PRIVATE PILOT | AIRPLANE + HELICOPTER

Checkride Oral Answer Bank

120+ questions DPEs actually ask, with answers that pass.

- Organized by the areas of operation your examiner will cover
- What the DPE is really checking in every section
- The 10 answers that end checkrides, and what to say instead
- A 7-day oral prep plan and checkride-day document checklist

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Study aid only. Verify every regulation against the current FAR/AIM, ACS and your aircraft's POH. 2026 edition.

Read this first

I have sat on both sides of an oral exam. As a flight paramedic I watched pilots make decisions under pressure for a living; as a helicopter CFII I now prepare students for the same examiners who once tested me. The pattern is always the same: students fail orals not because they know too little, but because they have never heard the questions asked the way a DPE asks them.

This book is built from the questions my students actually get. Each answer is written the way a passing candidate says it: short, specific, regulation-aware, and tied to today's flight. Under each section you will find what the examiner is really checking, because knowing *why* a question is asked is how you answer the follow-up you did not see coming.

How to use it

Work one section a day out loud with the 7-day plan at the back. Cover the answer, say yours, then compare. Mark anything you hesitate on. On the last day, review only your marks. Sections 1 through 8 apply to every private pilot candidate; Section 9 is for helicopter candidates and Section 10 for airplane candidates, though reading both will make you a better pilot.

What the ACS expects: rote, understanding, application, correlation

Rote is reciting the regulation. Understanding is explaining why it exists. Application is using it on today's flight. Correlation is connecting it to other things: weather to performance to fuel to a diversion decision. Examiners are required to test at the correlation level for most tasks. Every answer in this book is written to get you there.

A note on accuracy

Regulations change. Numbers in this book reflect the FARs, AIM and Private Pilot ACS as of late 2026. Before your checkride, confirm anything numeric in the current FAR/AIM, and confirm anything aircraft-specific in your POH. If your instructor teaches a procedure differently, use your instructor's version and be able to explain why.

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SECTION 01

Pilot Qualifications, Privileges & Currency

The DPE opens here because it is the easiest place to find out whether you actually read the regulations or just memorized a video. Know your own logbook cold.

1. What documents must you have on your person to act as pilot in command today?

Pilot certificate (or student certificate), a government-issued photo ID, and a current medical certificate or the BasicMed documents (course completion certificate and a completed CMEC within the last 48 months). A logbook is not required on your person for a private pilot, but you must be able to show currency if asked.

2. How long is your third-class medical valid?

If you were under 40 on the date of the exam, 60 calendar months for private-pilot privileges. If 40 or older, 24 calendar months. 'Calendar months' means it runs to the end of the month, not the exact date.

3. What is BasicMed and who can use it?

An alternative to a medical certificate under 14 CFR 61.113(i) and Part 68. You need to have held an FAA medical after July 14, 2006, complete the online medical course every 24 calendar months, and have a state-licensed physician complete the checklist every 48 months. Limits: aircraft up to 6 occupants and 12,500 lb, below 18,000 ft MSL, 250 knots or less, within the United States, and not for compensation or hire.

4. What are the aeronautical experience requirements for the private pilot certificate you are testing for today?

Airplane (61.109(a)): 40 hours total, at least 20 dual and 10 solo. Dual must include 3 hours cross-country, 3 hours night (one cross-country over 100 NM total and 10 full-stop night landings), 3 hours by reference to instruments, and 3 hours in the 2 calendar months before the test. Solo must include 5 hours cross-country, one solo cross-country of at least 150 NM total with full-stop landings at three points and one leg of at least 50 NM straight-line, plus 3 full-stop takeoffs and landings at a towered airport.
Helicopter (61.109(c)): 40 hours total, at least 20 dual and 10 solo. Dual: 3 hours cross-country, 3 hours night (one cross-country over 50 NM and 10 full-stop night landings), 3 hours in prep in the preceding 2 calendar months. Solo: 3 hours cross-country including one flight of at least 100 NM total with landings at three points and one leg of at least 25 NM, plus 3 takeoffs and landings at a towered airport.

5. What are the limitations of a private pilot certificate?

You may not act as PIC for compensation or hire, and may not pay less than your pro-rata share of operating expenses (fuel, oil, airport expenditures, rental) when carrying passengers. Exceptions exist for charitable flights, search and rescue, business flights incidental to your employment, and demonstrating aircraft as a salesperson with 200+ hours.

6. Explain the pro-rata share rule with an example.

If you and two friends fly to lunch and the rental and fuel total $300, you must pay at least $100. The flight also must have a common purpose. If the only reason you are flying is because they asked you to take them, that is a 'holding out' problem even if the money is split.

7. What are the passenger-carrying currency requirements?

Three takeoffs and landings within the preceding 90 days in the same category, class, and type (if a type rating is required). For night passengers: three takeoffs and landings to a full stop during the period 1 hour after sunset to 1 hour before sunrise, within the preceding 90 days. Tailwheel airplanes require full-stop landings for day currency as well.

8. What is a flight review and when do you need one?

Under 61.56, within the preceding 24 calendar months: at least 1 hour of ground and 1 hour of flight training with an authorized instructor. Passing a checkride for a new certificate or rating, or completing a phase of WINGS, counts as a flight review.

9. What is the difference between category, class, and type?

Category is the broad group: airplane, rotorcraft, glider, lighter-than-air, powered-lift. Class is within a category: single-engine land, multi-engine sea, helicopter, gyroplane. Type is a specific make and model when a type rating is required, generally turbojets and aircraft over 12,500 lb.

10. Can you fly a different model than the one you trained in after you pass?

Yes, within your category and class, as long as no type rating, endorsement, or other restriction applies. Endorsements are required for high-performance (over 200 hp), complex, tailwheel, and pressurized aircraft capable of flight above 25,000 ft. For helicopters, a Robinson R22 or R44 requires the SFAR 73 training and endorsements.

11. What is required to log PIC time as a private pilot?

You may log PIC time when you are the sole manipulator of the controls of an aircraft for which you are rated, when you are the sole occupant, or when acting as PIC of an aircraft requiring more than one pilot. Being rated means category and class, not a specific model.

12. What must you report to the FAA, and when?

A change of permanent mailing address within 30 days (61.60). A motor vehicle action involving alcohol or drugs (conviction or administrative action) within 60 days to the Security and Investigations Division (61.15). Accidents and certain incidents go to the NTSB under Part 830, immediately by the most expeditious means.

13. When does a student pilot certificate expire?

It does not expire. The solo endorsements in the logbook are what have time limits: 90 days for solo, and solo cross-country endorsements are per flight.

WHAT THE EXAMINER IS REALLY CHECKING

- When the DPE asks about your own experience requirements, pull out the logbook and point to the flights. Showing is stronger than reciting.
- 'I don't know, but I know where to find it' is an acceptable answer once. 'I think it's probably...' is not. Guessing is how orals go sideways.
- Say 'calendar months' every time it applies. Examiners listen for it.

SECTION 02

Airworthiness, Documents & Inspections

Examiners love this area because a private pilot who does not know what makes the aircraft legal will eventually fly one that is not.

14. What documents must be aboard the aircraft? (ARROW)

Airworthiness certificate (displayed so it is visible), Registration certificate, Radio station license (only for international operations), Operating limitations (the POH/AFM, placards, and markings), and Weight and balance data for this specific aircraft.

15. Does the airworthiness certificate expire?

No. A standard airworthiness certificate remains valid as long as the aircraft is maintained and inspected in accordance with Part 43 and Part 91 and is registered in the U.S.

16. How long is the registration certificate valid?

Seven years from the date of issue (this changed from three years in 2023). Check the expiration date on the certificate itself, and if the aircraft was recently sold, make sure a current registration or a pink temporary copy is aboard.

17. What inspections are required for this aircraft to be airworthy? (AV1ATES)

Annual: every 12 calendar months. VOR check: every 30 days, only if used for IFR. 100-hour: only if the aircraft is used for hire or for flight instruction for hire by the person providing the aircraft. Altimeter/pitot-static system: every 24 calendar months, for IFR. Transponder: every 24 calendar months. ELT: inspected every 12 calendar months; battery replaced after 1 hour of cumulative use or at 50% of its useful life. Static system is part of the altimeter check.

18. Can a 100-hour inspection be exceeded?

Yes, by up to 10 hours, but only to reach a place where the inspection can be done, and the excess time counts against the next 100 hours. An annual may not be exceeded except with a special flight permit.

19. What is an Airworthiness Directive?

A legally enforceable rule issued by the FAA to correct an unsafe condition in a product. Compliance is mandatory. ADs can be one-time or recurring, and you should be able to find the AD compliance record in the maintenance logs.

20. Who is responsible for maintaining the aircraft in an airworthy condition? Who determines it is airworthy for this flight?

The owner or operator is responsible for maintaining the aircraft in airworthy condition (91.403). The pilot in command is responsible for determining the aircraft is in a condition for safe flight before each flight (91.7).

21. What does 'airworthy' actually mean?

Two parts: the aircraft conforms to its type certificate (including approved alterations and STCs) and it is in a condition for safe operation. Both must be true.

22. The landing light is inoperative. Can you fly today?

Walk through 91.213(d). Is the item required by the type certificate data sheet or equipment list, by 91.205 for the kind of flight planned, by an AD, or by the POH's Kinds of Operations list? For day VFR not for hire, a landing light is not required, so it can be removed or deactivated and placarded INOP, and the PIC or a mechanic determines it does not constitute a hazard. If it were a night flight for hire, it would be required.

23. What is required for day VFR under 91.205? (A TOMATO FLAMES)

Airspeed indicator, Tachometer for each engine, Oil pressure gauge, Manifold pressure gauge (for altitude engines), Altimeter, Temperature gauge (liquid-cooled engines), Oil temperature gauge (air-cooled), Fuel gauge for each tank, Landing gear position indicator (if retractable), Anti-collision light system (aircraft certificated after March 1996), Magnetic compass, ELT, Seat belts and shoulder harnesses. For night add FLAPS: Fuses (spare set or three of each kind), Landing light (if for hire), Anti-collision lights, Position lights, Source of electrical power.

24. What are the preventive maintenance items a private pilot can perform?

Part 43 Appendix A(c) lists them: things like changing oil, servicing tires and wheel bearings, replacing bulbs, replacing safety wire, servicing the battery, and replacing seat belts. You must make a logbook entry with the date, description, your name, certificate number, and signature. If the item is not on the list, you cannot do it.

25. What is a special flight permit and when would you need one?

A 'ferry permit' issued by the FSDO allowing an aircraft that does not currently meet airworthiness requirements, but is capable of safe flight, to be flown to a place where repairs or inspections can be done, or for similar purposes. You cannot carry passengers for hire on it.

26. What is a Type Certificate Data Sheet?

The FAA document that defines the approved configuration of an aircraft type: engine, propeller or rotor, placards, limitations, and required equipment. If the aircraft differs from the TCDS without an approved alteration, it is not airworthy.

WHAT THE EXAMINER IS REALLY CHECKING

- Open the maintenance logs before the oral and tab the annual, transponder, ELT, and any 100-hour. Walk the DPE through them. This single move can shorten your oral by 20 minutes.
- Know the difference between 'required to be on board' (ARROW) and 'required to be displayed' (airworthiness certificate, and registration is generally kept with it).
- If the DPE invents a broken item, do not say 'I'd call a mechanic.' Reason through 91.213 out loud, then say you would confirm with maintenance.

SECTION 03

Weather Theory & Weather Services

Weather is where the DPE learns whether you can say no to a flight. Correlate: not just 'what is a front' but 'what will this front do to my flight today'.

27. What are the standard temperature and pressure at sea level, and the standard lapse rate?

15 degrees C (59 F) and 29.92 inHg (1013.2 hPa). Temperature decreases about 2 degrees C per 1,000 feet (3.5 F), and pressure decreases about 1 inHg per 1,000 feet in the lower atmosphere.

28. What is density altitude and why does it matter to you?

Pressure altitude corrected for non-standard temperature. High, hot, and humid raises density altitude, which lengthens takeoff roll, reduces climb rate, reduces engine power, and for helicopters can eliminate your ability to hover out of ground effect. You should compute it before every departure in summer or at high elevation and compare it to the POH performance charts.

29. What is the relationship between temperature and dew point?

When the spread narrows to within about 2 to 3 degrees C and winds are light, expect fog, mist, or low clouds. The spread is also how you estimate cloud bases: roughly (temperature minus dew point in C) divided by 2.5, times 1,000 feet AGL.

30. What is the difference between stable and unstable air?

Stable air resists vertical motion: smooth air, stratiform clouds, poor visibility from haze or fog, steady precipitation. Unstable air encourages vertical motion: turbulence, cumuliform clouds, good visibility, showery precipitation. Moist unstable air with a lifting action produces thunderstorms.

31. What are the three ingredients of a thunderstorm, and the three stages?

Ingredients: unstable air, high moisture content, and a lifting action (front, terrain, heating, convergence). Stages: cumulus (updrafts), mature (updrafts and downdrafts together, heaviest rain, lightning, the most dangerous), dissipating (downdrafts dominate). Stay at least 20 NM from a severe storm.

32. What hazards are associated with a microburst?

A localized intense downdraft that spreads out horizontally near the surface. You first encounter a headwind (performance increases), then a downdraft, then a tailwind (performance drops sharply) over as little as a mile. Recognize the signs on approach and go around early; do not try to salvage the approach.

33. What conditions are required for structural icing?

Visible moisture (clouds, rain, drizzle) and an outside air temperature at or below freezing at the point where the moisture strikes the aircraft. Clear ice forms from large supercooled droplets, usually in cumulus clouds or freezing rain; rime ice from small droplets in stratus. Neither your trainer airplane nor your helicopter is certified for flight into known icing.

34. What is a front, and what does a cold front usually bring?

A boundary between two air masses of different temperature and moisture. Cold front: steep slope, fast moving, cumuliform clouds, showers or thunderstorms in a narrow band, turbulence, and a sharp wind shift with improving visibility behind it. Warm front: shallow slope, slow, stratiform clouds and steady precipitation ahead of it with poor visibility, possibly freezing rain in winter.

35. Describe wind shear and where you would expect it.

A sudden change in wind speed or direction over a short distance. Expect it near thunderstorms, frontal zones, temperature inversions at low altitude (especially at night), and near terrain. On final, a loss of airspeed with a sink rate is the dangerous combination.

36. What is a temperature inversion and why does it matter?

Temperature increases with altitude instead of decreasing, usually from surface cooling on a clear night. It traps moisture and pollutants below it (poor visibility, fog, haze), creates smooth air with a possible wind shear at the top, and signals stable conditions.

37. Decode a METAR: KGFL 291253Z 31012G20KT 6SM -RA BKN015 OVC040 08/06 A2985

Glens Falls, on the 29th at 1253 Zulu, wind 310 at 12 gusting 20 knots, visibility 6 statute miles, light rain, broken ceiling at 1,500 feet AGL, overcast at 4,000, temperature 8 C, dew point 6 C, altimeter 29.85. The ceiling is the lowest broken or overcast layer: 1,500 AGL. Note the 2-degree spread and the gust factor.

38. What is the difference between a METAR, a TAF, and an area forecast product like the GFA?

A METAR is an hourly observation of actual conditions at an airport. A TAF is a 24- or 30-hour forecast for the area within 5 statute miles of an airport, issued four times daily. The Graphical Forecast for Aviation (GFA) on aviationweather.gov covers a region, not a point, and includes clouds, visibility, winds, icing, and turbulence.

39. What is the difference between an AIRMET, a SIGMET, and a Convective SIGMET?

AIRMET (now issued graphically as G-AIRMETs): weather significant to light aircraft. Sierra = IFR conditions and mountain obscuration; Tango = moderate turbulence, surface winds 30 knots or more, low-level wind shear; Zulu = moderate icing and freezing levels. SIGMET: severe non-convective weather such as severe turbulence, severe icing, dust or volcanic ash, affecting all aircraft. Convective SIGMET: severe thunderstorms, embedded storms, lines of storms, tornadoes, hail 3/4 inch or more, surface winds 50 knots or more.

40. What is a PIREP and why would you file one?

A pilot report of actual conditions aloft: cloud tops and bases, turbulence, icing, winds. Forecasters and other pilots depend on them, especially for icing and tops that cannot be observed from the ground. File through Flight Service or on aviationweather.gov; it is also a professional habit DPEs notice.

WHAT THE EXAMINER IS REALLY CHECKING

- Bring a real weather briefing for the real day. The DPE will ask 'so would you go?' Have a yes-or-no with reasons, including your personal minimums.
- If the weather is marginal on checkride day, saying 'I would not fly this cross-country as planned, and here is my alternative' is the strongest answer you can give. It is not a failure, it is the point.
- Translate every product to its effect on your flight. 'Tango AIRMET means I expect moderate turbulence below 10,000 feet, so I would brief my passenger and tighten belts' beats a definition.

SECTION 04

Airspace, Charts & VFR Weather Minimums

You will be handed a sectional and asked to narrate your route through it. Practice this out loud with your instructor until it is boring.

41. Describe Class A airspace.

From 18,000 feet MSL up to and including FL600. IFR only, instrument rating and clearance required, altimeter set to 29.92. VFR flight is not permitted.

42. What do you need to enter Class B airspace?

An explicit ATC clearance ('cleared into the Class Bravo'), a two-way radio, a Mode C transponder with ADS-B Out, and at least a private pilot certificate or a student with the specific 61.95 endorsement. Mode C and ADS-B are required within the 30 NM Mode C veil. VFR minimums inside are 3 SM and clear of clouds.

43. What do you need to enter Class C and Class D airspace?

Two-way radio communication must be established before entry: the controller must respond using your call sign. 'Aircraft calling, standby' is not established communication. Class C also requires Mode C and ADS-B Out. Class C is typically a 5 NM core to 4,000 feet AGL and a 10 NM shelf; Class D is typically 4 NM to 2,500 feet AGL, as charted.

44. What happens to Class D when the tower closes?

Check the Chart Supplement. The airspace typically reverts to Class E (sometimes down to the surface), or to Class G with Class E starting at 700 or 1,200 feet AGL. The weather minimums and communications requirements change with it.

45. Where does Class E airspace begin?

Where charted: at the surface (dashed magenta), 700 feet AGL (inside the shaded magenta vignette), 1,200 feet AGL (outside the vignette, the default in most of the country), or 14,500 feet MSL in a few remote areas. It extends up to but not including 18,000 feet, and again above FL600.

46. State the basic VFR weather minimums for Class E below 10,000 feet MSL. Then for Class G, day and night, below 1,200 AGL.

Class E below 10,000: 3 SM visibility, 500 feet below, 1,000 feet above, 2,000 feet horizontally from clouds. Class E at or above 10,000 MSL: 5 SM, 1,000 below, 1,000 above, 1 SM horizontal. Class G below 1,200 AGL day: 1 SM and clear of clouds. Class G below 1,200 AGL night: 3 SM and 500/1,000/2,000. Helicopters in Class G below 1,200 AGL by day may operate with less than 1 SM if clear of clouds and flown at a speed that allows adequate opportunity to see and avoid traffic.

47. What is Special VFR and what does it require?

An ATC clearance to operate in the surface area of Class B, C, D, or E when weather is below basic VFR. Airplanes need at least 1 SM visibility and must remain clear of clouds; at night the pilot must be instrument rated and the aircraft IFR equipped. Helicopters have no minimum visibility for SVFR but must remain clear of clouds. Some Class B surface areas prohibit SVFR ('NO SVFR' on the chart).

48. What are the minimum safe altitudes under 91.119?

Anywhere: an altitude allowing an emergency landing without undue hazard to persons or property. Congested areas: 1,000 feet above the highest obstacle within a 2,000-foot horizontal radius. Other than congested: 500 feet AGL. Sparsely populated or open water: 500 feet from any person, vessel, vehicle, or structure. Helicopters may operate below these if done without hazard to persons or property on the surface and complying with any FAA-prescribed routes.

49. What are VFR cruising altitudes?

Above 3,000 feet AGL on a magnetic course of 0 to 179: odd thousands plus 500 (3,500, 5,500). 180 to 359: even thousands plus 500 (4,500, 6,500). Remember 'East is odd.' It is based on magnetic course, not heading.

50. What is a MOA, a Restricted Area, and a Prohibited Area? Can you fly through each?

MOA: military training; VFR may enter but should exercise extreme caution and can call the controlling agency for status. Restricted Area: hazardous activity such as artillery; you need permission from the controlling agency when active, so check times and call. Prohibited Area: no entry without specific permission, period. Also know Warning Areas (offshore, 3 NM out), Alert Areas, and National Security Areas.

51. What is a TFR and how do you find one?

A temporary flight restriction, published by NOTAM, for things like VIP movement, disasters, stadiums (91.145), space launches, and wildfires. Check tfr.faa.gov and your briefing. Stadium TFRs are 3 NM and 3,000 feet AGL for major sporting events. Busting one is one of the fastest ways to lose a certificate.

52. What do the maximum elevation figures (MEF) on a sectional represent?

The large blue numbers in each quadrangle show the highest known terrain or obstacle, rounded up to the next 100 feet with a buffer, in thousands and hundreds of feet MSL. A '2 7' means 2,700 feet MSL. Fly higher than it for obstacle clearance; it is not a safe altitude by itself at night.

53. How do you identify a towered versus non-towered airport on the chart, and what does the star and 'L' mean?

Blue airport symbol: control tower. Magenta: no tower. A star indicates a rotating beacon operating sunset to sunrise. 'L' means lighting is available, 'L*' means lighting limitations exist; see the Chart Supplement. Also know what the ATIS, CTAF, and AWOS/ASOS frequencies look like in the data block.

WHAT THE EXAMINER IS REALLY CHECKING

- Trace your checkride cross-country on the chart and narrate airspace, altitudes, frequencies, and 'what if I lost comm here' at every boundary. This is the single highest-yield oral exercise.
- Know the Chart Supplement cold for your departure and destination: runway lengths, traffic pattern altitude, fuel, hours, and any 'Airport Remarks'.
- When asked VFR minimums, give the full set and the class, not 'three miles.' Precision is what separates pass from re-test here.

SECTION 05

Cross-Country Planning, Navigation & Lost Procedures

Most examiners build the oral around the cross-country you planned. Every number on your nav log should have a source you can point to.

54. Walk me through how you got the winds and the true course, and how you converted it to compass heading.

True course measured from the chart with a plotter against a meridian; wind correction angle from the winds aloft forecast gives true heading; apply magnetic variation from the isogonic line (east is least, west is best: subtract easterly variation) for magnetic heading; apply compass deviation from the card in the aircraft for compass heading.

55. How much fuel do you need for a VFR flight?

Enough to reach the first point of intended landing at normal cruise, plus a reserve of 30 minutes by day or 45 minutes at night for airplanes (91.151). Rotorcraft require 20 minutes, day or night. Most pilots and instructors use a personal minimum of at least one hour. Fuel should be planned at the POH consumption for your power setting, plus taxi, climb, and any expected deviations.

56. What is the difference between pilotage, dead reckoning, and radio navigation?

Pilotage: navigating by visual reference to landmarks. Dead reckoning: computing heading and time from known airspeed, winds, and course to estimate position. Radio navigation: VOR, GPS, NDB. A good VFR pilot uses all three and cross-checks them against each other.

57. How does a VOR work and how do you check it?

A ground station transmits two signals whose phase difference tells your receiver the radial you are on. Tune, identify (Morse code), and use the OBS to center the needle with TO or FROM. The 30-day VOR check is only required for IFR, but you should know the methods: VOT (plus or minus 4 degrees), ground checkpoint (4 degrees), airborne checkpoint (6 degrees), or dual VOR check (4 degrees between receivers).

58. What is RAIM and why does a VFR pilot care about GPS limitations?

Receiver Autonomous Integrity Monitoring: the receiver checks its own accuracy using extra satellites. Even VFR, know that a database may be out of date, that GPS can be jammed or degraded (check NOTAMs), and that handheld or tablet GPS is not a primary navigation source. Fly the chart and use GPS to confirm.

59. What are the magnetic compass errors?

Variation (true vs magnetic north), deviation (aircraft's own magnetic fields), magnetic dip, northerly turning error (UNOS: Undershoot North, Overshoot South), and acceleration error (ANDS: Accelerate North, Decelerate South, on east/west headings). The compass is only accurate in straight, level, unaccelerated flight.

60. You are lost. What do you do?

The 5 Cs: Climb (better radio range, more landmarks, more time), Communicate (121.5 or the nearest Flight Service or approach control; squawk 7700 if it is becoming an emergency), Confess (tell them you are lost), Comply (follow instructions), Conserve (reduce power to best endurance). Meanwhile, use the time and heading from your last known position to estimate where you are and look for large features such as rivers, lakes, highways, and towers.

61. What are the transponder emergency codes?

7500 hijack, 7600 lost communication, 7700 emergency. 1200 is VFR. Avoid passing through these codes when changing squawks.

62. Your radio fails inbound to a towered airport. What now?

Squawk 7600, remain outside Class D until you can determine the flow, enter the pattern at the proper altitude, and watch the tower for light gun signals: steady green = cleared to land, flashing green = return for landing, steady red = give way and continue circling, flashing red = airport unsafe, do not land, flashing white = return to starting point on the airport, alternating red and green = exercise extreme caution. Acknowledge by rocking wings (or flashing the landing light at night). A helicopter can also simply land at a non-towered airport or safe area and call by phone.

63. What is an ELT, what frequency does it transmit on, and how do you test it?

An emergency locator transmitter that activates on impact. Modern 406 MHz units transmit a digital signal with aircraft ID and position to satellites; older units transmit on 121.5 MHz only, which satellites no longer monitor. Test only in the first 5 minutes after the hour, for no more than three sweeps, while monitoring 121.5. Always monitor 121.5 after landing and check the ELT has not activated.

WHAT THE EXAMINER IS REALLY CHECKING

- Know your checkpoints, your time between them, and what you will do if the first checkpoint does not show up on time. The DPE is testing a decision-making process, not arithmetic.
- Have a diversion airport already picked for each leg, with its field elevation and runway length. Then the 'you need to divert' question becomes a conversation instead of a scramble.
- If the DPE challenges a number on your nav log, do not defend it reflexively. Say 'let me check,' and check.

SECTION 06

Performance, Weight & Balance

Expect to compute at least one takeoff distance and a weight and balance for the actual passengers and fuel on the day.

64. What is the difference between pressure altitude and density altitude, and how do you find each?

Pressure altitude: set the altimeter to 29.92 and read it, or add roughly 1,000 feet per inHg below 29.92 to field elevation. Density altitude: correct pressure altitude for temperature, about 120 feet per degree C above standard. Performance charts use pressure altitude and temperature; your aircraft 'feels' density altitude.

65. What happens if you load the aircraft beyond maximum gross weight?

Longer takeoff roll, slower climb, higher stall speed, reduced cruise speed and range, reduced maneuverability, structural margin reduced, and the aircraft is unairworthy because you are outside the operating limitations. For a helicopter, hover performance and the height-velocity envelope are directly affected.

66. What happens with the CG forward of the limit? Aft of the limit?

Forward CG (airplane): more stable, higher stall speed, heavier elevator forces, may not be able to flare. Aft CG: less stable, lower stall speed, stall and spin recovery may be impossible. Helicopter: forward CG means running out of aft cyclic in a hover and a nose-low attitude; aft CG means running out of forward cyclic, especially in a flare or with a tailwind.

67. Compute a sample weight and balance for today's flight.

Be ready to show: empty weight and moment from this aircraft's current W&B sheet, your weight, the DPE's weight (ask), baggage, and fuel at 6 lb per gallon (avgas) or the POH value. Sum weights and moments, divide for CG, and plot it on the envelope at both takeoff and landing weight. State the result, and then state what you would change if it were out of limits.

68. What is the effect of a 10-knot headwind versus tailwind on takeoff and landing distance?

A headwind shortens both; a tailwind lengthens both dramatically, often 20 percent or more for a 10 percent increase in groundspeed. Most POH charts show the correction. A tailwind is also a factor in helicopter ETL, LTE, and settling-with-power exposure.

69. How do you use the POH takeoff distance chart, and what do you add for a safety margin?

Enter with pressure altitude and OAT, correct for weight, then for wind and runway surface per the notes. The chart assumes a new aircraft, a professional test pilot, and a paved dry runway. Add at least 50 percent for real life and compare the result against the runway length minus any displaced threshold.

70. What is Va, and why does it change with weight?

Maneuvering speed: the maximum speed at which full, abrupt control deflection will not exceed the load limit. Lighter weight means the aircraft can reach the limit load at a lower speed, so Va decreases with weight. Use it in turbulence.

71. For a helicopter: what is the difference between hover in ground effect (IGE) and out of ground effect (OGE) performance?

IGE: within about one rotor diameter of the surface, the ground reduces induced flow and tip vortices, so less power is required. OGE requires more power. The POH hover ceiling charts show the maximum density altitude you can hover IGE and OGE at a given weight. If you cannot hover OGE, a confined area or pinnacle operation is off the table.

WHAT THE EXAMINER IS REALLY CHECKING

- Weigh yourself and ask the DPE's weight before the test. Running the numbers with the real people in the seats is expected and impressive.
- Compute takeoff distance at the actual field for the actual temperature and say the runway length out loud with it.
- Always state the 'so what': not just 'density altitude is 3,200 feet' but 'so my takeoff roll goes from 900 to about 1,250 feet and I lose 200 fpm of climb.'

SECTION 07

Aeromedical Factors & Human Factors (the flight paramedic's chapter)

I spent years in the back of air ambulances. Physiology is not a chapter to memorize; it is the thing that will quietly end a flight you thought was going fine. Examiners who have seen accidents push hard here.

72. What are the four types of hypoxia?

Hypoxic: not enough oxygen available (altitude). Hypemic: blood cannot carry oxygen (carbon monoxide poisoning, anemia, blood donation). Stagnant: blood is not flowing (G forces, shock, cold). Histotoxic: cells cannot use the oxygen (alcohol, drugs, cyanide). Symptoms: headache, euphoria, impaired judgment, cyanosis (blue lips and nail beds), tunnel vision. The danger is that it feels fine.

73. What are the supplemental oxygen rules under 91.211?

Above 12,500 feet MSL up to 14,000: required crew must use oxygen for any portion longer than 30 minutes. Above 14,000: required crew use it at all times. Above 15,000: every occupant must be provided with supplemental oxygen. Personal rule from the paramedic side: smokers and anyone tired or ill become hypoxic lower than the regulation assumes.

74. How do you tell hypoxia from hyperventilation, and what do you do?

The symptoms overlap: tingling, dizziness, visual disturbances, anxiety. Hyperventilation comes from blowing off too much CO2, usually from stress, and often at low altitude. Treatment for both starts the same: if you have oxygen, use it; then consciously slow your breathing, talk out loud, and descend. If you are below 10,000 feet and it does not resolve, think CO poisoning.

75. What are the signs of carbon monoxide poisoning and what do you do?

Headache, drowsiness, dizziness, loss of muscle control, eventually unconsciousness. The gas is colorless and odorless; exhaust smell is a warning but CO can be present without it. Turn off cabin heat, open vents and windows, use oxygen if available, land as soon as practical. A CO detector card or electronic detector is cheap insurance in any piston aircraft with a muffler shroud heater.

76. What is the alcohol rule?

91.17: no flying within 8 hours of consuming alcohol, with a blood alcohol concentration of 0.04 percent or more, or while under the influence. The practical rule is 8 hours bottle to throttle is the minimum; a hangover is still impairment. Also no carrying an obviously intoxicated passenger except in an emergency.

77. What is IMSAFE?

Illness, Medication, Stress, Alcohol, Fatigue, Emotion (or Eating). It is a self-assessment before every flight. A 'yes' on any of them is a reason to sit down and think, not an automatic cancel, but fatigue and medication are the two that pilots lie to themselves about most.

78. Can you fly on over-the-counter medication?

Many OTC medications are disqualifying for a period after the last dose, especially anything sedating: diphenhydramine (Benadryl and most 'PM' products) requires about 60 hours. The FAA's rule of thumb is 5 times the dosing interval. Check the FAA's Do Not Issue / Do Not Fly list, and when in doubt, ask an AME, not a pharmacist.

79. What are the illusions that lead to spatial disorientation?

Vestibular: the leans (sensing a bank after a slow roll), Coriolis (head movement during a turn), graveyard spiral, somatogravic (acceleration feels like pitch up, especially on a dark night takeoff), inversion, elevator illusion. Visual: false horizon, autokinesis, runway width and slope illusions, featureless terrain (black hole approach). The answer to all of them: trust the instruments, keep the head still, and avoid conditions that strip your outside references.

80. How does vision work at night and how do you protect it?

Rods (peripheral, low light, no color) take about 30 minutes to fully adapt. Avoid bright white light, use red or dim lighting, look slightly off-center at objects, scan slowly, and use supplemental oxygen above about 5,000 feet at night if you have it; night vision degrades with altitude long before daytime hypoxia symptoms.

81. What are the rules about scuba diving before flight?

Wait at least 12 hours after a dive that did not require controlled ascent before flying up to 8,000 feet, and 24 hours after any dive requiring a decompression stop or before flying above 8,000. Nitrogen bubbles coming out of solution at altitude cause decompression sickness, which is a medical emergency.

82. What is a middle-ear block and how do you manage it?

On descent, the Eustachian tube can fail to equalize pressure, causing pain and possible eardrum rupture. Swallow, yawn, or Valsalva early and often during descent; do not fly with a head cold. If a block develops, climb back up, equalize, and descend more slowly.

83. What are the hazardous attitudes and their antidotes?

Anti-authority ('don't tell me'): follow the rules, they are usually right. Impulsivity ('do something quickly'): not so fast, think first. Invulnerability ('it won't happen to me'): it could happen to me. Macho ('I can do it'): taking chances is foolish. Resignation ('what's the use'): I'm not helpless, I can make a difference. The DPE wants to hear you identify one in yourself honestly.

WHAT THE EXAMINER IS REALLY CHECKING

- Give one real example of a time you cancelled or changed a flight for a human-factors reason. That is correlation-level knowledge, and it is what the examiner wants.
- Nobody fails for admitting fatigue. People fail for pretending they would fly tired because the DPE 'wanted to fly.'
- Know the medication rule. It is asked on nearly every oral because so many pilots get it wrong in real life.

SECTION 08

Regulations, Right-of-Way & Emergency Operations

These are the questions where the DPE finds out if you will be a safe pilot when nobody is watching.

84. What are the right-of-way rules?

An aircraft in distress has right-of-way over everything. Otherwise, least maneuverable wins: balloon, glider, airship, airplane or rotorcraft, and anything towing or refueling has priority over others of its category. Head-on: both turn right. Converging: the aircraft on the right has right-of-way. Overtaking: pass on the right. Landing: the lower aircraft has right-of-way, but do not use that to cut someone off on final.

85. What are the responsibilities and authority of the pilot in command under 91.3?

The PIC is directly responsible for, and the final authority as to, the operation of the aircraft. In an in-flight emergency requiring immediate action, the PIC may deviate from any rule to the extent required, and must send a written report to the FAA only if requested.

86. What must you do if you have an accident?

Under NTSB Part 830, immediately notify the nearest NTSB office of an accident (death, serious injury, or substantial damage) or certain incidents such as flight control malfunction, in-flight fire, or an overdue aircraft. A written report is due within 10 days after an accident. Preserve the wreckage except to protect people or property.

87. What is the minimum altitude over a National Park or wildlife refuge?

Pilots are requested to maintain at least 2,000 feet AGL over charted national parks, monuments, seashores, wildlife refuges, and wilderness areas (AIM 7-5-6). It is advisory, but low flights there generate complaints and investigations.

88. What is the rule on dropping objects, and on careless or reckless operation?

91.15: no dropping objects that create a hazard to persons or property, but reasonable precautions make it legal. 91.13: no careless or reckless operation that endangers life or property. 91.13 is the catch-all the FAA uses in enforcement cases, so operate as if it is always watching.

89. What are the requirements for operating near other aircraft and formation flight?

91.111: no operation so close as to create a collision hazard, and no formation flight except by arrangement with the PIC of each aircraft, and never in formation while carrying passengers for hire.

90. What are your required actions on engine failure in cruise?

Airplane: pitch for best glide immediately, pick a landing site into the wind within glide range, attempt a restart (fuel selector, mixture, carb heat or alternate air, mags, primer), communicate (121.5, 7700), secure the engine and cabin before touchdown, unlatch the door. Helicopter: lower collective immediately to enter autorotation and preserve rotor RPM, establish autorotation airspeed, pick a spot, attempt restart if altitude permits, and fly the autorotation to a flare and cushion. In both, fly the aircraft first.

91. What do you do if you have an engine fire in flight? An electrical fire?

Engine fire: fuel off, mixture cutoff, master off, cabin heat off, and land immediately; in an airplane, a steep slip or increased airspeed may help keep flames away from the cabin. Electrical fire: master off, all electrical off, vents open; once the fire is out, if needed, turn on the master and then items one at a time to find the culprit. Follow the POH checklist for your aircraft.

92. What are the rules for use of safety belts and shoulder harnesses?

91.107: the PIC must ensure each person is briefed on how to fasten and unfasten the belt, and that belts are fastened for taxi, takeoff, and landing. Crew must wear belts at their stations at all times and shoulder harnesses for takeoff and landing if installed. Children under 2 may be held.

93. What are the rules on operating near an airport without a tower?

91.126 and 91.127: make all turns to the left unless otherwise indicated (right traffic shown by the segmented circle or Chart Supplement), and for helicopters, avoid the flow of fixed-wing traffic. Self-announce on CTAF: 10 miles out, entering downwind, base, final, and clear of the runway. Recommended pattern entry is 45 degrees to downwind at pattern altitude.

WHAT THE EXAMINER IS REALLY CHECKING

- When the DPE gives you an emergency scenario, say the first memory item instantly and then talk. Hesitation reads as 'this pilot will freeze.'
- 'Aviate, navigate, communicate' is a sequence, not a slogan. Use it to structure every emergency answer.
- Know Part 830 well enough to explain the difference between an accident, an incident, and the things that merely feel like emergencies.

SECTION 09

Helicopter Aerodynamics, Systems & Hazards

If you are testing in a helicopter, this is half your oral. Examiners want to hear the physics and the recovery in the same breath.

94. Explain dissymmetry of lift and how the rotor compensates for it.

In forward flight, the advancing blade sees rotor speed plus airspeed, the retreating blade sees rotor speed minus airspeed, so the advancing side produces more lift. The rotor compensates through blade flapping: the advancing blade flaps up, reducing its angle of attack; the retreating blade flaps down, increasing its angle of attack. Cyclic feathering adds to this.

95. What is retreating blade stall? Signs and recovery?

At high forward speed the retreating blade's angle of attack becomes so high that it stalls near the tip. Causes: high airspeed, high gross weight, high density altitude, low rotor RPM, turbulence, steep turns. Signs: abnormal vibration, nose pitches up, and a roll toward the retreating side (left in most U.S. helicopters). Recovery: reduce collective, reduce airspeed, reduce severity of the maneuver, check RPM, and descend to a lower density altitude. Do not pull aft cyclic hard; that makes it worse.

96. What is effective translational lift (ETL) and when does it occur?

As the helicopter accelerates through roughly 16 to 24 knots, the rotor flies out of its own recirculating air and into cleaner air, improving efficiency; you feel a shudder, the nose pitches up, and the aircraft climbs. You lose it on approach at about the same speed, which is why power requirements increase as you slow through it.

97. What is transverse flow effect?

Around 10 to 20 knots, air passing through the rear of the rotor disc has a higher downwash velocity than at the front, creating a difference in lift front to back. Through gyroscopic precession that shows up 90 degrees later as a roll to the right (in a counterclockwise rotor), felt as a vibration and a lateral shudder just before ETL.

98. What is translating tendency and how is it corrected?

The tail rotor thrust needed to counter main rotor torque pushes the whole helicopter sideways (to the right in a counterclockwise rotor). Designers correct it with a slightly tilted mast, rigging offset, or the pilot holds left cyclic in a hover; this is why many helicopters hover left-skid low.

99. What is vortex ring state (settling with power), what are the conditions, and how do you recover?

The rotor descends into its own downwash and re-ingests its tip vortices; adding power makes it worse. Conditions: airspeed below ETL, descent rate above about 300 fpm, and 20 to 100 percent power applied (the rotor is working). Typical traps: steep downwind approaches, OGE hover with a tailwind, and a quick stop that becomes a vertical descent. Recovery: lower collective slightly and apply forward cyclic to fly into clean air, or use the Vuichard recovery: increase collective to max available while applying lateral cyclic into the direction of tail rotor thrust (right in a counterclockwise rotor) with pedal to keep the nose straight, moving sideways out of the vortex. Know which one your instructor taught and why.

100. What is loss of tail rotor effectiveness (LTE)? What wind azimuths matter?

An uncommanded, rapid yaw that does not subside with pedal input, at low airspeed, caused by tail rotor aerodynamics rather than a failure. Critical relative wind azimuths (counterclockwise rotor): 120 to 240 degrees, weathercock stability, the wind pushes the tail; 210 to 330 degrees, tail rotor vortex ring state; 285 to 315 degrees, main rotor disc vortex interference. Also loss of translational lift. Recovery: full pedal against the yaw, forward cyclic to gain airspeed, and if altitude permits, reduce power. The best cure is avoiding slow downwind or crosswind maneuvering at high power.

101. What is dynamic rollover?

When a skid or wheel becomes a pivot point (caught on something, slope, or one skid stuck) and a rolling moment develops that exceeds the ability of cyclic to counter it, usually beyond a critical angle of about 5 to 8 degrees. Contributing: translating tendency, crosswind, slope, lateral CG, and most of all, raising the collective while the aircraft is pivoting. Recovery: smoothly and immediately lower the collective. Not cyclic.

102. What is ground resonance and what do you do?

A self-exciting vibration in fully articulated rotor systems when the blades become out of phase in lead-lag while the aircraft is in contact with the ground, usually after a hard or one-skid landing with improper damper or oleo servicing. It can destroy the aircraft in seconds. If rotor RPM is in the normal range, lift off immediately into a hover. If RPM is too low to fly, lower collective and shut down. Semi-rigid rotors like the R22/R44 are not susceptible.

103. Explain autorotation. How does the rotor keep turning?

With engine power removed, the freewheeling unit (sprag clutch) disengages the engine and the upward flow of air through the rotor drives it. The driving region (roughly 25 to 70 percent of the blade span) accelerates the rotor; the driven region near the tips and the stall region near the root slow it. Rotor RPM is managed with collective; airspeed with cyclic. A flare at the bottom trades airspeed for RPM and reduces descent rate, then collective cushions the touchdown.

104. What is the height-velocity (H/V) diagram?

The chart in the POH showing combinations of altitude and airspeed from which a safe autorotation after engine failure is unlikely: the low-airspeed, high-altitude shaded area (not enough time to get RPM and airspeed) and the high-airspeed, low-altitude area (not enough altitude to flare). Takeoff profiles are designed to stay out of the shaded areas; it is not prohibited but should be avoided whenever possible.

105. What is mast bumping and how do you avoid it?

In semi-rigid (teetering) rotor systems, low-G or near-zero-G conditions let the fuselage roll under the rotor; the pilot's instinctive lateral cyclic input then causes the rotor hub to strike the mast, which can sever it. Avoid abrupt forward cyclic pushovers and turbulence at high speed. Recovery from low-G: gently apply aft cyclic to reload the rotor, then correct the roll. SFAR 73 training on this is required for Robinsons.

106. Your low rotor RPM horn comes on. What do you do and why?

Immediately lower the collective and, if available, add throttle (roll on). Lowering collective reduces drag on the blades and lets RPM recover; low RPM is the single most dangerous condition in a helicopter because lift falls off as the square of RPM and blades can stall and cone. Forward cyclic in a hover is not the fix; collective is.

107. What is the purpose of the tail rotor, and what happens if it fails in forward flight versus hover?

It counters main rotor torque and provides yaw control. Loss of thrust in a hover: the nose yaws right (counterclockwise rotor); close the throttle to remove torque and perform a hovering autorotation. In forward flight: the vertical stabilizer provides some streamlining; maintain airspeed, consider a running landing or an autorotation to a landing with the throttle reduced to control yaw at the end, per your POH.

108. Explain the helicopter's main flight controls and what each does to the rotor.

Collective changes pitch on all blades equally: altitude and power. Cyclic tilts the rotor disc by changing pitch cyclically: direction of flight and attitude. Anti-torque pedals change tail rotor pitch: yaw and heading. Throttle (or governor) maintains rotor RPM; know how your governor works and how to fly without it.

109. What is carburetor icing in the R22/R44 and how is it managed?

Carb ice can form at temperatures from well below freezing to over 70 F with high humidity, especially at low power. Indications: drop in manifold pressure and roughness. Robinsons have a carb heat assist and a carb air temperature gauge: keep the needle out of the yellow arc. Apply carb heat on descent and whenever the gauge indicates. Know whether your aircraft has carb heat assist and how to override it.

WHAT THE EXAMINER IS REALLY CHECKING

- For every hazard, give the DPE three things in order: how to recognize it, how to recover, and how you avoid it in the first place. Avoidance earns the most credit.
- Say 'lower the collective' in your sleep. Low RPM, dynamic rollover, engine failure, overpitching: it is the first move for most of what kills helicopter pilots.
- If you train in a Robinson, re-read SFAR 73 the night before. The DPE will ask about low-G and mast bumping specifically.

SECTION 10

Airplane Aerodynamics, Systems & Hazards

If you are testing in an airplane, expect this section to be mixed in with everything else. Explain, then connect it to what you do in the cockpit.

110. What is a stall, and what causes it?

A stall occurs when the wing exceeds its critical angle of attack, roughly 16 to 18 degrees for most trainers, and airflow separates from the upper surface so lift decreases sharply. It can happen at any airspeed, any attitude, any power setting. Stall speed increases with weight, load factor (bank), forward CG, and frost or ice. Recovery: reduce angle of attack (pitch down), add power, level the wings, return to the desired flight path.

111. What is a spin and how do you recover?

An aggravated stall with autorotation about the vertical axis, requiring both a stall and yaw. Recovery, PARE: Power idle, Ailerons neutral, Rudder full opposite to the rotation, Elevator forward to break the stall; then neutralize the rudder when rotation stops and recover from the dive. Follow your POH if it differs.

112. Why does stall speed increase in a turn?

In a level turn the wing must produce extra lift to hold altitude, so load factor increases: 1.15 G at 30 degrees, 1.41 at 45, 2.0 at 60. Stall speed increases by the square root of the load factor, so a 60-degree level turn raises stall speed about 41 percent. This is why a tight, skidding base-to-final turn is a classic fatal accident.

113. What are the four left-turning tendencies?

Torque (reaction to the propeller turning clockwise rolls the airplane left), P-factor (the descending blade on the right produces more thrust at high angles of attack, yawing left), spiraling slipstream (the propwash strikes the left side of the vertical stabilizer), and gyroscopic precession (a pitch change on the propeller acts 90 degrees later, mainly in tailwheel airplanes on takeoff). All are strongest at high power and low airspeed: right rudder on takeoff and in a climb.

114. What is adverse yaw?

When rolling into a turn, the down-going aileron on the rising wing creates more drag, yawing the nose away from the turn. You correct with coordinated rudder in the direction of the turn. Frise ailerons and differential aileron travel reduce it.

115. What is ground effect?

Within about one wingspan of the surface, the ground interferes with the wingtip vortices and downwash, reducing induced drag. The airplane may float on landing, or lift off before it can climb out of ground effect on a hot day with a heavy load, which has caused many high-density-altitude accidents.

116. How do you avoid wake turbulence?

Vortices descend and drift with the wind, strongest behind a heavy, clean, slow aircraft. Taking off behind a larger aircraft: rotate before its rotation point and climb above and upwind of its flight path. Landing behind one: stay above its glide path and land beyond its touchdown point. Wait at least 2 to 3 minutes behind a large aircraft in light crosswind conditions, which can hold a vortex on the runway.

117. Explain the carburetor ice problem and how you detect and fix it.

Fuel vaporization and venturi cooling can drop the carburetor temperature up to 40 F below ambient, so ice can form at OAT up to about 70 F in humid air. Fixed-pitch prop: gradual RPM drop and roughness. Constant speed: manifold pressure drop. Fix: full carb heat; expect it to get rougher first as the ice melts, then recover. Apply carb heat before reducing power for descent in most trainers.

118. How does the pitot-static system work and what happens if the pitot tube or static port is blocked?

Pitot pressure feeds only the airspeed indicator; static pressure feeds the airspeed, altimeter, and VSI. Blocked pitot (ram and drain holes): airspeed acts like an altimeter, reading higher in a climb and lower in a descent. Blocked static: airspeed reads low in a climb and high in a descent, altimeter freezes, VSI shows zero. Use the alternate static source or, in an emergency, break the VSI glass (the VSI then reads reversed).

119. Which instruments are gyroscopic and what powers them?

Attitude indicator and heading indicator are typically vacuum (or pressure) driven; the turn coordinator is typically electric. Having them on separate power sources is deliberate so one failure does not take out all three. On vacuum failure, the attitude indicator and heading indicator slowly roll over and become unreliable: cover them and fly the turn coordinator, airspeed, altimeter, and compass.

120. What does the magneto check tell you, and what is a 'mag drop'?

Each magneto fires one of two spark plugs per cylinder independently of the electrical system. Checking each mag alone should show a small RPM drop, typically no more than 125 to 175 RPM with less than 50 RPM difference between them, per the POH. No drop at all means a mag is not grounding, so the engine could start if the prop is moved by hand: treat it as live. Excessive drop or roughness means a fouled plug or mag problem.

121. Your alternator fails in flight. What do you do?

Verify with the ammeter or low-voltage light, cycle the alternator (master or alternator switch per POH), check the alternator circuit breaker. If it does not come back, reduce electrical load to essentials (one radio, transponder), and plan to land before the battery depletes, typically 30 to 60 minutes. Land at a non-towered airport or notify ATC early while you still have a radio.

122. What is Vx and Vy, and when do you use each?

Vx is best angle of climb: most altitude per horizontal distance, used to clear an obstacle. Vy is best rate of climb: most altitude per unit time, used for normal climbs to cruise. Vx increases and Vy decreases slightly with altitude until they meet at the absolute ceiling.

123. Explain how to manage fuel: selector, mixture, and the difference between 100LL and jet fuel.

Use the fuel selector per the POH (BOTH on most Cessnas, timed tank switching on Pipers), lean the mixture at cruise per the POH to reduce consumption and plug fouling, and enrich for descent and landing. 100LL avgas is blue; jet fuel is clear or straw-colored, smells like kerosene, and will destroy a piston engine shortly after takeoff. Always sump the tanks and check the fuel truck placard.

WHAT THE EXAMINER IS REALLY CHECKING

- Tie every aerodynamic answer to a specific maneuver on your checkride: slow flight, power-on stalls, steep turns, short-field landings. The DPE is listening for correlation.
- Know your airplane's V-speeds without looking. Then be able to say where each one came from in the POH.
- When asked about a system failure, answer in this order: how you recognize it, immediate action, then the decision you would make about the flight.

SECTION 11

Ten answers that end checkrides

None of these is an automatic failure. Each one invites the examiner to dig until they find the gap. Here is what to say instead.

What candidates say	What to say instead
'I'd call my instructor.'	You are being tested as a pilot in command. Describe what you would do, then say who you would consult afterward.
'That's not in my aircraft.'	The DPE knows. They are testing whether you understand the system in general. Answer the concept, then note how it applies to your aircraft.
'I'd never fly in that weather anyway.'	Fine, but you still have to be able to explain the weather. Avoidance is not a substitute for knowledge.
Reciting an acronym and stopping.	Acronyms are for recall. The examiner wants each item explained and applied to today's flight.
Arguing with the examiner.	If you are sure you are right, say 'I believe it is X; may I show you in the FAR/AIM?' and then show it. Calmly. Once.
'I think it's around 500 feet or so.'	Regulations are not 'or so.' If you do not know, say you do not know and name the reference you would check.
Answering a different question than the one asked.	Classic nerves move. Pause, restate the question in your own words, then answer that.
Over-answering.	Answer the question, stop, and wait. Every extra sentence is another chance to say something wrong and open a new line of questioning.
Not knowing your own logbook.	The examiner will find your experience requirements. Tab every required flight before you arrive.
Saying 'I'd just go' when the scenario is clearly a no-go.	The DPE builds scenarios with a right answer. A confident 'I would not go, and here is what I would do instead' is a passing answer.

SECTION 12

The 7-day oral prep plan

One section a day, out loud. Studying silently is how you convince yourself you know things you cannot actually say.

Day 1 Logbook and documents

Tab every 61.109 requirement in your logbook with sticky flags. Gather your certificate, photo ID, medical, knowledge test report, and endorsements. Print the aircraft's current weight and balance and tab the maintenance logs (annual, 100-hour if applicable, transponder, ELT, ADs).

Day 2 Aircraft systems and airworthiness

Read the POH limitations and systems sections cover to cover. Work Sections 2 and 9 of this book out loud. Practice the 91.213 inoperative-equipment walk-through with three invented failures.

Day 3 Weather

Work Section 3. Pull a real briefing for your checkride route for three days in a row and make a go/no-go call each day with reasons. Decode five METARs and two TAFs out loud.

Day 4 Airspace and cross-country

Work Sections 4 and 5. Plan the DPE's cross-country if assigned, or re-plan yours with today's winds. Narrate the route, airspace, altitudes, frequencies, diversions, and lost-comm plan to someone who is not a pilot.

Day 5 Performance, W&B, aeromedical

Work Sections 6 and 7. Run a weight and balance and a takeoff/landing distance for the real airplane or helicopter with you and the DPE aboard at tomorrow's forecast temperature.

Day 6 Mock oral

Have your instructor or another pilot ask you 40 random questions from this book. Flag anything you hesitate on. Review only those. Then stop; cramming the night before costs more than it adds.

Day 7 Checkride day

Sleep. Eat. Arrive 30 minutes early with everything from Day 1 in one folder. Run IMSAFE honestly. Remember that the oral is a conversation between two pilots, and that the examiner wants to pass you.

SECTION 13

Checkride-day checklist

Put all of it in one folder the night before.

- Pilot certificate (student or current certificate) and government photo ID
- Medical certificate or BasicMed documents
- Knowledge test report (within 24 calendar months) and the instructor endorsement for any areas missed
- Logbook with all required endorsements (61.87, 61.93, 61.103, 61.105, 61.107 as applicable), tabbed
- IACRA application completed, FTN number handy; examiner's fee in the form they requested
- Aircraft documents: ARROW, maintenance logs showing current inspections, AD compliance

- Current sectional(s), Chart Supplement, FAR/AIM (paper or app), POH/AFM
- Completed nav log, weight and balance, performance calculations, and weather briefing for the assigned cross-country
- Plotter, E6B or app, headset, view-limiting device, water and a snack
- A written list of your personal minimums

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