

Airborne Icing (Pass 70%)

1. Airframe icing is most frequent when static air temperature is between?
 - a) 2 and -20°C
 - b) -2 and 20°C
 - c) -5 and 30°C
 - d) 0 and 25°C
2. Supercooled Large Droplets (SLD) can have a diameter of up to?
 - a) 10,000 microns
 - b) 100,000 microns
 - c) 1,000,000 microns
 - d) 1,000 microns
3. Freezing rain typically forms in _____ air, with _____ air aloft:
 - a) Subfreezing, above freezing
 - b) Above freezing, subfreezing
 - c) Above freezing, above freezing
 - d) Subfreezing, subfreezing
4. If you encounter Supercooled Large Droplets, an altitude change of _____ ft. usually is sufficient to exit those conditions:
 - a) 1,000
 - b) 3,000
 - c) 7,000
 - d) 12,000
5. What type of air is most conducive to airframe icing?
 - a) Cool, dry
 - b) Warm, moist
 - c) Cold, moist (-28°C)
 - d) Cold, moist (-8° C)
6. Icing in stratiform cloud is usually found in the higher temperature, mid to low level clouds below _____ ft AGL.
 - a) 10,000
 - b) 15,000
 - c) 7,000
 - d) 14,000

7. Icing in cumulus cloud is usually _____ in duration, and _____ in intensity.
- a) Short, severe
 - b) Extensive, moderate
 - c) Short, light
 - d) Moderate, severe
8. Which type of cloud typically contains a lower amount of liquid water in a given volume?
- a) Cumulus
 - b) Stratiform
 - c) Unstable
 - d) Both (a) and (b)
9. The likelihood of picking up ice is greatest:
- a) Along the leeward side of a mountain
 - b) Near a large body of water
 - c) Downwind from a large mountain range
 - d) Anywhere
10. Warm air gradually rising over cold air in the winter signifies:
- a) Winter cold front and possible snow squalls
 - b) Low pressure area
 - c) Winter warm front and may result in freezing rain or freezing drizzle
 - d) Daytime heating
11. When flying an aircraft in the vicinity of a cold front, in order to avoid icing a pilot should:
- a) If it is a classic cold front, fly behind it
 - b) If it is a shallow cold front, fly behind it
 - c) If it is a shallow cold front, fly ahead of it
 - d) Both (a) and (c)
12. The risk of having a severe icing encounter in freezing rain or freezing drizzle is highest in the vicinity of:
- a) Warm Front
 - b) Cold Front
 - c) Occluded Front
 - d) Both (a) and (c)

13. Ice accretion will:

- A. Decrease climb rate
- B. Decrease cruise speed
- C. Decrease stall speed
- D. Decrease service ceiling
- E. Decrease maximum range
- F. Decrease fuel consumption

- a) A, B, D, E
- b) A, B, C, E
- c) B, C, E, F
- d) A, B, C, D, E, F

14. In some instances, exposure to clear icing for 2 minutes could:

- a) Double drag
- b) Reduce maximum lift by 25 – 30%
- c) Reduce critical angle of attack by 8 degrees
- d) All of the above

15. Very small amounts of ice (equivalent to medium grit sandpaper) can increase the stall speed by _____ knots.

- a) 15
- b) 10
- c) 5
- d) 17

16. Ice contaminated tail stalls are almost always associated with:

- a) Flap retraction
- b) Flap extension
- c) Gear extension
- d) Missed approaches

17. Which type of wing would be the most efficient ice collector?

- a) Thick wing
- b) Thin wing
- c) Large aspect ratio
- d) Small aspect ratio

18. An aircraft anti icing system should be activated:

- a) Before the aircraft enters icing conditions
- b) After $\frac{1}{2}$ inch of ice forms on the leading edge
- c) As soon as ice is seen building up on the leading edge
- d) None of the above

19. An aircraft de-icing system:

- a) Is used to prevent the formation of ice
- b) Usually relies on heat to evaporate water
- c) Is used to remove ice after it has accreted on a protected surface
- d) All of the above

20. A pneumatic deicing boot should be activated:

- a) At the first indication of ice accretion
- b) When $\frac{1}{4}$ inch of ice has accumulated
- c) When $\frac{1}{2}$ inch of ice has accumulated
- d) Before the aircraft enters icing conditions

21. With regards to an aircraft being certified for flight into icing conditions:

- a) Aircraft are certified for both freezing rain and freezing drizzle
- b) Aircraft are certified for neither freezing rain or freezing drizzle
- c) Aircraft are certified for freezing drizzle but not freezing rain
- d) Aircraft are certified for light freezing rain but not moderate freezing rain

22. A regional jet reports light icing during climb out. The pilot of a light twin, flying in that same area could expect:

- a) Severe icing
- b) Moderate Icing
- c) Light icing
- d) Both (a) or (b) could be expected

23. Which of the following indicate that a cloud has high liquid water content?

- a) Cloud edge diffuse and fuzzy
- b) Coloured rings or a rainbow like pattern
- c) Cloud edges well defined
- d) Both (b) and (c)

24. Icing in cumulus cloud is usually limited _____ but can extend _____ for thousands of feet. To prevent entering icing conditions around cumulus cloud a pilot should _____.

- a) Vertically, laterally, climb or descent
- b) Laterally, vertically, divert around
- c) Laterally, vertically, climb or descent
- d) Vertically, laterally, divert around

25. Icing in stratus cloud may be extensive _____, but is usually less than _____ feet thick.

- a) Laterally, 3,000
- b) Vertically, 3,000
- c) Laterally, 2,000
- d) Laterally, 3,500

26. Which components of an aircraft tend to accrete ice first?

- a) Wing and tail leading edges
- b) Windshields and windows
- c) Wiper blades, probes, and unheated portions of spinners
- d) All of the above

27. Which of the following could indicate that an aircraft is picking up ice?

- a) Higher than normal power settings for a particular airspeed
- b) Gradual loss of airspeed
- c) Ice detector activation
- d) All of the above

28. While receiving your departure clearance from ATC, you realize the clearance will take you through icing conditions while in the air. The best course of action to take would be:

- a) Ask for a different clearance from ATC
- b) Activate your deicing system as soon as you are off the ground
- c) Stop at the deicing bay and have your aircraft sprayed with de/anti icing fluid
- d) Disregard standard procedure and climb through ice as fast as possible

29. Why can flying an approach in icing conditions or with ice accretion be hazardous?

- a) Ice accretion may suddenly become noticeable when power or aircraft configuration is changed
- b) Ice induced tail stalls are more likely to occur when flaps are lowered
- c) Ice accretion will lower the aircrafts stall speed.
- d) Both (a) and (b)

30. You are flying an aircraft that is certified for flight in icing conditions. You can assume that the de icing system will be able to handle all icing conditions that may be encountered.

- a) True
- b) False