Oral Exam Flashcards

162 Q&A flashcards organized by certificate level. Each card has a question on the front and a model CFI-grade answer on the back.

How to use: Read the question aloud. Speak your answer out loud — don't think it silently. Compare to the model answer. Mark cards you missed with a checkmark; review them again the next day.

Helicopter (Rotorcraft)

Private Pilot — 21 cards

1. What documents must you carry as a pilot?

Answer: Pilot certificate, government-issued photo ID, and current medical (or BasicMed eligibility document if applicable). [§61.3]

2. What documents must be aboard the aircraft?

Answer: ARROW: Airworthiness, Registration, Radio station license (international), Operating limitations / POH, Weight & balance. [§91.9, §91.203]

3. What inspections are required?

Answer: AAV1ATE: Annual; ADs as applicable; VOR (30 days, IFR); 100-hour (for hire/instruction); Altimeter / Pitot-static (24 cal mo, IFR); Transponder (24 cal mo); ELT (12 cal mo).

4. What are the VFR fuel reserves for a helicopter?

Answer: §91.151(b): 20 minutes at normal cruise day or night.

5. What is translating tendency?

Answer: The lateral drift caused by tail-rotor thrust in a hover (right drift in CCW rotor systems); compensated by mast tilt or trim.

6. What is ETL?

Answer: Effective Translational Lift — typically begins around 16–24 kt as the rotor flies out of its own downwash and induced flow decreases, increasing rotor efficiency.

7. Define settling with power (VRS).

Answer: Vortex Ring State: power applied + descent rate (~300+ fpm) + low airspeed (< ETL) into own downwash. Recovery: lower collective and forward cyclic to fly out, or Vuichard recovery.

8. How do you recover from LTE?

Answer: Reduce power if obstacles permit, full opposite pedal, forward cyclic to gain airspeed and weathervane; fly out of the wind region.

9. What is dynamic rollover?

Answer: A roll about a fixed pivot point (skid/wheel). Past the critical angle (~8–10°) cyclic alone won't recover. Prevent with smooth, coordinated collective and lateral cyclic neutralization.

10. What is mast bumping?

Answer: Risk in semi-rigid teetering rotors during low-G/pushover; flapping exceeds limits and the hub strikes the mast. Recovery: smooth aft cyclic to load the rotor first.

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11. What is the VFR cloud clearance below 10,000 ft MSL in Class E?

Answer: 3 SM, 500 below, 1000 above, 2000 horizontal.

12. What is Class G helicopter VFR below 1,200 AGL day?

Answer: ½ SM, clear of clouds (helicopter exception, see §91.155(b)).

13. How long is a flight review valid?

Answer: 24 calendar months. Min 1 hour ground + 1 hour flight (§61.56).

14. What's the recency for carrying passengers?

Answer: 3 takeoffs and landings within preceding 90 days in same category/class. Night: full-stop. Helicopter: full-stop at night.

15. Define density altitude.

Answer: Pressure altitude corrected for nonstandard temperature. Higher DA = degraded engine and rotor performance.

16. Lost procedures mnemonic?

Answer: 5 C's: Climb (for radio reception/SA), Communicate (121.5 / nearest ATC), Confess (state lost), Comply, Conserve (fuel).

17. Hazardous attitudes & antidotes?

Answer: Anti-authority — 'Follow rules.' Impulsivity — 'Not so fast.' Invulnerability — 'It could happen to me.' Macho — 'Taking chances is foolish.' Resignation — 'I'm not helpless.'

18. PAVE checklist?

Answer: Pilot, Aircraft, enVironment, External pressures — used during preflight for risk identification.

19. What is a high reconnaissance for confined area?

Answer: Survey size, shape, surface, surroundings; identify wind, slope, escape route, departure path, obstacles, and best approach/departure.

20. What's the helicopter VFR night minimum visibility in Class E above 10,000 MSL?

Answer: 5 SM, 1000 above, 1000 below, 1 SM horizontal — same as airplane.

21. What is rotor RPM 'green arc' importance?

Answer: Operating range for safe lift, autorotation entry, and survival of the rotor system; below — risk of stall/coning, above — risk of structural damage/blade flap.

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Commercial Pilot — 12 cards

1. §61.129(c) total-time minimum?

Answer: 150 hours; 100 powered, 50 helicopter, 100 PIC, 35 PIC heli, 10 PIC XC heli, 20 dual, 10 solo (long XC + 5 night).

2. What restrictions does §61.133(b) impose?

Answer: Without an Instrument-Helicopter rating, no for-hire XC >50 NM and no for-hire night flights.

3. What is Part 133?

Answer: Rotorcraft external load operations — Classes A, B, C, D.

4. What is Class A external load?

Answer: Cargo on a fixed line, cannot move freely, not jettisonable.

5. What is Class C external load?

Answer: Cargo remains in contact with land/water — long-line drag, etc.

6. What is the Commercial 180° autorotation tolerance?

Answer: To a designated spot — refer to current ACS for tolerances; rotor RPM in green, smooth flare, level touchdown within published tolerance.

7. Steep approach angle?

Answer: Typically >13° (13–15°) per Commercial ACS — used to clear obstacles.

8. Shallow approach to running landing — when?

Answer: When hover power is unavailable due to high DA, weight, or surface conditions; touchdown with forward speed.

9. What does SFAR 73 cover?

Answer: Special pilot/instructor requirements for Robinson R22/R44 — awareness training, hours, recurrent training every 12 calendar months.

10. Who can hold out for 'common carriage'?

Answer: Only operators with Part 119/135 (or other) certificate. A Commercial certificate alone does not authorize common carriage.

11. What is Vne?

Answer: Never-exceed speed; decreases with high DA, high gross weight, and turbulence to prevent retreating-blade stall.

12. Confined-area planning principle?

Answer: Plan for engine failure, tail-rotor failure, multiple escape routes, and consider DA/wind/load.

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Instrument Rating — 19 cards

1. What are the helicopter IFR fuel reserves?

Answer: §91.167: destination, alternate (if required), then 30 minutes at normal cruise.

2. What is helicopter alternate weather minima (no published alt)?

Answer: §91.169: 200 ft above the lowest MDA/DA and 1 SM at ETA.

3. When is no alternate required (helicopter)?

Answer: §91.169(b)(2): destination has IAP and from 1 hr before to 1 hr after ETA, ceiling ≥1000 ft above lowest applicable approach minima or 400 ft above the lowest minima (whichever higher), visibility ≥2 SM.

4. How do you regain instrument currency?

Answer: §61.57(c): 6 approaches, holding, intercept/track within preceding 6 cal mo. After 12 mo total non-currency: IPC required.

5. 5 T's at each fix?

Answer: Time, Turn, Twist, Throttle, Talk.

6. What is the standard 'Copter only' approach speed?

Answer: AIM 5-4-5: typically 70 KIAS (or as charted), with a 90 KIAS approach segment limit.

7. PinS — 'Proceed VFR' vs 'Proceed Visually'?

Answer: 'Proceed VFR' requires VFR weather and the pilot proceeds VFR after the MAP. 'Proceed Visually' uses charted visual references; pilot remains IFR. (AIM 5-4-5)

8. AVE-F for lost comms?

Answer: Route: Assigned, Vectored, Expected, Filed (in that order). Altitude: highest of MEA, Expected, Assigned. (§91.185)

9. Holding entry sectors?

Answer: Direct (no maneuver, fly outbound on the published heading after crossing fix); Parallel (parallel outbound on non-holding side, then 180° back); Teardrop (turn ~30° toward the holding side, fly outbound, intercept inbound).

10. WAAS LPV minimums can go as low as?

Answer: Often 200 ft HAA when published. (AIM 1-1-19)

11. What are RAIM and WAAS?

Answer: RAIM: Receiver Autonomous Integrity Monitoring (TSO-C129). WAAS: Wide Area Augmentation System (TSO-C145/146) — provides corrections and integrity for vertical guidance.

12. Maximum holding airspeeds (AIM)?

Answer: ≤6,000 ft = 200 KIAS; 6,001–14,000 = 230 KIAS; 14,001+ = 265 KIAS.

13. Cold-temperature corrections — when applied?

Answer: At designated Cold Temperature Restricted Airports (CTRA) per AIM 7-3-1 — add a correction to non-precision segments and possibly to MDA.

14. DA / DH reaction at minimums?

Answer: At DA/DH, if required visual references not in sight, immediately execute the missed approach (§91.175(c)).

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15. VOR check tolerances?

Answer: §91.171: VOT ±4°, ground checkpoint ±4°, airborne ±6°, dual VORs ±4°.

16. Approach categories — pilot-selected?

Answer: Helicopter approaches typically use Category-A unless 'Copter only'. Use the highest minima associated with your approach speed.

17. Alternate planning order of priority?

Answer: Weather forecast at ETA + 1 hour; equipment available; fuel; published alternate minima.

18. What is the preferred approach when weather is marginal?

Answer: The lowest minima you're authorized for, based on equipment, currency, and aircraft.

19. What is partial panel fundamentally?

Answer: Loss of primary attitude or heading reference; transition to standby instruments and basic raw-data nav, manage power, communicate.

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Fundamentals of Instructing — 12 cards

1. REEPIR?

Answer: Readiness, Effect, Exercise, Primacy, Intensity, Recency.

2. Levels of learning?

Answer: Rote → Understanding → Application → Correlation.

3. 5 phases of demonstration-performance?

Answer: Explanation, Demonstration, Student Performance, Instructor Supervision, Evaluation.

4. Maslow's hierarchy?

Answer: Physiological, Safety, Belonging, Esteem, Self-actualization.

5. 3 domains of learning?

Answer: Cognitive, Affective, Psychomotor.

6. Hazardous attitudes?

Answer: Anti-authority, Impulsivity, Invulnerability, Macho, Resignation. With antidotes.

7. DECIDE?

Answer: Detect, Estimate, Choose, Identify, Do, Evaluate.

8. PAVE?

Answer: Pilot, Aircraft, enVironment, External pressures.

9. 5 Ps?

Answer: Plan, Plane, Pilot, Passengers, Programming — used at decision points.

10. How does anxiety affect learning?

Answer: Reduces retention, can cause hazardous attitudes, and degrades skill performance — address before flight.

11. Effective oral question?

Answer: Brief, single idea, free of unintended clues, presents a challenge.

12. What is the 'building blocks' principle?

Answer: New learning builds on previously mastered skills; do not skip foundational steps.

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Certified Flight Instructor — 12 cards

1. How long is a CFI certificate valid?

Answer: 24 calendar months — §61.197.

2. How can a CFI renew without practical?

Answer: FIRC (eFIRC); ≥5 students recommended for practical with ≥80% pass; or activity per air-carrier instructor program. (§61.197)

3. What is required pre-solo per §61.87?

Answer: Pre-solo flight training in maneuvers/procedures, pre-solo written test (administered, graded, reviewed by CFI), and 90-day solo endorsement.

4. What are the 90-day endorsements?

Answer: A.3 solo flight; the 90-day rule applies to keeping a student solo current.

5. What endorsement is needed for solo XC?

Answer: A.4 (general solo XC privileges) and A.5 (each specific XC) per §61.93.

6. What endorsement allows a student into Class B?

Answer: A.7 (operations to/from/through a Class B) per §61.95(a); A.8 for primary Class B airport per §61.95(b).

7. What is required spin training for helicopter CFI?

Answer: None — §61.183(i) exempts helicopter CFI applicants. Stall awareness (settling-with-power, retreating blade stall) is taught instead.

8. What is the dual time required to recommend a student for the practical test?

Answer: 3 hours of flight training within preceding 2 calendar months — §61.39(a)(6)(i) / §61.109.

9. What is the difference between PIC time logged and PIC time acted as?

Answer: §61.51 vs. §1.1. CFIs may log PIC while instructing; acting-as PIC requires meeting privileges including currency.

10. How do you teach a settling-with-power demo safely?

Answer: At a safe altitude with sufficient recovery margin, per RFM and SOP. Start with recognition cues, demonstrate gradual recovery (forward cyclic and reduce collective, or Vuichard).

11. How do you handle a student who freezes on the controls?

Answer: Use the 'I have the controls' / 'You have the controls' / 'I have the controls' protocol; keep one hand near the cyclic; intervene if safety dictates.

12. What is the FOI knowledge test?

Answer: Required prior to initial CFI practical (unless §61.183(d)(2) exempted with teacher's certificate).

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CFII (Instrument Instructor) — 10 cards

1. CFII eligibility?

Answer: Hold CFI Helicopter and Instrument Rating Helicopter; pass FII knowledge test; receive practical-test endorsement; pass practical.

2. What is the most-commonly-tested teaching method for instrument scan?

Answer: 'Selected Radial / Hub-and-Spoke', 'Inverted-V', and 'Rectangular' scans, paired with primary/supporting concept.

3. What is the proper IFR cockpit organization principle?

Answer: Approach plates current and accessible, briefed; backup chart available; navigation tuned, identified, and verified; heading bug and course bugs preset.

4. How do you brief an approach (TANT-EM)?

Answer: Type/Title; Approach course; Navaids/setup; Timing; Entry/FAF; Missed approach.

5. What is a PinS approach?

Answer: Point-in-Space — RNAV approach to a missed approach point near a heliport; uses 'Proceed VFR' or 'Proceed Visually' segments.

6. How do you teach unusual attitude recovery (helicopter)?

Answer: Cross-check the AI as primary; smooth control inputs to bring level; manage power; keep coordinated; avoid abrupt collective.

7. What is partial-panel emphasis in helicopter IFR teaching?

Answer: AHRS/ADC failures may degrade attitude or airspeed; rely on standby instruments and trim; manage rotor RPM via collective and torque.

8. What is the 'cleared for the approach' clearance?

Answer: Authorization to begin the published procedure; comply with all altitudes/restrictions; report procedure-related items per AIM.

9. How is helicopter IPC conducted?

Answer: To Instrument ACS standards; in a helicopter or approved FFS/FTD; performed by an authorized CFII or examiner.

10. How do you handle an inadvertent IMC encounter (IIMC) for a VFR-only helicopter pilot?

Answer: Immediate ATC contact, climb to MEA/MSA, level wings on AI, smooth control, stabilize for IFR-style flight, request vectors to VMC.

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Airplane (ASEL)

Private Pilot — 22 cards

1. What are the airplane VFR fuel reserves (day / night)?

Answer: §91.151: Day VFR — 30 min at normal cruise. Night VFR — 45 min at normal cruise.

2. VFR cloud clearance below 10,000 MSL in Class E?

Answer: 3 SM, 500 below, 1000 above, 2000 horizontal.

3. Class G below 1,200 AGL day requirements (airplane)?

Answer: 1 SM and clear of clouds.

4. What are the four left-turning tendencies?

Answer: Torque, P-factor (asymmetric blade thrust), spiraling slipstream, gyroscopic precession. Counter with right rudder, especially at high power and low airspeed.

5. How is a stall defined?

Answer: Exceeding the critical angle of attack — possible at any airspeed, attitude, or power setting.

6. PARE spin recovery?

Answer: Power idle, Ailerons neutral, Rudder full opposite to spin, Elevator briskly forward through neutral. Verify with the POH.

7. V-speeds: Vx vs Vy?

Answer: Vx = best angle of climb (most altitude per ground distance). Vy = best rate of climb (most altitude per unit time).

8. Va — maneuvering speed — protects against?

Answer: Structural overload from full deflection of a single control surface; varies with weight (lower weight = lower Va).

9. Required documents on board (ARROW)?

Answer: Airworthiness, Registration, Radio station license (international), Operating limits / POH, Weight & balance.

10. Required inspections (AAV1ATE)?

Answer: Annual; ADs; VOR (30 days IFR); 100-hour (for hire/instr); Altimeter / Pitot-static (24 cal mo IFR); Transponder (24 cal mo); ELT (12 cal mo).

11. Carburetor icing conditions?

Answer: OAT 20–70°F (-7 to +21°C) with visible moisture or high humidity; can occur even on warm days. Apply carb heat per POH.

12. Wake turbulence T/O behind a heavier aircraft on the same runway?

Answer: Rotate before its rotation point and stay above and upwind of its flight path.

13. Crosswind T/O technique?

Answer: Aileron into the wind, opposite rudder for directional control. Lift off at slightly higher airspeed; transition to crab in climb.

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14. Crosswind landing technique?

Answer: Side-slip / wing-low: aileron into wind, opposite rudder for centerline alignment. Increase aileron input as airspeed bleeds off in rollout.

15. Engine failure single-engine — ABCD flow?

Answer: Airspeed (best glide), Best field, Checklist (restart: fuel selector, mixture, primer, mags, throttle), Declare (mayday, squawk 7700, transmit 121.5).

16. Stall speed in a level turn?

Answer: Vs(turn) = Vs × √(load factor). 60° bank → load factor 2 → stall speed × 1.41.

17. §61.31 endorsements — Complex / High-Performance / Tailwheel?

Answer: Complex (e): retractable gear + controllable prop + flaps. HP (f): >200 hp engine. Tailwheel (i): normal/crosswind T/L, wheel landings (unless POH prohibits), go-arounds.

18. 5 Cs for lost VFR?

Answer: Climb, Communicate, Confess, Comply, Conserve.

19. Hazardous attitudes & antidotes?

Answer: Anti-authority — 'Follow rules.' Impulsivity — 'Not so fast.' Invulnerability — 'It could happen to me.' Macho — 'Taking chances is foolish.' Resignation — 'I'm not helpless.'

20. PAVE checklist?

Answer: Pilot, Aircraft, enVironment, External pressures.

21. §91.211 oxygen — flight crew use?

Answer: Above 12,500 MSL after 30 min between 12,500 and 14,000; continuous above 14,000 MSL. Passengers must have available oxygen above 15,000 MSL.

22. Density altitude effect?

Answer: High and hot and humid = degraded performance: longer takeoff roll, reduced climb gradient, longer landing roll.

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Commercial Pilot — 12 cards

1. §61.129(a) total time minimum?

Answer: 250 hours; 100 powered, 50 airplane, 100 PIC (50 PIC airplane), 50 PIC XC (≥10 in airplanes), 20 dual including 10 complex/turbine/TAA, 10 instrument (≥5 airplane), the 300 NM long XC, and 5 hours night with 10 T/L.

2. §61.133(b) restriction?

Answer: Without an Instrument-Airplane rating: no for-hire XC >50 NM and no for-hire night flights.

3. Chandelle?

Answer: A maximum-performance climbing 180° turn — peak bank at the 90° point, peak pitch at the 180° point; precise pitch/bank coordination.

4. Lazy 8?

Answer: Two coordinated, symmetrical 180° turns with continuously varying pitch and bank. Coordination and symmetry are the keys.

5. Eights on pylons — pivotal altitude?

Answer: h(pivotal) = GS² / 11.3 (kt) or GS² / 15 (mph). Climb/descend with GS to keep the line of sight on the pylon.

6. Steep turn at the Commercial level (typical standard)?

Answer: 50° bank; ±100 ft altitude, ±10 kt airspeed, ±10° rollout heading.

7. Power-off 180° accuracy approach standard?

Answer: Touchdown at or within 200 ft beyond the designated point with no power; smooth energy management.

8. Soft-field T/O — technique?

Answer: Pre-flap, full back-yoke during taxi, lift off in ground effect at minimum airspeed, accelerate to Vy in ground effect, then climb.

9. Short-field landing — technique?

Answer: Stabilized approach at published 50-ft obstacle airspeed, full flaps, aim short, firm touchdown without float, max braking.

10. §61.31(g) high-altitude endorsement?

Answer: Required for pressurized airplanes capable of FL250+. Specific ground (oxygen physiology, decompression) and flight training.

11. Common carriage — what triggers it?

Answer: Holding out to the public for compensation transportation. Requires a Part 119/135 (or 121) operating certificate.

12. Best technique for high-altitude operations?

Answer: Plan with density altitude, lean per POH, climb with Vy or cruise climb, use oxygen per §91.211, monitor cabin pressure.

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Instrument Rating — 12 cards

1. What are the airplane IFR fuel reserves?

Answer: §91.167: destination, alternate (if required), then 45 minutes at normal cruise.

2. What are the alternate weather minima for filing (airplane)?

Answer: §91.169(c). Standard: precision approach 600 ft / 2 SM; non-precision 800 ft / 2 SM. Use published Part 97 minima where listed.

3. 1-2-3 rule (no alternate required)?

Answer: §91.169(b)(2): destination has IAP, and from 1 hour before to 1 hour after ETA, ceiling ≥2,000 ft above airport elevation and visibility ≥3 SM.

4. How do you regain instrument currency?

Answer: §61.57(c): 6 approaches, holding, intercept/track within preceding 6 cal mo. After 12 mo total non-currency: IPC required.

5. 5 Ts at each fix?

Answer: Time, Turn, Twist, Throttle, Talk.

6. AVE-F for lost comms?

Answer: Route: Assigned, Vectored, Expected, Filed. Altitude: highest of MEA, Expected, Assigned. (§91.185)

7. Holding entry sectors?

Answer: Direct, Parallel, Teardrop. Visualize the inbound course; identify by aircraft heading relative to inbound and turn direction.

8. WAAS LPV minimums?

Answer: Often as low as 200 ft HAA when published. Verify chart and equipment authorization.

9. Pitot-static blockage with pitot blocked, static open?

Answer: ASI acts like an altimeter — reads high in a climb, low in a descent. Cross-check with attitude, GPS GS.

10. Ice protection — known icing meaning?

Answer: Forecast or reported icing in conditions you intend to fly through. Some legal interpretations include forecast as 'known' for §91.13. Always consult AFM, FDC NOTAMs, AIM 7-1-19.

11. What does CRAFT mean for IFR clearance?

Answer: Cruise (clearance limit), Route, Altitude, Frequency, Transponder.

12. How long is the IRA written valid?

Answer: 24 calendar months (§61.39).

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Certified Flight Instructor — 12 cards

1. How long is a CFI certificate valid?

Answer: 24 calendar months — §61.197.

2. How can a CFI renew without practical?

Answer: FIRC (eFIRC); ≥5 students recommended for practical with ≥80% pass; or air-carrier instructor program (§121.414/§135.337).

3. What is required pre-solo per §61.87?

Answer: Pre-solo flight training in maneuvers/procedures, pre-solo written test (administered, graded, reviewed by CFI), and 90-day solo endorsement.

4. What's required for a §61.31(e) complex endorsement?

Answer: Training in retractable gear, controllable-pitch prop, flaps. Logbook endorsement.

5. What is required spin training for airplane CFI?

Answer: §61.183(i)(1) — flight training in stall awareness, spin entry, spins, and spin recovery procedures, with logbook endorsement.

6. What is the dual time required to recommend a student for the practical test?

Answer: 3 hours of flight training within preceding 2 calendar months — §61.39(a)(6)(i) / §61.109.

7. What is the difference between PIC time logged and PIC time acted as?

Answer: §61.51 (logging) vs. §1.1 (operational PIC). CFIs may log PIC while instructing; acting-as PIC requires meeting privileges including currency.

8. How do you handle a student who freezes on the controls?

Answer: Use the 'I have the controls' / 'You have the controls' / 'I have the controls' positive exchange; intervene if safety dictates.

9. What is the FOI knowledge test requirement?

Answer: Required prior to initial CFI practical (unless §61.183(d)(2) exempted with teacher's certificate).

10. How do you teach steep turns at 50° bank safely?

Answer: Demonstrate, emphasize coordination, altitude management, and bank discipline; coach recovery from over-bank.

11. What endorsement is needed for tailwheel airplane carriage of passengers (currency)?

Answer: 3 T/Ls within 90 days in a tailwheel airplane to a full stop — §61.57(a)(1)(ii).

12. For an additional aircraft rating practical (e.g., adding multi-engine), the applicable rule is?

Answer: §61.63 governs additional aircraft ratings. Train and endorse per §61.63.

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CFII (Instrument Instructor) — 10 cards

1. CFII airplane eligibility?

Answer: Hold CFI Airplane and Instrument Rating Airplane; pass FII knowledge test; receive practical-test endorsement; pass practical.

2. What's the standard scan technique for IFR teaching?

Answer: Selected Radial / Hub-and-Spoke, Inverted-V, and Rectangular scans paired with the Primary/Supporting concept (or Control + Performance).

3. How do you brief an approach (TANT-EM)?

Answer: Type/Title; Approach course; Navaids/setup; Timing; Entry/FAF; Missed approach.

4. What is partial-panel emphasis in airplane IFR teaching?

Answer: Vacuum vs. electric AHRS failure; alternate static source; pitot-static failures; rely on standby instruments and trim; manage attitude with TC + ASI + ALT.

5. How do you handle inadvertent IMC for a VFR-only pilot?

Answer: Immediate level wings on AI, climb to a safe altitude (MSA/MEA), call ATC for vectors to VMC, fly the airplane first.

6. How is the airplane IPC conducted?

Answer: To Instrument ACS standards in an airplane or approved FFS/FTD; performed by an authorized CFII or examiner.

7. What's an LPV approach?

Answer: Localizer Performance with Vertical guidance (WAAS-augmented). Often LPV minima as low as 200 ft HAA when published.

8. What's the difference between LNAV and LPV?

Answer: LNAV — non-precision (lateral only). LPV — vertical guidance, lower minima. LP — Localizer Performance (lateral only with high accuracy).

9. How do you handle airframe icing?

Answer: Recognize early signs; descend or climb out of icing layer per AFM; activate anti-ice/de-ice; declare and divert. Keep airspeed up; smooth control.

10. What is a precision approach?

Answer: An approach with vertical guidance signal (ILS, LPV with WAAS). DA decision altitude — execute missed if visual references not in sight.

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