



***THE GLIDING FEDERATION
OF AUSTRALIA INC.***

OPS 0015

A, B and C Certificate Handbook

**ISSUE 2
December 2011**

The Gliding Federation of Australia Inc. ©

A, B and C Certificate Handbook

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Record of Document History

	Prepared	Approved	Issued	Control	
Signed	CTO	COP	21/12/2011	Issue 2	
Date	21/12/2011	21/12/2011	21/12/2011	Effective 21/12/2011	
Authorised by	CTO	COP	21/12/2011	No. of Pages 12	

Record of amendment

Version/ Pages	Prepared by	Approved by	Issued	Précis of Changes
page 1,4,6,7,9 ,10,11	CTO	COP	21/12/2011	

"A" CERTIFICATE Requirements

1. Minimum age 15 years.
2. GFA Medical Declaration (Appendix I to Ops Regs) signed (or doctor's signature obtained on Appendix: 2 if unable to sign declaration).
3. Minimum of 5 solo flights with normal landings.
4. Satisfactory check flight, which must include the following as a minimum:-
 - (a) An awareness of pre-spin symptoms and a demonstration of the correct action to prevent a spin developing,
 - (b) An accurate circuit without reference to the altimeter,
 - (c) Correct handling of selected emergencies at the discretion of the checking instructor.
5. Oral examination on basic theory and flight rules and procedures.
6. Hold a Flight Radiotelephone Operators License or GFA issued equivalent.

Privileges and limitations

1. May only fly solo under the direct supervision of an instructor.
2. May carry out local soaring only.

"B" CERTIFICATE Requirements

1. A total of 15 solo flights with normal landings, including at least one soaring flight of not less than 30 minutes duration. (Note: This means an overall total of 15 solo flights, not 15 solo flights since qualifying for the "A" Certificate).
2. Completion of post-solo training syllabus in accordance with the Instructor Handbook.
3. Oral examination on basic theory, flight rules and procedures (including GFA Ops Regs and MOSP) and basic airworthiness.

Privileges and limitations

1. May carry out local soaring only.
2. May carry out mutual flying, subject to the following conditions :-
 - (a) The other occupant of the glider also holds a minimum of a "B" Certificate.
 - (b) Each mutual flight is authorised by and carried out under the direct supervision of the Duty Instructor, who shall nominate the command pilot for the flight. The command pilot shall carry out the takeoff and landing.

"C" CERTIFICATE Requirements

1. A total of 20 solo or mutual flights, including two solo soaring flights of at least one hour's duration each.
Notes:
 - (i) This means an overall total of 20 solos/mutuals,
 - (ii) Only time in command of mutual flights can be counted towards this total.
2. Trained and checked in ability to carry out a safe outlanding.
3. Received a "passenger awareness" briefing, using pages 8 to 12 of Part 2 of the GFA Instructor's Handbook as a reference.
4. Oral test on basic theory, basic navigation, basic meteorology, airways procedures, outlanding hazards, post-outlanding actions and SAR requirements.
5. Demonstrate satisfactory spin entry and recovery. This may be carried out dual or solo (observed from the ground) at the discretion of the supervising instructor.

Privileges and limitations

1. May fly cross-country at the discretion of the CFI or Instructor Panel.
2. May carry "family/friend" passengers (not for hire or reward and not Air Experience Flights) at the discretion of the CFI Instructor Panel and under the direct supervision of the Duty Instructor.

Important notes on the basic gliding certificates

The operational functions of the GFA depend on a strong club-based structure. Each club has operational control of its members through the medium of its Operations or Instructor Panel. The certificates provide the certainty of proper follow-up training after initial solo. That is their primary function. They also provide the basic qualifications for mutual flying (B certificate) and carriage of family or friend passengers and/or cross-country flying (C certificate).

These privileges may only be exercised on any given day provided that the pilot concerned is not only in current flying practice, but also meets the particular operational requirements of the club. Some clubs have special procedures and the periodic check requirements may vary considerably from one club to another, based on a number of factors.

It is not expected that any club will unnecessarily stand in the way of a pilot exercising privileges which have been rightly earned. On the other hand, each club reserves the right to exercise operational control over all its members and this applies to the holders of these certificates just as it does to all other club members, regardless of status or experience. As in life itself, common sense should always be the guiding factor in determining whether a given pilot should do this or that on any given day. If this is kept in mind, disputes should be infrequent and solutions to any such disputes easy to find.

"A" Certificate oral examination

Basic theory

- Q1. How is "safe speed near the ground" calculated? Nominate that speed for the glider you fly.
A1: 1.5 times the stalling speed (1.5Vs).
- Q2. What is the secondary effect of rudder?
A2. Roll, caused by the increased angle of attack of the outer wing, which is a result of the wing's dihedral angle. This results in an increase in lift on the outer wing.
- Q3. What happens to the stalling speed in a turn? Why does it happen?
A3. It increases, because of the increase in effective weight due to an increase in g-loading. Because the increased g-loading increases wing-loading.
- Q4. Define aileron drag and explain (a) how the designer compensates for it and (b) how the pilot copes with it.
A4. The downgoing aileron (on the upgoing wing) causes an increase in induced drag because the angle of attack has increased. Likewise the upgoing aileron (on the downgoing wing) causes a decrease in induced drag because the angle of attack has decreased. This difference in drag on each wing results in a yaw away from the direction of intended turn (adverse yaw). The designer usually uses differential ailerons, with more upward travel than downward, to help fix the problem. The pilot ensures that enough rudder is used in coordination with the ailerons to eliminate adverse yaw.
- Q5. Of the forces acting on a glider in flight, which one is used to turn the glider?
A5. Lift - tilted in the direction of turn when the glider is banked.
- Q6. On a glider fitted with an elevator trim tab, which way will the tab move if the trim lever is moved forward?
A6. Up.
- Q7. Airbrakes are used on final approach to control... what?
A7. Rate of descent.
- Q8. If a wing drops at the stall, what is the correct action on the part of the pilot?
A8. Stick forward. Use only enough rudder to prevent yaw.
- Q9. What is the correct recovery action from a fully-developed spin?
A9. Full opposite rudder
- Ensuring ailerons central, move stick forward until spinning stops
 - Centralise rudder
 - Recover from dive
- Q10. Define wind-gradient and explain:
(a) what is its effect on a glider and;
(b) what action does the pilot take to compensate for it.
A10. (a) Wind-gradient is the reduction in wind speed near the ground, caused by ground friction. Near the ground, the glider experiences a loss of airspeed as it enters the area of wind gradient;
(b) The only cure is to carry extra speed during the whole approach in anticipation of the loss and to lower the nose promptly if the airspeed decreases until the correct approach speed is re-established.
- Q11. What usually happens to a glider's airspeed when it flies into a thermal?
A11. It increases momentarily.
- Q12. Which is the higher figure, the speed for minimum sink or the speed for best glide angle?

nominate both figures for the glider you fly.

- A12. Speed for best glide angle is higher than speed for minimum rate of sink.
- Q13. On a glider fitted with flaps, will downward deflection of the flaps improve the glide angle or make it worse?
- A13. Make it worse.
- Q14. What happens to the stalling speed when the airbrakes are opened?
- A14. It increases by 2 to 5 knots.
- Q15. What kind of stability does the glider have in the rolling plane?
- A15. Neutral at low bank angles. But maybe negatively stable at high angle of bank.

Flight rules and procedures

- Q1. What is the in-flight visibility required for flight in Visual Meteorological Conditions (VMC) - (a) Below 3,000ft AGL, (b) between 3,000ftAGL and 10,000ft AMSL and (c) Above 10,000ft?
- A1. (a) 5000m, (b) 5000m, (c) 8km.
- Q2. If the speed falls to below 1.5Vs on a winch-launch and is still falling, what action is the pilot required to take?
- A2. Lower the nose. Release immediately, and obtain 1.5Vs prior to any turns and in preparation for landing.
- Q3. Who gives way when two gliders are approaching each other (a) head-on (b) on converging headings?
- A3. (a) Both turn right (b) the one which has the other on its right gives way.
- Q4. Assuming that the glider is not taking off or landing, what is the minimum height to fly over a built-up area?
- A4. 1,000 feet above highest obstacle below.
- Q5. What actions would a pilot take in the event of glider release failure on aerotow?
- A5. Try again if no success, contact the tow pilot by radio. If for some reason communication can not be established, move out to the left and await acknowledgement from tug pilot. Back up with a radio call if possible. Try again. If still no success, move back behind tug, then up into high tow. Try again. Tug pilot will release glider when it is established in high tow. Failing this (a double hookup) the combination will descend with the glider using airbrakes judiciously to keep the rope taut. The glider will provide most of the braking on the ground roll.
- Q6. What is the minimum vertical and horizontal separation between gliders in a thermal?
- A6. 200 feet.
- Q7. Who establishes the direction of circling in a thermal?
- A7. The first glider in the thermal, unless local rules specify a particular direction near the airfield (e.g. comps).
- Q8. What action would the pilot take on running out of height in the circuit? :
- A8. Modify the circuit and select the best available landing area (be it an alternative runway or an off-field landing)..
- Q9. What is the "gliding in progress" signal, to be located near the windsock at an airfield?
- A9. A double white cross.
- Q10. On which side does a glider overtake another glider (a) when hill-soaring, (b) at all other times?
- A10. When hill soaring, overtake on the downwind side, i.e. between the overtaken glider and the hill. At all other times, overtake on the right.

- Q11. Who is entitled to give a "Stop" signal at a launch-point?
A11. Anyone who sees a hazardous situation developing.
- Q12. What action is required of a pilot before flying in Class C controlled airspace?
A12. The pilot requires a clearance from Air Traffic Control and must comply with the terms of that clearance.
- Q13. At what stage is the airbrake or spoiler control used on final approach?
A13. When a definite overshoot situation is seen to exist.
- Q14. What is the pilot's first priority immediately following a launch failure?
A14. Ensure speed is set at 1.5Vs.
- Q15. What action does a pilot take before carrying out intentional stalling or spinning, or before aerobatics?
A15. Complete the pre-aerobatic check (mnemonic is HASLL)..

"B" certificate oral examination

Basic theory

- Q1. A glider wing always stalls at the same what?
A1. Angle of attack.
- Q2. What is lateral damping?
A2. The tendency of a wing to resist uncommanded movement in roll, caused by the increased angle of attack (and thus increased lift) on the downgoing wing, and the reduced angle of attack (and thus decreased lift) on the upgoing wing..
- Q3. What kind of stability does a glider have in the yawing plane?
A3. Positive stability. The glider tends to return to its original heading when the rudder pedals are centralised.
- Q4. Define wing-loading.
A4. Effective glider weight divided by wing area. The effective glider weight is the g-load on the glider multiplied by the glider's mass.
- Q5. What is meant by "laminar flow"?
A5. A smooth, streamlined flow of air, resulting in low drag around a glider wing, as distinct from a turbulent, high-drag flow.
- Q6. What happens to the rate of descent in a turn?
A6. It increases, because the vertical component of the lift force is reduced. Lift acts at right angles to the chord line of the wing. Lift is resolved into two components, one acting upwards to balance out the weight of the aircraft, the other acting "inwards" to provide the turning (centripetal) force. As angle of bank increases, more of the lift force is resolved horizontally towards the centre of the turn and less acts upwards.
- Q7. What is meant by a "speed-limiting" airbrake?
A7. An airbrake which will not allow the glider to exceed its maximum permitted speed (V_{ne}). Most modern airbrake systems will limit the speed to V_{ne} in a 30-45 degree dive, but no steeper.
- Note: 'Terminal Velocity' airbrakes allow a vertical descent without exceeding V_{ne} .
- Q8. Define aspect ratio.

- A8. Wingspan divided by chord length.
- Q9. What is the purpose of the short length of wool or string sometimes seen attached to glider canopies?
- A9. Usually known as a "yaw-string", it is more accurately described as an airflow direction indicator. Generally used to detect slip or skid in a turn. In level flight, it should be straight.
- Q10. What effect do raindrops have on the wings of a high-performance glider and what action does the pilot take to compensate?
- A10. They partly destroy the laminar flow of air past the wing, resulting in an increase in stalling speed and an increase in the rate of sink. The pilot should increase speed by 5 to 10 knots to compensate and should plan on a much higher sink rate than normal. Approach speed will need to be higher as a consequence.
- Q11. How does profile drag vary?
- A11. As the square of the airspeed. Twice the airspeed, four times the profile drag, three times the airspeed, nine times the drag, etc.
- Q12. What causes pre-stall buffet?
- A12. The turbulent airflow from the breakdown in flow over the top of the wing striking the tail. And shaking the elevator
- Q13. What is the danger in banking too steeply near the ground in a strong wind?
- A13. The top wing is in an airmass of faster speed to the bottom wing (due to wind gradient). At low level, turning into a strong wind causes the glider to overbank, vice-versa if turning downwind. The effect may be beyond the pilot's ability to prevent it occurring.
- Q14. What is a "stabilised approach"?
- A14. A glider going in the required direction at a constant safe airspeed near the ground and a constant rate of descent is said to be on a stabilised approach. The best landings result from such approaches.
- Q15. The longer a glider has been spinning, the longer it might take for recovery action to be effective. True or false?
- A15. True, but it will only recover if the CORRECT recovery action has been taken and the glider is within its CG limits. Most aircraft certification is limited to 6 rotations in spin.

Flight rules and procedures

- Q1. What is the "break-off point"?
- A1. The point at which upper-air exercises are terminated and full commitment made to the circuit, approach and landing.
- Q2. What is the recommended minimum height to clear an obstacle on final approach?
- A2. 50 feet or about one wingspan.
- Q3. Who is entitled to give a "take up slack" signal?
- A3. Only the pilot, or someone definitely known to have been delegated this responsibility by the pilot.
- Q4. Who has priority, a glider taking off or a powered aircraft landing?
- A4. ANY aircraft landing has priority over ANY aircraft taking off.
- Q5. To whom must a gliding club report an accident?
- A5. Accidents and serious incidents (commonly called Immediately Reportable Matters), which affect the safety of aircraft must, in the first instance, be notified to the Australian Transport Safety Bureau (ATSB) by telephone toll-free call: 1800 011 034 or fax (02) 6274 6434 and the RTO/Ops. The accident must be reported immediately,
- Q6. Should you fly a glider if you donated blood the day before?

- A6. No. The minimum mandated recovery period is 24 hours. The Australian Red Cross stipulates 72 hours before operating critical machinery or aircraft. Blood donors have to sign a declaration to this effect.
- Q7. By what height above the ground must all stalling, spinning and aerobatics be completed?
- A7. 1,000 feet. In fact, the lowest point of any aerobatics must not be below 1,000' AGL.
- Note: AIP ENR 5.5, sect 1.2.10 states that gliders are not permitted to perform aerobatics, including spin training within 2 nm of a Certified or Registered airfield below 2,000 ft AGL (1000 feet above circuit height)
- Q8. What action do you take if you abandon a take-off, pull the release twice but know or suspect that the cable/towrope has become entangled in the wheel or skid?
- A8. Shout "Stop" (very loudly) and on the radio if possible, open airbrakes fully and hold stick fully forward. If possible, apply wheel-brake. Do not let the aircraft fly!
- Q9. What does a rudder-waggle on aerotow mean?
- A9. Airbrakes Unexpectedly poor rate of climb. Suspect airbrakes/spoilers extended or tail chute deployed.
- Q10. Above what altitude must oxygen be carried and used?
- A10. Above 10,000 feet AMSL.
- Q11. What action do you take if you have mishandled the landing flare and the glider is starting to gain height?
- A11. Close airbrakes. Stop the backward movement of the stick to prevent the glider "ballooning" any higher. If the balloon is a really bad one, sufficient forward movement of the stick to regain normal flying attitude. Carry out landing further down field.
- Q12. Assuming you had a choice {i.e. airfield procedures or obstacles do not take precedence), on which side of the strip would you do a circuit in a strong crosswind?
- A12. On the downwind side.
- Q13. Where should the pilot's left hand be during every takeoff?
- A13. Immediately next to the yellow release handle.
- Q14. Prior to every takeoff, what clearance must be obtained by the pilot?
- A14. "All clear above and behind".
- Q15. When you join the circuit, you realise that you are too high and the angle to the strip is too steep. What action do you take?
- A15. Move out straightaway, then resume parallel track with strip further out. Airbrakes may be used if a gross error has been made, but beware of gliders underneath in the circuit joining area.

Basic airworthiness

- Q1. What aircraft document should be checked before flight and what information should be sought from it?
- A1. Maintenance Release (MR)/ GFA Form 1. Check expiry date of MR, check minor defect (allows flight) and major defect (prevents flight) pages and check that the Daily Inspection has been signed for. Confirm the MR matches the registration of aircraft to be flown.
- Q2. Where should the pilot look to find the glider's minimum and maximum weak-link strengths?
- A2. On a placard in the cockpit.
- Q3. What action should the pilot take in the event of overstressing or overspeeding a glider in flight?
- A3. Do not allow it to fly until inspected by a qualified person. Seek the advice of an authorised inspector. If none available, leave matters in the hands of the Duty Instructor. DO NOT

NEGLECT TO REPORT IT TO SOMEONE.

- Q4. What is meant by "manoeuvre speed (V_a)"?
- A4. Manoeuvre speed (V_a) is the speed above which full control deflection is not permitted, it is imposed to protect the structure. Over V_a , only one- third deflection is permitted on the ailerons and rudder, and use of the elevator is limited to the extent necessary to keep the glider within its permitted "G" loadings.
- Q5. If flutter is encountered in moderate to high speed flight, (a) what immediate action should the pilot take, (b) what subsequent action after landing?
- A5. (a) Slow down, (b) ground the glider and report the incident. Get the glider inspected.
- Q6. When checking a back-release, at approximately what downward angle should the cable automatically back- release?
- A6. At about right-angles to the fuselage. The important thing is that the cable does NOT have to be pulled backwards to actuate the back-release. If it needs such an extreme angle to make it work, there may be something wrong with it.
- Q7. What is " V_{ne} "? Is it the same at all altitudes?
- A7. "Velocity Never Exceed", the indicated maximum permitted air-speed of the glider in 'smooth air. The V_{ne} indicated on the airspeed indicator reduces with height because of reducing air density with height (at an approximate rate of 1.5% reduction in indicated V_{ne} per 1,000' AMSL). Consult glider Flight Manual for details
- Q8. A glider must never be pulled forward or backward by its wingtips. Why not?
- A8. It puts too much strain on the wing-root fittings because of the long leverage arms of the wings.
- Q9. Every glider has a maximum and minimum pilot weight. Where can this information be found?
- A9. On the cockpit placards.
- Q10. Under what circumstances can a pilot lighter than the permissible minimum pilot weight fly the glider?
- A10. Only when the required ballast is carried in accordance with the placard, and then only if the ballast is capable of being properly secured in the proper location..
- Q11. Why is a weak-link fitted to a cable or towrope?
- A11. To protect the glider structure in the event of launch overstress.
- Q12. What is meant by the "manoeuvre envelope"?
- A12. The "envelope" of speeds and G loadings within which it is safe to fly the glider and outside of which damage or failure of the structure may occur.
- Q13. What kind of inspection must be carried out on a glider after it has been rigged?
- A13. A Daily Inspection. Should be two daily inspections ,to give an independent rigging check
- Q14. What is a Form 2 Inspection?
- A14. The Annual Inspection for the continuing validity of the glider's Certificate of Airworthiness and the issue of a new Maintenance Release".
- Details of annual inspections are recorded on GFA Form 2.
- Q15. From an airworthiness point of view when must aerobatics NOT be performed?
- A15. In rough air and if prohibited by the Flight Manual. Some flight manuals allow some simple aerobatics but prohibit others.

"C" Certificate oral examination

Basic theory

- Q1. Assuming adequate entry speed, how much G is capable of being produced in a 60 degree banked turn?
- A1. $2G$. $G\text{-loading} = 1 / \cos(\text{Angle of Bank})$
- Q2. If a glider is not fitted with an elevator trim tab, how is trimming carried out?
- A2. By an internal spring bias attached to the elevator circuit.
- Q3. What is "ground effect"?
- A3. The partial cancellation of wing downwash caused by proximity to the ground. This results in a reduction in induced drag and an effectively flatter glide-angle.
- Q4. What is autorotation and what causes it?
- A4. Autorotation is the tendency of an asymmetrically-stalled glider to rotate continuously in the rolling plane. Spinning is an autorotative manoeuvre with the nose pointing steeply down. It is caused in the first instance by the loss of lateral damping on a stalled wing.
- Q5. If you blow lightly into the total-energy venturi of a variometer system, which way would you expect the vario needle to move?
- A5. Up.
- Q6. You are in a gentle turn with the bank slowly increasing and the stick coming steadily back at a constant nose attitude. What is likely to happen if the stick continues to come back?
- A6. The glider will probably spin.
- Q7. What is meant by a "balanced" turn?
- A7. A properly coordinated turn without slip or skid.
- Q8. What effect does aspect ratio have on induced drag?
- A8. The higher the aspect ratio (i.e. the "skinnier" the wing), the lower the induced drag, because the wingtip vortices are less intense on a high aspect ratio wing.
- Q9. A glider is flying at 60kts IAS into a 20kt headwind with a reading of 2kts down on the variometer. The airfield is 10NM away. What height will you have on arrival at the field if you set off towards home at 4,000ft?
- A9. 1,000 feet, calculated as follows. Effective glide angle over the ground is 1 in 20 (40 knots groundspeed divided by 2 knots rate of descent), therefore 10 nautical miles would take 0.5 of a nautical mile of height, which is about 3,000 feet.
- Q10. What is the optimum angle of bank for minimum height loss in a turn at 1.5Vs.
- A10. Theoretically 50 degrees, but for practical purposes 40 to 45 degrees.
- Q11. Which is the best wing for the groundcrew to hold on a crosswind aerotow takeoff?
- A11. The downwind wing. because it is easier to help a pilot out of a ground loop situation by holding back if the glider starts to weather cock into wind..
- Q12. What is the effect of water-ballast on (a) stalling speed,(b) climb performance and (c) glide angle?
- A12. (a) It is increased, (b) It is degraded, (c) It remains the same but occurs at a higher airspeed.
- Q13. Why are TWO rings fitted to the end of a launching rope or cable?
- A13. To ensure that the pull exerted by the small ring on the hook is always straight and not at an angle.

- Q14. What is the dominant control in incipient spin recovery?
A14. The elevator.
- Q15. In a crosswind landing using the crab method of approach, are the controls crossed when the glider touches down?
A15. Yes, to counter secondary effect of rudder when drift correction (crab) angle is removed to align the fuselage with landing direction.

Flight rules and procedures

- Q1. What is meant by the "non-manoeuving area"?
A1. The area of sky within which, if a launch failure occurred, the glider would be too high to land ahead within the remaining strip length and too low to manoeuvre to join a circuit.
- Q2. Which way does the aiming-point move if the glider is overshooting?
A2. Downwards in the canopy.
- Q3. When is a glider permitted to fly in the following areas: (a) Danger Area, (b) Restricted Area (c) Prohibited Area? On which chart will these areas be found?
A3. (a) Anytime with care (b) Only in compliance with specified conditions (c) Never. These areas will be found on Enroute Charts(ERSA), Low (ERC(L)s) and Visual Terminal Charts (VTCs).
- Q4. What action must the glider pilot take if he loses sight of the tug during an aerotow?
A4. Release immediately.
- Q5. At what height above ground must selection of an outlanding area be made on a cross-country flight?
A5. Landing areas should be monitored at all times above ground. A short-list of suitable out-landing paddocks must be selected below 2,000 feet AGL
- Q6. What wind-indicators are available to assist a pilot on an outlanding?
A6. Cloud shadows on ground, drift in circuit (Note: these two will give wind at height, which will be a useful guide but not quite the same as the surface wind). Wind-shadows on dams, dust behind cars on dirt roads (look at individual puffs' directions). Movement of crops. Finding a windsock is very useful.
- Q7. What is the most common circuit-planning fault in early attempts at outlanding?
A7. Too steep an angle, cramping the circuit.
- Q8. What are the five "S's" for choosing outlanding paddocks?
A8. Size, slope, surface, stock and surroundings. The latter check should pay particular attention to Single Wire Earth Return (SWER) lines.'
- Q9. What are the minimum paddock standards for an aerotow retrieve from an outlanding?
A9. Authorised Landing Area (ALA) standard, but in any case a minimum length of 600 metres.
- Q10. What precautions are necessary when flying cross-country on days of total fire-ban?
A10. Non-sparking skids must be fitted to gliders. No aerotow retrieves because of fire danger from tug exhausts. Retrieve cars confined to roads and not permitted in paddock, unless it is ploughed and then only with farmer's clearance. Diesel powered retrieve vehicles are preferred in extreme conditions. If there is a total movement ban, the retrieve may not be allowed until the ban is lifted.
- Q11. What are the implications of landing out and failing to contact crew by radio or telephone by last light?

- A11. The crew will be compelled to initiate search and rescue (SAR) action.
- Q12. Name three basic precautions to take when giving an introductory flight to a relative or friend.
- A12. No aerobatics or steep turns. Gentle thermal turns. Keep flights short on rough or very hot days or consider flying on another day.
- Q13. What extra equipment must a glider carry for operations in a Designated Remote Area?
- A13. Either a Emergency Locator Transmitter (ELT), or portable Personal Locator Beacon (PLB) or marine equivalent known as an EPIRB (Electronic Position Indicating Radio Beacon). Equipment for a water-still. The latest ELTs are 406 Mhz frequency replacing the previously used 121.5 and 243 Mhz units.
- Q14. What qualifications does a glider pilot need to communicate with Air Traffic Services?
- A14. Logbook endorsement as GFA radio operator, or a flight radiotelephone operator as part of a pilot's license.
- Q15. What are the horizontal and vertical extents of a CTAF? What do the initials stand for?
- A15. 10NM radius, at a height that may cause confliction to traffic. CTAF stands for Common Traffic Advisory Frequency
- Q16. Is it mandatory for a glider to carry and use radio in a CTAF?
- A16. Yes, if the airport is a military, certified or registered airport.

Basic soaring meteorology

- Q1. At what rate (in degrees Celsius per 1,000ft) does a thermal cool as it rises in clear air? What is the name given to this rate?
- A1. 3 degrees per 1,000ft. The Dry Adiabatic Lapse Rate.
- Q2. What is meant by "atmospheric stability"?
- A2. A temperature structure in the atmosphere whereby a rising thermal will tend to reach temperature equilibrium with its surrounds and therefore stop rising.
- Q3. What is "water vapour"?
- A3. The invisible moisture present in the atmosphere to some extent at all times.
- Q4. What is "dew point"?
- A4. The temperature at which water vapour condenses into visible water droplets in the atmosphere (that is clouds form).
- Q5. If a thermal is capped by a cloud, what does the cloud consist of?
- A5. Visible water droplets (NOT water vapour).
- Q6. What happens to a thermal inside a convection cloud?
- A6. It increases its rate of ascent (because the air becomes more bouyant) due to the release of latent heat when water vapour changes its state to visible water droplets at the dew point.
- Q7. What is "coriolis force" and what is its effect on a wind blowing from high pressure to low pressure?
- A7. The effect of the earth's rotation on wind, causing an otherwise straight flow of wind to turn into spiral patterns around areas of high and low pressure.
- Q8. In which direction does the wind blow around an anticyclone?
- A8. Anti-clockwise in the Southern Hemisphere.
- Q9. A cyclone is an extreme form of. ...what?
- A9. Depression.

- Q10. What is the effect of an increase in height on (a) air temperature, (b) air pressure, (c) air density.
A10. They all decrease with height.
- Q11. Which is likely to generate the most hazardous weather for gliding, a warm front or a cold front?
A11. A cold front (blustery winds, rain, possible thunderstorms).
- Q12. In what kind of pressure pattern is subsidence likely?
A12. Centre of an anticyclone.
- Q13. What is the effect of subsidence on thermal development?
A13. It tends to inhibit thermal development.
- Q14. What is a "downburst" or "microburst"? Where are they likely to be found and what does a glider pilot do about them?
A14. An extremely strong downdraft, causing locally strong surface winds which are often very hazardous. They are found on the edges of thunderstorms, often at a considerable distance from the storm itself. They may also be underneath areas of virga (precipitation that evaporates before reaching the ground). Glider pilots must avoid them at all costs; although the downburst itself may be invisible, they are sometimes marked by areas of rising dust where they reach the ground.
- Q15. Are the conditions following the passage of a cold front likely to be good or bad for soaring?
A15. Good (unstable air with enough moisture to form cumulus clouds).