

**GLIDING NEW ZEALAND  
QUALIFIED GLIDER PILOT CERTIFICATE  
HUMAN FACTORS EXAMINATION**

Time Allowed: 1 Hour

**INSTRUCTIONS:**

1. Do not write on this examination paper.  
Write only on the answer sheet provided.
2. On the answer sheet, enter your name, date, club and paper number.

**This is a SAMPLE Human Factors Exam.**

3. Questions are of the multiple choice answer type and are to be answered by placing a cross on the answer sheet and over the appropriate letter (A, B C or D) at the number corresponding to the question.  
eg. 7. A. B. C. D.
4. If you make an error and wish to change your choice of answer, circle the error and place a cross on the new answer chosen.  
eg. 7. A. B. C. D.
5. The paper consists of twenty questions. Read all the questions carefully before making your choice of the most correct answer. To attain a pass you must answer correctly at least fourteen questions.
6. You must return both the examination paper and the answer sheet to the supervisor at the completion of the exam.
7. If you consider any aspect of this examination requires amendment or can be improved upon, please do not hesitate to advise the National Operations Officer.

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**Tips On Exam Technique**

1. This is a multi choice exam where you have 4 possible answers. Only one will be completely correct. The other answers may range from being partly or nearly right to being obviously wrong!
2. Read all the answers before committing yourself to the answer you consider correct.
3. Work out how much time to allow for each question then keep track of time.
4. Don't get hung up on one particular question; move on and complete those you are confident you know the right answer then come back to those you left.

## HUMAN FACTORS

1. The symptoms of hyperventilation may include:
  - (a) Rapid breathing, dizziness, faintness, tremors, clumsiness and anxiety.
  - (b) Over confidence, loss of self criticism, decrease in colour vision and peripheral vision.
  - (c) Pain in the middle ear and possible stomach cramps.
  - (d) All of the above.
  
2. Trapped gases in body cavities expand with increasing height and may cause pain. At constant body temperature, the volume doubles as the pressure halves. Trapped gases can occur in:
  - (a) The brain, lungs and ears.
  - (b) The middle ear, gut, teeth and sinuses.
  - (b) The ears and bowel.
  - (d) The lungs, joints and ears.
  
3. Pilot decision making is impaired by:
  - (a) Disrupted circadium rythms (e.g. shift work related sleep disturbance and / or jet lag).
  - (b) Hypoxia.
  - (c) Environmental stressors.
  - (d) All of the above.
  
4. Why is flying with a cold not recommended?
  - (a) You may damage your middle ear or aggravate sinus disorders because of an inability to equalise the pressure in these cavities.
  - (b) A blocked nose may cause hyperventilation and possibly the chokes.
  - (c) A cold will impair your hearing and radio calls may be missed.
  - (d) Subtle pressure changes that help you detect lift and sink are not detected.

5. Even mild hypoxia impairs our lookout because:
- (a) The muscular tremors and flickering associated with hypoxia blur our vision.
  - (b) The eyes, being closest to the brain, are the nearest to be affected.
  - (c) The eyes require 30% of our total oxygen supply and any reduction of oxygen supply to them will cause loss of visual acuity and a narrowing of our peripheral vision.
  - (d) The cones and rods are oxygen sensitive and dilate with any lack of oxygen which blurs our vision.
6. Most heat is lost through which part of the body when exposed to cold?
- (a) The hands.
  - (b) The feet.
  - (c) The abdominal core.
  - (d) The head.
7. What is the most important body system for keeping the pilot orientated?
- (a) The balance organs of the inner ear that provide our sense of balance.
  - (b) The visual system that provides our horizon reference.
  - (c) The nervous system that allows us to fly "by the seat of the pants".
  - (d) The intestinal system that allows us to fly according to "the gut feeling".
8. Self medication is okay:
- (a) Never.
  - (b) Only after checking with a doctor qualified in Aviation Medicine that the medication to be used is safe to fly with as Pilot-in-Command.
  - (c) If you use oxygen from a lower altitude; say 8000ft.
  - (d) If you have used it safely at least three times before.

9. Lookout is a function of Perception, Decision and Response, all of which take time. The Perception phase involves detecting an object in our field of view. This is best done by scanning as follows:
- (a) Divide the area into 20 degree sectors and hold your scan in each sector for at least 2 seconds before moving on.
  - (b) Scan in a flowing zig zag pattern from left to right avoiding focal stagnation.
  - (c) Focus on a near object then scan outwards to distant objects to avoid blind spots.
  - (d) Scan by moving your head rather than your eyes so as to avoid peripheral stagnation.
10. Any alcohol in the bloodstream contributes to disorientation by:
- (a) Changing the specific gravity of the fluid in our inner ear thereby distorting signals to the brain for up to 12 hours after drinking.
  - (b) Diluting haemoglobin in the semi circular canals.
  - (c) Reducing our ability to metabolise oxygen thereby impairing decision making and simple brain functions like hand / eye co-ordination.
  - (d) Both (a) and (c).
11. If you suspect you are hypoxic you should:
- (a) Tell someone, set up a spiralling descent and tighten your mask.
  - (b) Lookout below and start descending then check your oxygen system.
  - (c) Select the highest flow rate, check your system, commence a descent and tell someone.
  - (d) Start descending and breath faster till the symptoms dissipate.
12. Approaching to land on sloping ground can create the illusion that:
- (a) Your speed is too high for the angle of approach.
  - (b) You are shallow if the slope is uphill so you get too high.
  - (c) You are too steep if the slope is uphill so you may end up too low and undershoot.
  - (d) You are shallow if the slope is downhill so you get too high and overshoot.

13. The bends is the most common form of decompression sickness. It may occur when:
- (a) You fly above 6000 ft after doing some scuba diving.
  - (b) You fly above 18,000 ft for an extended period of time.
  - (c) You over exercise a joint and cause oxygen to come out of solution.
  - (d) Either (a) or (b).
14. What are your actions in the event of suspecting the passenger you are flying with is hyperventilating?
- (a) Tell them to hold their breath for as long as comfortably possible.
  - (b) Have them slow their rate of breathing while reducing / stopping any manoeuvres that may have caused them to be anxious, provide reassurance and return to land.
  - (c) Open the cockpit vent to bring in fresh CO<sub>2</sub> laden air.
  - (d) Pass them a sick bag as there is little else you can do until you get back on the ground.
15. Which of the following contribute to stress?
- (a) Excessive heat, cold, noise, vibration and glare.
  - (b) Low blood sugars levels, hypoxia and sleep disturbances.
  - (c) In flight emergencies, personal problems and lack of personal fitness.
  - (d) All of the above.
16. Landing with water droplets on the canopy is hazardous because:
- (a) The eyes focus on the droplets which reduces our depth perception and this often leads to heavy landings.
  - (b) The eyes cross focus on the droplets causing possible double or blurred vision.
  - (c) Droplets magnify the prismatic colour displacement which may induce flicker vertigo.
  - (d) The streaming droplets creat a false peripheral horizon which can induce the leans.

17. Dehydration can be a problem for glider pilots exposed to high ambient temperatures and/or prolonged breathing of dry aviation oxygen. To help prevent it you should:
- (a) Eat moist foods and drink carbonated softdrinks.
  - (b) Wear a light coloured sun hat and light weight clothing, take frequent drinks of water or sport type fluids and eat low protein snacks during flight.
  - (c) Pre soak your socks, carry 2 litres of water for each hour you expect to be airborne and avoid drinking coffee for 4 hours prior to flying.
  - (d) Avoid over dressing and direct vented air over your head to keep it cool.
18. Humans are prone to making errors of omission. Items on a checklist can be missed when:
- (a) You are interrupted.
  - (b) You are distracted by other events.
  - (c) You are tired.
  - (d) Any of the above.
19. The symptoms of hypoxia are many and varied and include:
- (a) Euphoria, dimming of vision, muscular tremors, slurring of speech.
  - (b) Rapid deep breathing, light headedness and fainting.
  - (c) Loss of co-ordination, tunnel vision, loss of colour vision and over confidence.
  - (d) Both (a) and (c).
20. What warning do you have as you approach your shreshold of tollerance to positive G?
- (a) You start "greying out" as the blood flow to the eyes is reduced and your peripheral vision diminishes.
  - (b) None, unless you have a G meter fitted to your glider.
  - (c) You start "redding out" as excess blood rushes to the head and engourges the eyes with blood.
  - (d) You get a tingling in your toes as the nerve endings are compressed.

*Answers to Meterology questions:*

<b>Question</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
<b>Answer</b>	A	B	D	A	C	D	B	B	A	D	C	C	D	B	D	A	B	D	D	A