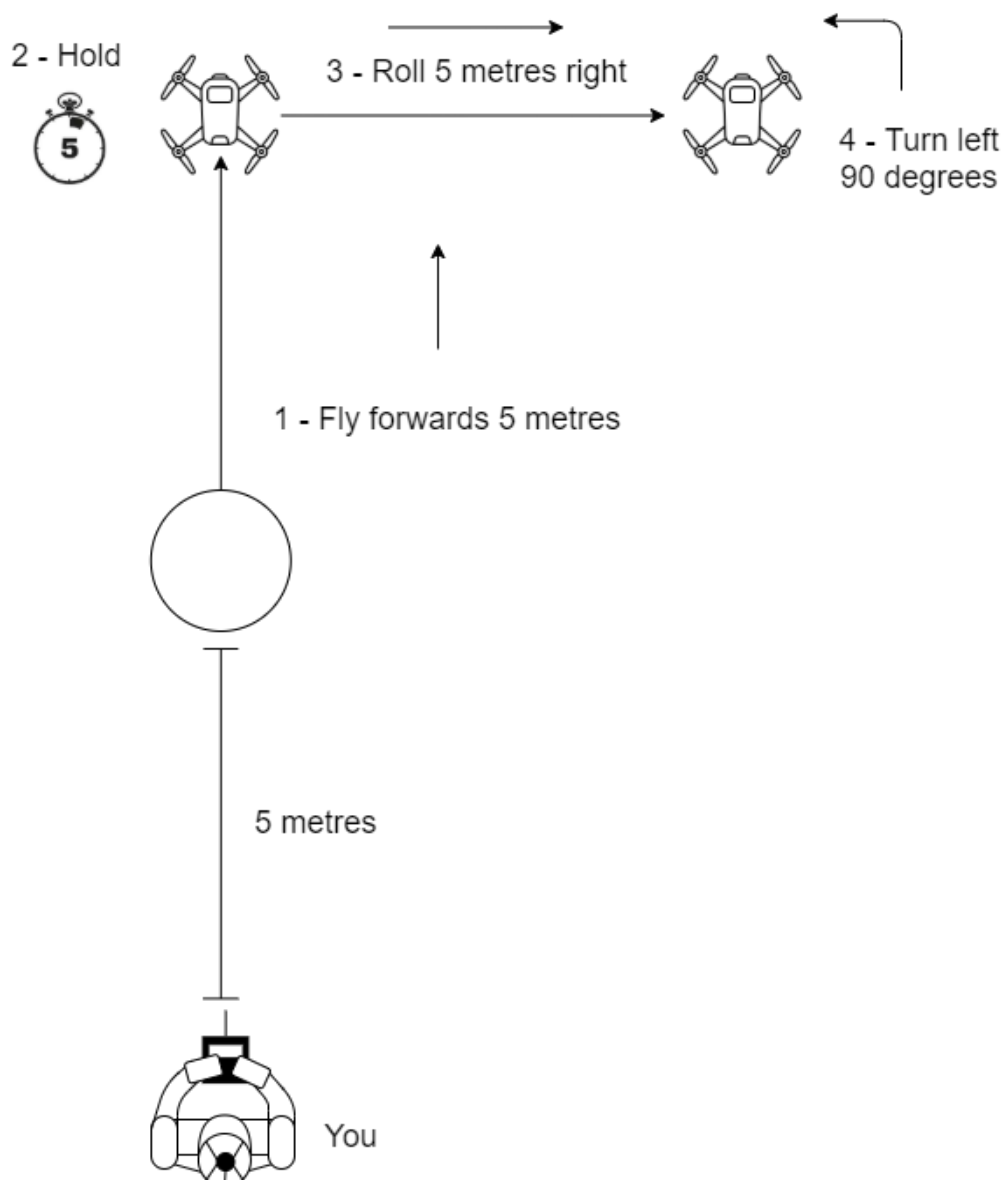


These circles should be flown at flying speed (relatively high speed, compared to the previous exercises). Your examiner will be looking for coordinated use of the controls to give a smooth controlled curve as you turn around the circle. Height and speed should be consistent with no big deviations.

Once you have completed four complete circles, return the aircraft to the default position and hover (2.5m height, 5m ahead of you, tail in). Check telemetry/mobile device for any warning messages, battery condition, signal strength, etc. Now is another good time to land and swap batteries if required.

Confirm the flying area is clear and your aircraft is ready to your examiner and move onto the Top Hat Manoeuvre.

9 - Top Hat Manoeuvre

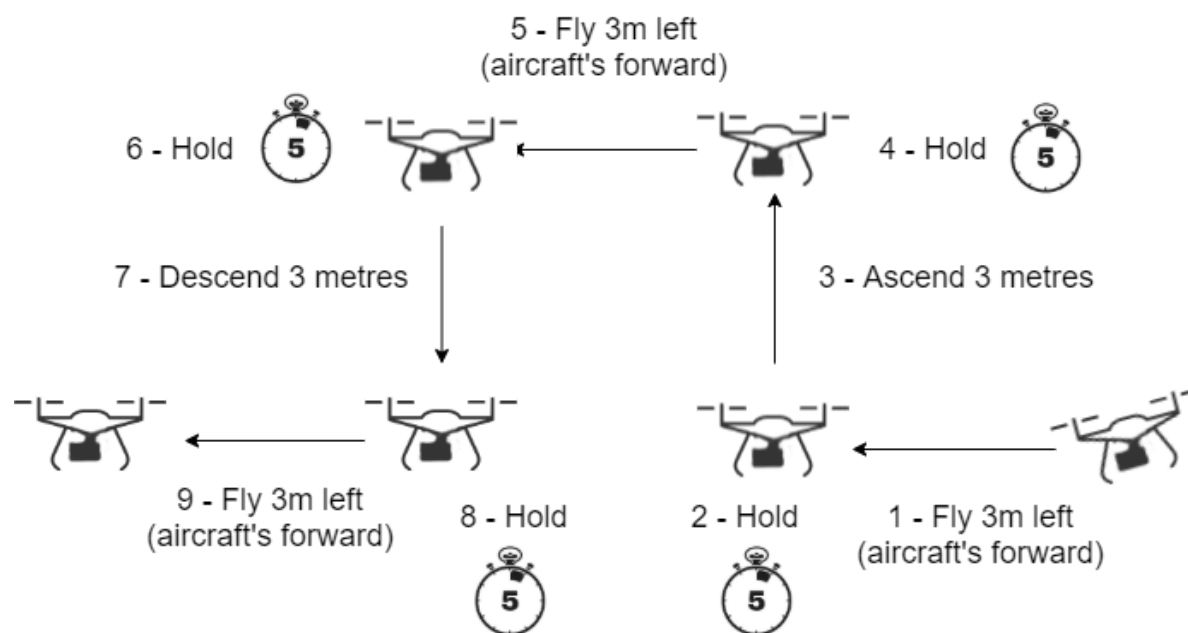


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Fly the aircraft forward 5m, hover for five seconds, then roll the aircraft 5m right.

Now turn the aircraft 90 degrees left so that it is facing to your left ready for the Top Hat Manoeuvre.



Fly the shape of a top hat by flying the aircraft left (its forward) 3m, pause for five seconds, make the aircraft ascend three metres, pause for five seconds, then fly the aircraft 3m to your left (its forward). Pause for five seconds, then make the aircraft descend three metres, pause for five seconds, then fly the aircraft left (its forward) 3m and hover the aircraft for five seconds.

Now turn the aircraft 180 degrees right and fly the aircraft right (its forward) until it is back directly in front of you (approximately 10m ahead), turn the aircraft ninety degrees left so that it is tail in again and fly it backwards to your default position.

With a quick glance check telemetry/mobile device for any warning messages, battery condition, signal strength, etc. Visually check the flying area is safe. (**Examination note:** *If it is, tell your examiner that everything is good, and you're moving onto the Emergency Descent*).

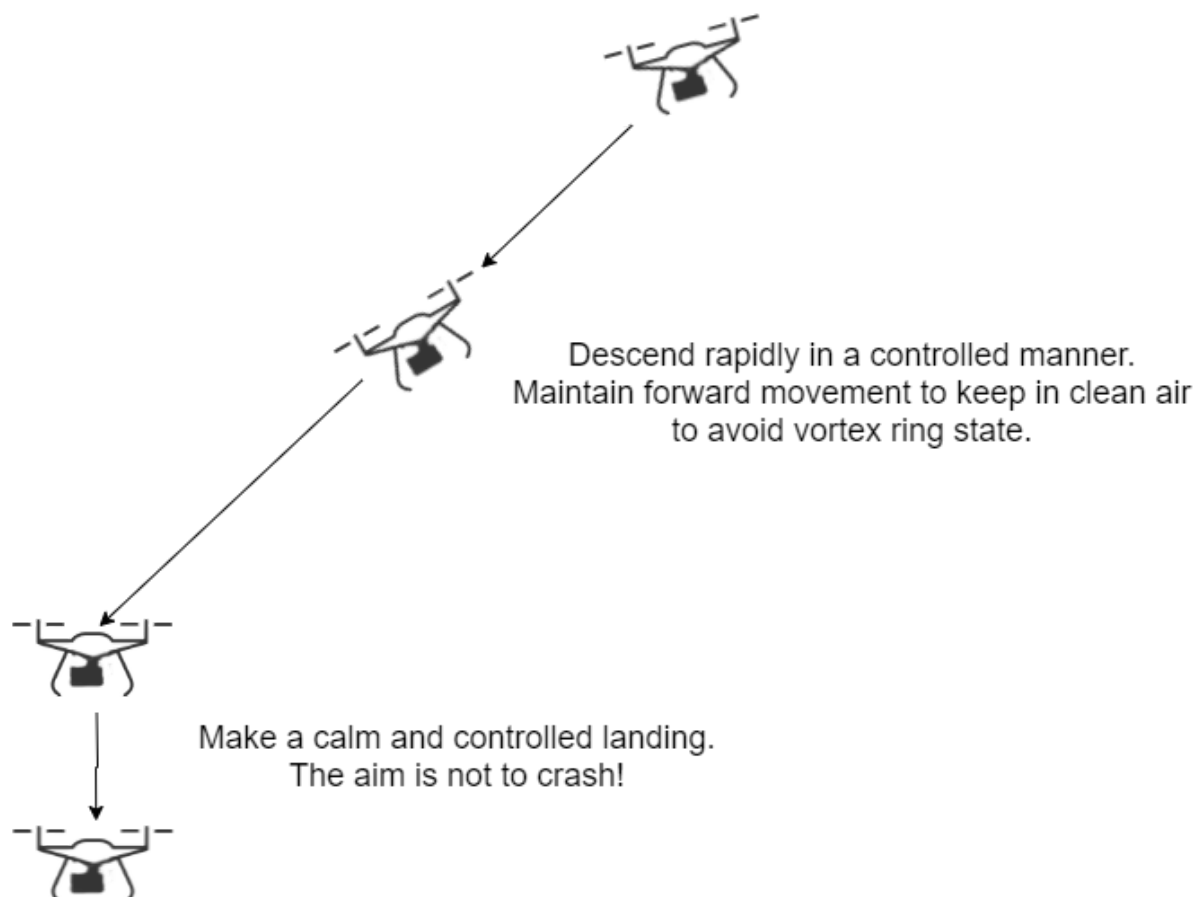
10 - Emergency Descent

In case of an incursion from a manned aircraft (e.g. a HEMS or Police helicopter) you should be competent in performing a rapid emergency descent.

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Fly the aircraft up to around 20m (65 feet) and then perform a simulated emergency descent by rapidly descending the aircraft from its height to ground level. The aircraft should descend at a steep angle (around 45 degrees) to get out of the airspace as quickly as possible and perform a normal landing.



Keep the aircraft moving forward whilst descending in order to keep it in fresh air and avoid vortex ring state.

This is not a crash test - do not feel compelled to land hard. (Once the aircraft is down to 1m above the ground it is out of harm's way and you can take your time with your landing).

11 - Landing

Before landing the pilot should briefly check the landing area for any debris, animals, or any other objects that may be cause for concern on landing.

Be positive and smooth. Beware of ground effect which can cause problems for a hesitant landing.

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Power down

Power down safely, inspect the aircraft for damage and collect it.

Post Flight Checks

Check the aircraft for any damage, particularly the propellers and battery. If the aircraft has sustained a hard landing at any point, thoroughly inspect the battery for damage/puffiness and err on the side of caution. An exploding battery in your car boot on the way home is not desirable!

Battery Charging

Remember that charging is when most battery fires occur. Be very mindful of this when charging your batteries. Thoroughly inspect your batteries for damage/puffiness and don't charge them if they are damaged.

Charge in a safe place and never leave charging batteries unattended. Whilst convenient, charging your batteries from your cigarette lighter socket whilst driving is not advisable.