

## Instrument check ride homework assignment

This is a homework assignment. It is not required, but will help you on your Instrument check ride.

- 1) Draw an aircraft and make three columns to describe
  - a. where ice accumulates
  - b. negative effect on aircraft
  - c. mitigation strategies.

Include the following on diagram: Propellor, air intake, Carburetor (if equipped), Wings, control surfaces, tail surfaces, comm/nav antennas, Pitot tube, static port, landing gear (including wheels and brakes), Wind screen.

- 2) You are flying to an airport in winter and the ATIS reports runway conditions are 3/3/2. What does this mean? will you divert?

- 3) ATC informs you a PIREP was made about 30 minutes ago in the area you are flying into at your same altitude and reported Moderate Rime, OAT -3 degrees Celsius. How much ice per hour would you expect to accumulate? How does this compare to a report of light Rime? What would you do?

- 4) You are planning to fly to KRFD and the weather at your ETA +/- 1 hr is reported as 31010kt 2sm -SN BR OVC008. Do you need to file an alternate? Can you file KJVL as an alternate if during this same time period is reporting 32007KTS 5SM -SHSN BR OVC015?

- a. In the above example, how do you determine if there are non-standard alternate minimums?
- b. What if you arrive after 10 pm (tower is closed) does that change which approach you can use for filing the alternate?
- c. What If the KJVL ATIS is out of service?

- 6) How do you determine if you are established or NOT established on an approach or an airway? How does this affect your terrain clearance and ability to continue an approach?

- 7) Describe the difference in how the CDI needle sensitivity changes (nautical miles off course with full scale deflection) for GPS navigation for Enroute, Terminal and Approach phases of flight.

- 8) briefly describe the difference between LNAV, LPV, and ILS approaches including
  - a. how the approach corridor changes from FAF to the runway
  - b. the width of the corridor at runway threshold
  - c. how CDI needle sensitivity changes

- 9) describe how you would execute a missed approach from straight in vs circling to land.

10) What is the difference between take off minimums and a departure procedure? Can take off minima be used as a departure procedure?

10b) How do you determine if an airport has been surveyed for a departure? If airport is surveyed for a departure but no ODP or SID is published, what is the default departure procedure to ensure terrain and obstacle clearance? How far from runway does this provide terrain clearance?

11) describe how you would depart C77 safely with a low overcast. How did you determine this is the acceptable method of departing?

12) Plot out on paper or a sectional the ODP for KRIL listed in the takeoff minimums to show your exact flight path.

- How would you program this in your aircraft?
- What climb gradient would you use to ensure terrain clearance?
- How would you enter the hold? How long would the legs be?
- What altitude do you need to obtain before you exit the hold?
- What are the other the available departure procedures at KRIL and which would you consider using and why?

13) describe the process to determine if your aircraft can meet a prescribed minimum climb gradient in a departure procedure.

- a. how do you determine your ground speed in the climb
- b. discuss how to use of Climb table in the Terminal Procedures
- c. how does a tail wind or head wind would affect your climb performance?
- d. Will your aircraft maintain the same rate of climb from lift off up to the required published safe altitude? How do you account for this in your flight planning?