

## CFII ORAL

Oral was structured off of questions students have asked DPE over the years, encompassing all areas required under the CFII PTS.

- What are the 5 types of airspeeds and a description of each?
  - What exactly is position and instrumentation error? DPE then drew out an aircraft in a high AOA and another in a low AOA and asked a few questions about pressures and velocity of air entering the pitot tube.
  - Where are we more likely to find compressibility errors?
  - True airspeed vs ground speed
- What are the tumble limits for pitch and roll on the attitude indicator? Directional gyro?
- Student says no matter how hard I try I can't get the turn coordinator to tumble, why is that?
- Student comes to you saying he/she knows about compass error corrections (UNOS/ANDS) but wants to know why they exist. Know this well, bring a simple model to explain it.
- Know your navigational vs communication frequency ranges, what bands are below nav, what bands are above comm.? There is a large chart published by the FCC you can bring with to explain.
- Student asks how exactly does DME work? Explain ground station, onboard equipment, and the time/distance triangles.
- Student comes and tells you they understand an ILS is 4x more sensitive than a VOR, the course width is 2.5 degrees on either side for a total of 5 degrees width, and that the total width varies between 3-6 degrees. Why does the total width vary between 3-6, why don't all ILS's have identical course widths? (See AIM definition, course width needs to be 700ft at threshold, so length of the runway comes into play.)
- The same student asks another question about the ILS marker beacons, since marker beacons operate at 75 Hz why don't all the lights turn on when I overfly the outer marker? Why does only the outer marker turn on? (Again see AIM, outer, middle, and inner markers are all at the same frequency, but are modulated within that frequency at different rates.)
- Explain how a GPS works thoroughly, explain WAAS, explain ADSB in/out.
  
- We then moved onto the low enroute chart:
  - Why are some airspaces depicted in blue? (Need ADSB)
  - Open arrow vs closed (solid) arrows pointing to a fix? (DME fix vs NAVAID fix)
  - What do the two parallel bars on each side of the fix mean? (Alt. change)
  - (T) inside of a navigational box? (terminal vor, know your ranges and altitudes too)
  - MRA
  - Talked about comm. failures and total electrical failures, troubleshooting steps and procedures.
- Asked about instrument student hour and XC requirements.
  - Know all hour requirements
  - Know the XC requirements
    - Know if certain combinations of approaches count or not for the XC:
      - ILS, VOR, RNAV does that count?
      - ILS, LOC, VOR?
      - LOC, VOR-A, VOR?
      - ILS, LNAV, LPV?
  - Know the required endorsements
- Asked questions about approach plates:
  - Had me brief a plate from TPP book, review the TPP user guide beforehand since it might not be a familiar plate.

- Nonstandard takeoff vs nonstandard alternate triangles, where do we find the corresponding info?
- Why do some LNAV approaches have lower mins than LNAV/VNAV?

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**Flight Portion:**

- 1-Unusual Attitudes
- 2-ILS 30 into Airlake, go missed into published hold
- 3- Leave published hold for VOR12 into airlake
- 4- Partial panel RNAV 34 into SGS