



INSTRUMENT FLYING
GROUNDSCHOOL
END OF COURSE EXAMINATION

Instructor Version

Chris Hobbs
Farmhall Aviation Training Limited

<http://www.farmhall.ca>

©2002—2009 All Rights Reserved

Issue 2.2
February 2009

Contents

1	Air Law	2
2	IFR Flight	6
3	Communications	14
4	Meteorology	17
5	Instruments	21
6	Navigation Systems	24
7	Miscellaneous	27
8	Human Factors	28

Chapter 1

Air Law

Q 1 *A flight plan is required for an IFR flight:*

- 1. unless the flight is completely within class G airspace*
- 2. if the flight is to enter class C airspace*
- 3. if the flight is totally within class F airspace*
- 4. if the flight is totally outside class G airspace*

4 (i.e. a flight plan is not needed if the flight is in whole or part outside controlled airspace.)

Q 2 *Under which of the following circumstances is a pilot required to notify an ATC, FSS or CARS of a change to an IFR flight plan?*

- 1. when, in controlled airspace, the true airspeed differs by more than 5% of that given in the flight plan*
- 2. when, in uncontrolled airspace, the destination airport is changed*
- 3. when, in uncontrolled airspace, the cruising altitude changes*
- 4. when, in controlled airspace, the cruising altitude changes*

1 and 4.

Q 3 *Is it possible to file a composite VFR/IFR flight plan?*

- 1. yes, but only if the VFR portion of the flight is in uncontrolled airspace*
- 2. yes, but only on international flights*
- 3. yes, but the flight rules must be entered as Y or Z on the flight plan*
- 4. no: two separate flight plans must be filed*

3.

Q 4 *May an IFR Flight Plan be converted into a VFR Flight Plan during flight?*

1. *yes, if the aircraft is in VMC and the pilot has reasonable expectations that the remainder of the flight will be in such conditions, ATC will convert the flight plan on request*
2. *no, the pilot must cancel the IFR flightplan and contact a FSS to file a VFR one*
3. *yes, except on international flights*
4. *no, unless the aircraft is controlled airspace when the pilot may request a special VFR clearance*

1, as long as the destination remains unchanged (see RAC6.2).

Q 5 *Is it possible to file an IFR flight plan including intermediate stops?*

No, except on training flights. See RAC3.10

Q 6 *May an IFR flight-plan be filed for a destination airport which does not have a published instrument approach?*

1. *yes, but only if an airport with published instrument approach is within 25 nautical miles*
2. *no, as there would be no way to make an approach at such an airport*
3. *yes, but only if the airport has a control tower from which ATC can control the aircraft*
4. *yes*

4.

Q 7 *What conditions need to be considered when calculating the fuel necessary for an IFR flight?*

In addition to VFR fuel requirements, every aircraft shall carry fuel that is sufficient to provide for: taxiing and foreseeable delays prior to takeoff, meteorological conditions, foreseeable air traffic routing and traffic delays, landing at a suitable aerodrome in the event of loss of cabin pressure and any other foreseeable conditions which could delay the landing of the aircraft.

Q 8 *How much fuel need a propeller-driven aircraft carry at the beginning of an IFR flight when an alternate aerodrome is not filed?*

- 1. sufficient to fly to the destination, perform a missed approach and then fly for a further 90 minutes at cruise power*
- 2. sufficient to fly to the destination, perform a missed approach and then fly to the closest aerodrome with an instrument approach and perform an approach*
- 3. sufficient to fly to the destination, perform a missed approach and then fly to the filed alternate and then for a further 45 minutes at cruise power*
- 4. sufficient to fly to the destination, perform a missed approach and then fly for a further 45 minutes at cruise power*

4

Q 9 *When must an alternate aerodrome be filed for an IFR flight plan or flight itinerary?*

- 1. when the weather at the destination is forecast to be below published approach minima at the estimated time of arrival*
- 2. when the fuel on board the aircraft is insufficient to return to the departure airport following a missed approach at the destination*
- 3. always*
- 4. always unless authorised by the Minister*

4.

Q 10 *An aerodrome for which a TAF is issued and which is selected as the alternate on an IFR flight plan must have a landing area suitable for the aircraft and the predicted weather ----- must -----.*

- 1. at the anticipated time of arrival, be above the minimum required for an instrument approach at that aerodrome*
- 2. between one hour before and two hours after the anticipated arrival, meet the conditions defined in the CAP GEN*
- 3. between one hour before and two hours after the anticipated arrival, be above the minimum required for an instrument approach at that aerodrome*

4. *at the anticipated time of arrival, meet the conditions defined in the CAP GEN*

4

Q 11 *May Aerodrome Forecasts (TAFs) that contain BECMG, TEMPO or PROB be used to determine the suitability of an aerodrome as an alternate?*

1. *yes, but the highest of the forecast conditions must be used to determine whether the aerodrome can be used as an alternate.*
2. *yes, but only the lowest of the forecast conditions must be used to determine whether the aerodrome can be used as an alternate.*
3. *yes, but only if a useable precision approach is available at the airport.*
4. *no.*

2

Q 12 *May an aerodrome without an instrument approach and without a TAF be filed as an alternate?*

Yes.

Q 13 *May an aerodrome having only a GPS approach be filed as an alternate?*

Yes.

Q 14 *What are the standard alternate minima?*

400-1 for two or more useable precision approaches, 600-2 for one useable precision approach, 800-2 for non-precision approaches only.

Chapter 2

IFR Flight

Q 15 *A pilot flying an approach at 95 knots flies the ILS for runway 32 and, after breaking out of cloud, circles for landing on runway 25. While circling, how far from the airport may the pilot fly? If IMC is encountered during the circling, what action should the pilot take?*

- 1. 1.5 sm; fly the missed for runway 25 approach*
- 2. 1.5 nm; fly to the centre of the airport and then the missed approach for runway 25*
- 3. 1.5 sm; descend until the ground can be clearly seen*
- 4. 1.5 nm; fly to the centre of the airport and then the missed approach for ILS 32*

4.

Q 16 *When a pilot reaches a clearance limit without further clearance, what action should be taken?*

- 1. the pilot should climb to the MOCA and continue on course after informing ATC of the intention*
- 2. the pilot should execute a 180° turn and return to the departure point.*
- 3. the pilot should enter a hold on the inbound track.*
- 4. the pilot should enter a hold on the heading to be taken from the clearance limit.*

3

Q 17 *The timing requirement in a holding pattern at or below ... feet ASL is for an inbound leg of ... seconds. Above that height the inbound leg should take ... seconds.*

1. 14'000, 60, 60
2. 14'500, 60, 120
3. 14'000, 60, 90
4. 14'500, 60, 90

3 (see RAC10.6).

Q 18 *What are the speed restrictions for a propeller-driven aircraft in a holding pattern?*

See RAC10.7: 175 KIAS for propeller aircraft.

Q 19 *When instructed by ATC to “maintain runway heading” after takeoff, what correction should the pilot make for drift?*

None.

Q 20 *When departing on a SID clearance, with whom does the responsibility to follow noise abatement procedures lie?*

1. with the Pilot in Command
2. with ATC until the aircraft reaches en route altitude
3. with the Minister
4. with the Navigator

1.

Q 21 *What should be contained in the first radio call to Departure Control after takeoff with a SID clearance?*

RAC7.5: the aircraft call sign, the runway of departure, the vacating altitude and the assigned (SID) altitude.

Q 22 *When is takeoff prohibited?*

When the visibility is below that required.

Q 23 *A takeoff is to be conducted from Runway 27. The pilot is authorised a take-off minimum of RVR2600 (1/2 SM). May a takeoff occur if ATC reports "...RVR runway 27 is 2000, variable 1600-2800, tower visibility 1/2 mile"?*

Yes.

Q 24 *A takeoff is to be conducted from Runway 27. The pilot is authorised a take-off minimum of RVR2600 (1/2 SM). May a takeoff occur if ATC reports "...RVR runway 27 is 2200, visibility observed on the hour 1/4 mile, tower visibility now 1/2 mile"?*

Yes.

Q 25 *A takeoff is to be conducted from Runway 27. The pilot is authorised a take-off minimum of RVR2600 (1/2 SM). May a takeoff occur if neither RVR nor tower visibility is available?*

Yes: pilot's judgement.

Q 26 *In order to ensure terrain clearance, what is the lowest altitude at which a pilot should turn after takeoff?*

1. *35 feet above runway elevation.*
2. *at the MOCA for the area*
3. *at the flight-planned cruise altitude.*
4. *400 feet above runway elevation.*

RAC7.7: 4

Q 27 *When departing from an airport in the Standard Pressure Region, when shall a pilot set the aircraft's altimeter to 29.92"?*

1. *immediately before levelling out at cruise or at 18'000 feet ASL, whichever is the higher.*
2. *as soon as a safe altitude is reached after takeoff.*
3. *immediately before levelling out at cruise or at 18'000 feet ASL, whichever is the lower.*
4. *before entering a low-level airway or air route.*

RAC2.11: 3

Q 28 *ATC has identified a departing IFR aircraft on radar but is not issuing vectors. Which of the following statements is true?*

- 1. ATC is responsible for maintaining separation between the aircraft and all other aircraft.*
- 2. ATC is responsible for obstacle clearance for the aircraft.*
- 3. ATC is responsible for maintaining terrain clearance for the aircraft.*
- 4. ATC is responsible for maintaining separation between the aircraft and all other IFR aircraft.*

4

Q 29 *When is a pilot flying IFR required to make a position report?*

- 1. in controlled airspace, over every compulsory reporting point and any other point specified by ATC.*
- 2. in uncontrolled airspace, over every navigation device.*
- 3. in controlled airspace over all navigation devices.*
- 4. in uncontrolled airspace, at all points specified by ATC.*

2

Q 30 *What should be contained in a position report?*

- 1. Aircraft ID, Position, Time Over, Altitude, Type of Flight Plan, Name of Next Reporting Point, Estimated Time at Next Reporting Point, Name of Destination.*
- 2. Aircraft ID, Position, Time Over, Altitude, Type of Flight Plan, Name of Next Reporting Point, Estimated Time at Next Reporting Point, Estimated Time at Destination.*
- 3. Aircraft ID, Position, Time Over, Altitude, Type of Flight Plan, Name of Next Reporting Point, Estimated Time at Next Reporting Point, Name of Succeeding Reporting Point.*
- 4. Aircraft ID, Position, Time Over, Altitude, Type of Flight Plan, Estimated Time at Next Reporting Point, Name of Succeeding Reporting Point, Destination.*

3

Q 31 *When should a revised position report be given?*

If the estimated time at the next reporting point is found to be in error by more than 3 minutes.

Q 32 *What is the minimum altitude at which an aircraft in IFR flight should be flown?*

Except when taking off or landing, at 1000 feet above the highest obstacle within 5nm (known as the Minimum IFR Altitude).

Q 33 *When flying in a designated mountainous area when the temperature is well below standard, what adjustment should be made to the published MEA?*

RAC2.12. At least 1000 feet should be added.

Q 34 *When flying across a fix with different MEAs either side, at what altitude should the fix be crossed?*

At the higher of the two.

Q 35 *When may an Air Traffic Controller approve IFR flight lower than the MEA?*

When requested by the pilot for reasons of safety. ATC cannot approve flight below the MOCA.

Q 36 *When flying in designated Mountainous Areas what special actions should a pilot take when there are large variations in temperature or pressure?*

Fly at least 1000 feet above the MEA (RAC2.12)

Q 37 *When flying IFR in a designated Mountainous Area outside areas for which minimum altitudes for IFR operation have been established, what minimum altitudes apply?*

Fly at least 2000 feet above the highest obstacle within 5nm (British Columbia or the far north) or at least 1500 feet above the highest obstacle within 5nm elsewhere. (RAC2.12)

Q 38 *When ATC vectors arrival traffic, who has responsibility for terrain clearance?*

1. *The Pilot in Command until the aircraft intercepts the final approach course*
2. *The Minister*
3. *ATC until the aircraft intercepts the final approach course*
4. *ATC until the aircraft reaches the higher of the MOCA or MRA*

3.

Q 39 *What adjustment should be made to procedure altitudes in cold weather?*

The corrections in CAP GEN.

Q 40 *What determines an approach ban?*

1. *visibility.*
2. *visibility and ceiling.*
3. *types of approaches available.*
4. *experience of the pilot in command.*

1

Q 41 *Under what conditions may an approach be made if an approach ban is in force?*

If the aircraft is already past the FAF when the RVR is received, if the aircraft is on a training flight and is intending to miss, if the RVR is fluctuating above and below the required minimum or if ATC or FSS is reporting a visibility of at least $\frac{1}{4}$ miles.

Q 42 *Which of the following is false for a TLS?*

1. *the final approach path may include changes of heading*
2. *a calibrated transponder is required in the aircraft*
3. *two aircraft may be making the approach at the same time as long as there is 1 nautical mile separation between them*
4. *the approach does not require a localiser array*

3

Q 43 *Which of the following does not constitute “establishing visual reference” when approaching to land?*

1. *the PAPI*
2. *the runway centre line lights*
3. *the runway number*
4. *the localiser array*

4. One of the following references for the intended runway must be visible and identifiable: runway markings, runway threshold markings, touchdown zone markings, the approach lights, the approach slope indication system, the runway identification lights, the threshold and runway end lights, the touchdown zone light, the parallel runway edge lights or the runway centre line lights. RAC9.19.3.

Q 44 *When considering an approach, what authority have the published landing visibility figures on the approach plates?*

None, they are advisory only. RAC9.20.3.

Q 45 *What is the difference between a Contact Approach and a Visual Approach?*

A contact approach may be requested by the pilot (it will never be suggested by ATC) when the aircraft has 1nm flight visibility, the reported ground visibility is at least 1sm and will be approved if traffic conditions permit. The flight is continued by ground reference.

A visual approach may be suggested by ATC for operational reasons if the ceiling is at least 500 feet above the minimum vectoring altitude, ground visibility is at least 3SM and the pilot reports airfield in sight. RAC9.7.

Q 46 *Under what rules is a pilot flying if on a missed approach from a Visual Approach?*

VFR. RAC9.6.2.

Q 47 *What is a Precision Radar Approach?*

1. *an approach offered at a towered airport making use of ATC's primary radar.*
2. *any precision approach at an airport with radar in the tower.*
3. *an approach wherein a controller "talks" the pilot down.*

4. *an approach which cannot be flown unless the aircraft is fitted with radar.*

3.

Q 48 *When flying in the Standard Pressure Region, when should the aircraft's altimeter be set from 29.92" to the setting of the destination airport?*

Prior to starting a descent with the intention of landing. RAC2.11.

Q 49 *A pilot is arriving at an uncontrolled airport lying below controlled low-level airspace. On descending to the MEA visual conditions are not encountered. May the pilot descend further?*

1. *no but the pilot can cancel his or her IFR flight plan and continue with the descent at his or her discretion.*
2. *no, ATC is never allowed to clear an IFR aircraft to an altitude below the MEA.*
3. *yes, the pilot can descend to the MOCA without informing ATC and return to the MEA if visual conditions are not encountered.*
4. *yes, the pilot can request a descent to the MOCA and ATC will protect the MEA for 30 minutes in case visual conditions are not met at the MOCA*

4

Chapter 3

Communications

Q 50 *Following a two-way communications failure, at what altitude should a pilot fly when en route?*

At the highest of:

1. the altitude assigned in the last clearance received and acknowledged
2. the minimum IFR altitude
3. the altitude that ATC has advised may be expected in a further clearance (at the time of that expected clearance).

RAC6.3.2.2.

Q 51 *What action should a pilot flying on an IFR flight plan take following a two-way communications failure in VMC?*

1. *Continue on flight-planned route until reaching the final fix. Hold at that fix until the scheduled arrival time, then start the approach and landing.*
2. *Continue on cleared route until reaching the final fix. Hold at that fix until the scheduled arrival time, then start the approach and landing.*
3. *Continue the flight in VMC and land as soon as practicable.*
4. *Divert immediately to the alternate aerodrome filed on the flight plan.*

RAC6.3.2.2: 3

Q 52 *A pilot is flying a “RADAR REQUIRED” approach under ATC vectors in IMC when a two-way communications failure occurs. The pilot should select 7600 on the transponder, climb to the minimum IFR altitude and ...*

- 1. fly right-hand triangular patterns to indicate the failure.*
- 2. fly the anticipated route using DED reckoning.*
- 3. immediately fly the missed approach procedure.*
- 4. use the backup communication channel through the NDB frequency.*

RAC6.3.2.2: 2

Q 53 *In the absence of other direction from ATC, the code ... should be set on a transponder for IFR flight in controlled and the code ... in uncontrolled low-level airspace.*

- 1. 1400, 1200*
- 2. 1000, 1400*
- 3. 1400, 1000*
- 4. 1000, 1000*

4.

Q 54 *An approach is labelled LOC/DME/NDB RWY 09. Which of the following is true about this approach?*

- 1. Localiser, DME and ADF are required to fly this approach*
- 2. Localiser, DME or ADF is required to fly this approach*
- 3. the chart describes multiple approaches*
- 4. the approach may only be flown with a co-pilot able to read DME distances*

1.

Q 55 *What items must be included in a holding clearance?*

- 1. the time at which the pilot is to enter the hold, the name of the fix, the altitude at which the hold is to be flown and the “expect further clearance” time.*
- 2. the name of the fix, the radial or inbound track to the fix, the altitude at which the hold is to be flown and the “expect further clearance” time.*

3. *the name of the fix, the radial or inbound track to the fix, the speed at which the hold is to be flown and the “expect further clearance” time.*
4. *the name of the fix, the radial or inbound track to the fix, the speed at which the hold is to be flown, the direction of the hold (right- or left-handed) and the “expect further clearance” time.*

2.

Q 56 *Which of the following are true for Decision Height and Minimum Descent Altitude:*

1. *DH and MDA refer to the same point on a non-precision approach*
2. *DH is the altitude at which a pilot is issued a landing clearance*
3. *MDA is the lowest altitude at which navigation devices may be received*
4. *MDA is a term used for non-precision approaches whereas DH is a term used for precision approaches*

4.

Q 57 *To which of the following is it unnecessary to apply cold temperature corrections when flying in cold weather?*

1. *Missed approach altitudes*
2. *Aerodrome elevations*
3. *Altitudes assigned by ATC on vectors*
4. *Sector altitudes*
5. *Decision heights*

2,3

Chapter 4

Meteorology

Consider the following weather forecast to answer the questions in this section.

```
TAF AMD CYOW 111414Z 111512 12012KT 4SM -RA BR OVC008
WS020/27040KT TEMPO 1719 1/2SM -RA FG
FM111930 09012KT 1SM -DZ BR VV003 BECMG 1120/1121 5SM HZ
FM112200 23020KT P6SM BKN020
FM120000 24015KT P6SM SCT050=
RMK NXT FCST BY 18Z=
```

Q 58 *What is the time of issue and validity period of this CYOW TAF?*

- 1. issued on 11th of the month at 15:12Z and valid from 14:00Z to 14:00Z on the 12th of the month*
- 2. issued on 11th of the month at 14:14Z and valid from 12:00Z to 15:00Z*
- 3. issued on 14th of the month at 11:14Z and valid from 15:00Z to 12:00Z on the 15th of the month*
- 4. issued on 11th of the month at 14:14Z and valid from 15:00Z to 12:00Z on the 12th of the month*

4

Q 59 *What is the meaning of the term **AMD** in the TAF?*

- 1. American Meteorological Data—indicating that the forecast is based on observations made in the USA*

2. *Amended*—indicating that the forecast has been modified since being originally issued
3. *Automatic Meteorological Data*—indicating that the forecast has been based on information from an automated weather station.
4. *Approximate Meteorological Data*—indicating that the forecast has been based on information from an automated weather station.

2

Q 60 *What is the meaning of the term WS020/27040KT in the TAF?*

1. *Wind speed is expected to change at 20:00Z to westerly at 40 knots.*
2. *Wind sheer is anticipated at 2000 feet*
3. *Wind sheer is anticipated at 20000 feet*
4. *Water Spouts are anticipated after 20:00Z*

2

Q 61 *Which of the following is correct?*

1. *Rime icing moves forwards as it collects*
2. *Rime icing results from flight through large, super-cooled water droplets*
3. *Rime icing moves backwards as it collects*
4. *Rime icing cannot form when the temperature is below -5°C*

None of these (I think!).

Q 62 *Which of the following is incorrect?*

1. *Hoar frost is caused by sublimation*
2. *Clear ice spreads backwards as it collects*
3. *Icing is classified as Trace, Light, Moderate and Severe*
4. *Icing will collect on blunt surfaces before it will collect on sharp ones*

4.

Q 63 *Match the types of fog to their causes.*

1. *Radiation Fog*
2. *Advection Fog*
3. *Upslope Fog*

4. *Frontal Fog*

1. *Precipitation from warm or cold air falls into colder air below.*
2. *Moist air moves up rising terrain*
3. *Cooling on clear nights when the relative humidity is high*
4. *Horizontal movement of warm, moist air over a cool surface*

(1,3) (2,4) (3,2) (4,1).

Q 64 *What are the meanings of the following weather descriptors?*

- *BR*
- *DZ*
- *GS*
- *FU*
- *IC*
- *PL*

Mist, Drizzle, Snow Pellets, Smoke, Ice Crystals, Ice Pellets.

Q 65 *Given the following weather report*

06015KT 3/4 FG R03/2400FT/U OVC007

may you start an approach into runway 03? What is the meaning of the U in the above report?

Yes. Going up.

Q 66 *The greatest turbulence associated with an active thunderstorm is normally found:*

1. *below the cloud base*
2. *in regions where the temperature exceeds 5°C*
3. *in the middle to upper levels of the cell*
4. *in regions where the temperature is below -15°C*

3.

Q 67 *You are in an aircraft on the apron at an airport. You may find the pressure altitude of the airport by:*

1. *setting the aircraft's altimeter to 29.92 inches and noting the altitude displayed*
2. *setting the aircraft's altimeter to register the correct airfield elevation and reading the pressure*
3. *setting the aircraft's altimeter to 29.92 inches, noting the altitude displayed and adding this to the airfield's elevation*
4. *setting the aircraft's altimeter to 0 (sea level) and reading the pressure*

1.

Q 68 *What is the precise meaning of the term CAVOK?*

RAC1.4. No cloud below 5000', no CBs, visibility 6 SM or more, no precipitation, thunderstorms, shallow fog or low drifting snow.

Q 69 *On an upper air chart, contour lines represent points having the same ... ?*

1. *altitude above sea level in decametres*
2. *wind speed*
3. *altitude above sea level in hundreds of feet*
4. *sea level pressure*

1.

Chapter 5

Instruments

Q 70 *While flying in IMC a pilot notices that she has not applied pitot heat. What instrument(s) might be suspect and how would their operation be affected?*

1. *Heading Indicator and Attitude Indicator*
2. *Vertical Speed Indicator, Altimeter and Airspeed Indicator*
3. *Turn Coördinator*
4. *Airspeed Indicator*

4

Q 71 *A pilot is flying at 7500 feet over an airport where the sea-level pressure is 29.42 inches of mercury. The outside air temperature is -10°C . His calibrated airspeed is 96 knots, what is his true airspeed?*

1. *96 knots*
2. *86 knots*
3. *106 knots*
4. *104 knots*

3

Q 72 *Which of the following is not normally indicated on the face of an air-speed indicator?*

1. V_{ne}
2. V_a

3. V_{fe}
4. V_{no}

2.

Q 73 *An aircraft is flying due east when the pilot pulls carburetor heat on. What effect will this have on the magnetic compass?*

1. *no effect—the two systems are independent*
2. *the compass registers a turn to the north*
3. *the compass registers a turn to the south*
4. *the compass initially indicates a turn to the east and then swings to indicate a turn to the south*

3

Q 74 *A pilot is flying to an airport which is reported to have a magnetic variation of $15^{\circ}W$. He lands and stops on the centreline of runway 34T. What will his compass be reading?*

1. 355°
2. 325°
3. 340°
4. 370°

1.

Q 75 *What effect does an acceleration have on a normal attitude indicator?*

It registers a climb.

Q 76 *Which of the following statements is true?*

1. *the altitude transmitted by a mode C transponder is determined by the altimeter setting*
2. *mode C transponders only transmit the 4 digit transponder code, a mode S transponder is needed to transmit altitude information*
3. *mode C transponders can be interrogated by TCAS systems*
4. *mode C transponders continuously transmit the transponder code and altitude of the aircraft*

5. *a transponder code of 0468 should be selected when flying in the sparsely-populated area of Canada*
- 3.

Q 77 *A pilot is flying with the turn coördinator indicating a rate 1 turn to the right and the inclinometer ball at the right-hand end of its possible travel. What is the aircraft doing?*

1. *it is accelerating*
 2. *it is skidding*
 3. *it is descending*
 4. *it is in coördinated flight*
- 1.

Q 78 *Which of the following statements is true?*

1. *a stormscope measures the distance of a thunderstorm by timing the difference between the reception of the lightning strike and the thunder*
 2. *a stormscope only displays areas where rain is falling*
 3. *a stormscope displays areas of virga better than areas of convective activity*
 4. *a stormscope detects static-electrical discharges*
- 4.

Chapter 6

Navigation Systems

Q 79 *What is the accuracy of VOR radials?*

1. *Published radials are correct to within 3°, unpublished radials to within 6°*
2. *All radials are correct to within 3°*
3. *Published radials are correct to within 4°, unpublished radials to within 6°*
4. *Published radials are correct to within 3°, there is no bound on the accuracy of unpublished radials*

4. COM3.5.

Q 80 *How may the accuracy of an onboard VOR receiver be checked?*

At an airport equipped with a VOT, the pilot can tune this and centre the needle. The VOR should then read 360° FROM or 180° TO within $\pm 4^\circ$.

In an aircraft with two VOR receivers, these may be checked against each other. A difference of more than 4° indicates that the VORs may not be used.

Some airports have designated VOR Check Points. When at these points the VOR should read within $\pm 4^\circ$ of the posted radial.

When en route the aircraft may be flown over a landmark located on a published radial. In this case a tolerance of $\pm 6^\circ$ is allowed. COM3.5.

Q 81 *VOR A lies directly to the north of VOR B. A pilot flying southwards has tuned and correctly identified both using her two VOR receivers. VOR A is showing a centred track bar (CDI needle) with a FROM flag when the OBS is set to 280. At the same time, the OBS for VOR B is set to 270. What flag is being shown on VOR B and to which side is the track bar deflected?*

FROM, left.

Q 82 *You are 20 miles from a VOR in the southern domestic airspace and flying on a heading of 090°. You have your RMI tuned to detect the VOR. As you cross the VOR's 230 radial, at what value is the RMI needle pointing?*

1. 090
2. 230
3. 040
4. 050

3.

Q 83 *ADF night effect is:*

1. *most pronounced when the sun is at its lowest point below the horizon*
2. *caused by the ADF receiver tuning to the ground wave rather than the sky wave*
3. *caused by the radio waves created by cosmic rays hitting the ionosphere*
4. *caused by sky waves interfering with ground waves*

4.

Q 84 *NDBs are checked to an accuracy of at least ... for an approach and ... for en route navigation:*

1. $\pm 6^\circ$, $\pm 10^\circ$
2. $\pm 4^\circ$, $\pm 8^\circ$
3. $\pm 6^\circ$, $\pm 8^\circ$
4. $\pm 5^\circ$, $\pm 10^\circ$

4.

Q 85 *What is the significance of an X or an I as the first character of a localiser identifier?*

An *X* means that the localiser alignment is more than 3° from the runway alignment. An *I* means that the localiser (or back-course) is aligned to within 3° of the runway. COM3.12.

Q 86 *When is the Morse code identifier removed from a navaid?*

When emergency repairs are in progress. The lack of identifier indicates that, although the navigation information may be being received, it is not reliable and should not be used. COM3.2.

Q 87 *Within what space is a localiser signal checked for validity?*

Within 35° either side of a front- or back-course to a distance of 10 nm from the localiser and within 10° either side out to 18 miles from the localiser. COM3.13.1.

Q 88 *What is the difference between Primary Surveillance Radar and Secondary Surveillance Radar and what equipment is needed on board the aircraft for it to be fully detected by these types of radar?*

Primary radar expects a signal reflected from the metal of the aircraft. No special equipment is needed onboard the aircraft. Secondary radar interrogates the onboard transponder.

Q 89 *What are CAT I, CAT II and CAT III ILS categories?*

CAT I: operation down to 200 feet DH, CAT II: operation down to 100 feet DH, CAT III: minima as defined in CAP. COM3.13.6.

Q 90 *How wide are VHF and LF low-level airways?*

VHF airways are 8 nm wide out to a distance of 51 nm from the VOR and then spread at 9° (4.5° either side of the centre line). LF airways are 8.68 nm wide out to a distance of 50 nm from the NDB and then spread at 10°. RAC 2.7.1.

Q 91 *A DME is most accurate when:*

1. *flying to a distant station at high altitude*
2. *flying from a nearby station at a high altitude*
3. *flying on an easterly heading while south of the station*
4. *flying directly over a station while descending rapidly*

1.

Q 92 *Which of the following can GPS not provide?*

1. *heading*
2. *altitude*
3. *track*
4. *air speed*
5. *ground speed*

1 and 4.

Chapter 7

Miscellaneous

Q 93 *Approach charts give approach minima for aircraft of categories A to E. What do these categories mean?*

A:

B:

C:

D:

E:

The category is governed by the *airspeed* of the aircraft on approach. Category A indicates less than 90 knots, category F means above 165 knots.

Q 94 *What are the lower altitude limits of the Southern, Northern and Arctic Control Areas?*

18000' ASL, FL230 and FL270. RAC2.6.

Q 95 *What is the difference between a low-level Air Route and a low-level Airway?*

- 1. An air route is an Airway in the northern domestic airspace*
 - 2. An air route is a route between low frequency beacons (NDBs) whereas an airway is a route between very high frequency beacons (VORs)*
 - 3. an air route lies above 18000 feet ASL whereas an airway lies below 18000 feet ASL*
 - 4. an air route is in class G airspace whereas an airway is not*
- 4.

Chapter 8

Human Factors

Q 96 *What are the symptoms of hyper-ventilation and how should this condition be treated?*

Q 97 *Differentiate between Kinesthetic, Vectional and Vestibular illusions.*

Q 98 *You are used to flying from a small, rural airport with a 3000ft x 75 feet runway. You are making an approach into a large international airport. What visual illusion might you encounter?*

Q 99 *Transport Canada recommends the “DECIDE” model for decision making. For what do the letters of DECIDE stand?*

D

E

C

I

D

E

Q 100 *What are the five layers of Reason’s model as applied to aviation incidents?*