INFRAESTRUCTURES DEL TRANSPORT AERI (ITA)
Mid Term Exam - Spring semester 2022

Apr 25th 2022

ATS flight plans [3 points]

Imagine you are a flight dispatcher at Vueling, currently based in Menorca airport. You are about to dispatch a return flight to Girona airport scheduled for today's afternoon. Using the data below, the set of radionavigation charts provided for this exam and the excerpt of the ICAO Doc. 4444 also provided, fill the two ICAO flight plan forms for the corresponding flights.

1. The crew members are:
   - Captain: Ms. Margalida Maria Gomila.
   - 1st officer: Mr. Joan Pons.
   - Purser: Mr. Joan Miquel Oliver.
   - Flight attendand: Mr. Jaume Mascaró.
   - Flight attendant: Ms. Antònia Font.
   - Flight attendant: Ms. Aurèlia Torres.
2. The aircraft is an Airbus A320-231 with IAE V2500-A1 engines registered as EC-JTQ with the following equipment and configurations:
   - 3-aisle-3-seat configuration and single-class cabin with 2 galleys.
   - Standard com/nav/approach radionavigation aid equipment (VHF RTF, VOR, ADF, ILS, DME), required navigation performance type certification P-RNAV, RVSM certification and an 8.33 kHz channel spacing capable radio.
   - Mode C transponder.
   - RCLA as SELCAL code.
   - All the emergency radios are operative except the VHF.
   - The only survival equipment is maritime and jackets have just a flashing light.
3. Flight Menorca – Girona:
   - The estimated off-block time is 17h15 and the expected arrival time is 18h00 (both in local time).
   - Menorca airport is chosen as alternative airport and the total fuel on board allows for 2h23' of flight.
   - A reduced thrust take-off strategy is going to be used at departure due to noise abatement procedures in place at Menorca airport.
   - The callsign assigned to this flight is VLG921.
   - The cruise altitude is requested to be FL260 and the estimated cruise speed is Mach 0.67.
   - The passenger composition is: 127 Adults + 9 children.
4. Flight Girona – Menorca:
   - The estimated off-block time is 18h45 and the expected arrival time is 19h23 (both in local time).
   - Girona airport is chosen as alternative airport and the total fuel on board allows for 2h07' of flight.
   - The callsign assigned to this flight is VLG922.
   - The cruise altitude is requested to be FL250 and the estimated cruise speed is Mach 0.66.
   - The passenger composition is: 112 Adults + 7 children + 3 infants.

Test [7 points]

You have Permutation CODE 0 – GROUP 00

For each question **only one** answer is correct: Correct: +1 test point - Incorrect: -1/3 test points - No answer: 0 points

1. Which of the following pieces of aeronautical information could potentially appear in a NOTAM message?
   (a) "... sectorisation in Barcelona TMA from 10h to 12h is 11 Victor... "
   (b) "... Begur (BGR) VOR unserviceable from Oct 1st to Oct 15th 2019 ..."
   (c) "... visibility more than 10km, clouds few at 3000ft, QNH one zero seven eight, ... "
   (d) All answers are correct.
2. Which air navigation service is the responsible to **disseminate** the instrument approach charts to the aircraft operators?
   (a) The airspace management (ASM) service.
   (b) The flight inforamtion service (FIS).
   (c) The aeronautical information service (AIS).
   (d) The aerodrome traffic zone (ATZ) service.
3. The airfield traffic pattern leg by which an aircraft flies towards the landing runway is called:
   (a) final.
   (b) crosswind.
   (c) downwind.
   (d) upwind.
4. An aircraft is flying a *base* leg when
   (a) it flies (approximately) parallel to the landing runway in an approach procedure.
   (b) it flies (approximately) perpendicular to the landing runway in an approach procedure.
   (c) it flies the inbound leg of a standard holding pattern.
   (d) it flies the first leg of the missed approach procedure.
5. Which is the correct order of priorities (from the highest to the lowest) when flying an aircraft?

(a) Aviate, Navigate and Communicate.

(b) Aviate, Communicate and Navigate.

(c) Communicate, Aviate and Navigate.

(d) Communicate, Navigate and Aviate.

6. Imagine a twin engine aircraft departing in IMC from a controlled airport. Few seconds after take-off, it hits birds, causing a fire in one of the engines and loosing all of its power. In this situation, the **navigate** function of the aircraft crew would be:

   (a) to check if there is a contingency departure published for that airport and execute it.

   (b) to safely control the aircraft trajectory with the loss of power and to manage to extinguish the fire and shut down the engine.

   (c) to send a distress message to the air traffic control.

   (d) to revert to manual control and visual flight to safely land as soon as possible.

7. Which type of fix is NEVIK, which appears in the SID chart for RWY01 in Menorca airport (see IFR navigation charts given in annex to this exam)?

   (a) an intersection.

   (b) a radionavigation facility.

   (c) a RNAV waypoint.

   (d) none of the other answers is correct.

8. Which type of fix is MJV, which appears in the SID chart for RWY01 in Menorca airport (see IFR navigation charts given in annex to this exam)?

   (a) an intersection.

   (b) an NDB

   (c) a RNAV waypoint.

   (d) none of the other answers is correct.

9. Regarding the SID MAMUK1H for RWY20 at Girona airport (see IFR navigation charts given in annex to this exam), which of the following statements is correct?

   (a) All aircraft shall be at FL75 or above when overflying MAMUK.

   (b) All aircraft shall be at FL75 or below when overflying MAMUK.

   (c) All aircraft shall be at strictly below FL75 when overflying MAMUK.

   (d) All aircraft shall be at FL75 when overflying MAMUK.

10. Regarding the legs that compose the GEANT1H SID for RWY20 at Girona airport (see IFR navigation charts given in annex to this exam), which of the following options is correct?

    (a) The SID is formed by the succession of three consecutive VOR radials.

    (b) The SID is formed by one VOR radial, followed by a dead-reckoning leg, followed by another VOR radial.

    (c) The SID is formed by a dead-reckoning leg, followed by a DME arc, followed by two VOR radials.

    (d) The SID is formed by a VOR radial, followed by a DME arc, followed by two VOR radials.

11. Regarding the legs that compose the BGR4H SID for RWY20 at Girona airport (see IFR navigation charts given in annex to this exam), which of the following options is correct?

    (a) The SID is formed by the succession of three consecutive VOR radials.

    (b) The SID is formed by one VOR radial, followed by a dead-reckoning leg, followed by another VOR radial.

    (c) The SID is formed by a dead-reckoning leg, followed by a DME arc, followed by a VOR radial.

    (d) The SID is formed by a VOR radial, followed by a DME arc, followed by a VOR radial.

12. Imagine an aircraft executing the KABRE1F arrival procedure for runway 19R at Menorca airport (see IFR navigation charts given in annex to this exam) when the ATC instructs the pilot to hold at the IAF of this approach. In this case, the aircraft will enter the hold with...

    (a) a racetrack entry procedure.

    (b) a direct entry procedure.

    (c) an offset entry procedure.

    (d) a parallel entry procedure.

13. Imagine an aircraft executing the KABRE1F arrival procedure for runway 19R at Menorca airport (see IFR navigation charts given in annex to this exam). The aircraft is still following Radial 233 of MHN VOR when the ATC instructs the pilot to proceed direct to MN IAF and hold (please note there is a hold for MN and a different hold fr MHN depicted in the chart). In this case, the aircraft will enter the hold with...

    (a) a racetrack entry procedure.

    (b) a direct entry procedure.

    (c) an offset entry procedure.

    (d) a parallel entry procedure.

14. Regarding the STARs chart for Girona RWY20, annexed to this exam, the radionavigation aid labelled as *GRN* is a:

    (a) Localizer.

    (b) VOR/DME.

    (c) DME.

    (d) NDB.

15. Imagine an aircraft executing the MAMUK1F arrival procedure (see IFR navigation charts given in annex to this exam) for runway 20 at Girona when the ATC instructs the pilot to hold at the IAF. In this case, the aircraft will enter the hold with...

    (a) a racetrack entry procedure.

    (b) a direct entry procedure.

    (c) an offset entry procedure.

    (d) a parallel entry procedure.

16. With regards to the holding pattern defined over Menorca NDB in the STAR chart to Menorca Runway 19 given in annex to this exam, which of the following sentences is correct?

    (a) All legs in the holding are non-guided (i.e. dead reckoning legs).

    (b) All legs in the holding are guided.

    (c) The holding leg with course 010^o is guided

    (d) The holding leg with course 190^o is guided.

17. The holding pattern defined over Menorca NDB in the STAR chart to Menorca Runway 19 given in annex to this exam, is...

    (a) a right-turn holding pattern.

    (b) a left-turn holding pattern.

    (c) a holding pattern that can be executed in both turning directions.

    (d) a *8-shaped* pattern and therefore, the aircraft turns in both directions when executing it.

18. Imagine an aircraft executing the MAMUK1F arrival procedure (see IFR navigation charts given in annex to this exam). What defines the IAF for this procedure?

    (a) an intersection.

    (b) a VOR.

    (c) a DME.

    (d) an NDB.

19. Which of the following aircraft instruments are mainly used to perform the *aviate* function in IMC conditions?

    (a) the VOR, the ADF (NDB receiver) and the DME.

(b) the artificial horizon and the airspeed indicator.

(c) the *aviate* function is always executed visually and no instruments are required.

(d) all engine related instruments.

20. In which case radionavigation is optional for the whole flight?

(a) In VMC and flying under VFR (*).

(b) In VMC and flying under IFR (*).

(c) In IMC and flying under IFR.

(d) The answers labelled with (*) are correct.

21. When does a SID end?

(a) At a given radionavigation fix.

(b) At the top of climb.

(c) At a given visual landmark.

(d) Depending on the airport and TMA characteristics, any of the previous answers could be possible.

22. Regarding standard terminal arrival routes, which of the following statements is correct?

(a) a designated national administration is responsible to publish them in the AIP, assuming nominal operations.

(b) a designated national administration is responsible to publish them in the AIP, assuming nominal operations, but also publishing if needed contingency procedures.

(c) the aircraft manufacturer is responsible to publish them in the AIP assuming nominal operations, but also publishing if needed contingency procedures.

(d) the aircraft operator is responsible to publish them in the AIP assuming nominal operations, but also publishing if needed contingency procedures.

23. According to figure 2 at the end of this test...

(a) Turns in the airfield traffic pattern are always to the right.

(b) Turns in the airfield traffic pattern are always to the left.

(c) Turns in the airfield traffic pattern are to the right for runway 09 and to the left for runway 27.

(d) Turns in the airfield traffic pattern are to the left for runway 09 and to the right for runway 27.

24. According to figure 2 at the end of this test, the downwind leg to runway 09 has an approximate course of:

(a) 002^o

(b) 092^o

(c) 272^o

(d) None of the other answers is correct.

25. An aircraft is flying the downwind leg to runway 09 to Pamiers airport (see figure 2 at the end of this test) in strong wind conditions with winds blowing from the North. With regards of the aircraft **heading**, which of the following options could be correct?

(a) 092^o

(b) 285^o

(c) 265^o

(d) None of the other answers is correct.

26. An aircraft is flying the downwind leg to runway 09 to Pamiers airport (see figure 2 at the end of this test) in strong wind conditions with winds blowing from the North. With regards of the aircraft **track**, which of the following options could be correct?

(a) 092^o

(b) 285^o

(c) 265^o

(d) None of the other answers is correct.

27. According to figure 2 at the end of this test, what will be approximately the altitude above mean sea level of the aircraft at the end of the downwind leg?

(a) 2100 ft

(b) 1100 ft

(c) 1050 ft

(d) 1000 ft

28. According to figure 2 at the end of this test, what will be approximately the altitude above mean sea level of the aircraft at the end of the final leg?

(a) 2100 ft

(b) 1100 ft

(c) 1000 ft

(d) None of the other answers is correct.

29. How are VFR arrivals typically defined?

(a) It is not possible to define arrivals in VFR, since radionavigation means are required to define arrivals.

(b) Using visual reporting points and dead reckoning indications between these points.

(c) Using contingency charts, especially designed by the operator.

(d) Using STAR charts designed by the ANSP and published in the AIP.

30. A circling to approach...

(a) is the same than a non precision approach.

(b) is the same than an APV approach.

(c) is an approach that cannot be considered as a straight-in approach.

(d) is only for approaches where the final approach segment has a miss-alignment of 15 degrees or more.

31. A circling to approach with prescribed tracks...

(a) consists of a sequence of visual tracks that guide the pilot when flying the circling procedure.

(b) consists of a sequence of instrumental tracks that guide the pilot when flying the circling procedure.

(c) consists of a sequence of visual tracks to be avoided by the pilot when flying the circling procedure.

(d) consists of a sequence of instrumental tracks to be avoided by the pilot when flying the circling procedure.

32. Which of the following statements is correct?

(a) Non-precision approaches always require a VOR or an NDB as main radionavigation system to provide guidance in the final approach segment.

(b) Non-precision approaches are executed when the ILS Localiser is not available.

(c) Non-precision approaches are executed when the ILS Locator is not available.

(d) None of the other answers is correct.

33. The MDA...

(a) is typically lower than the DA for the same runway.

(b) is typically lower than the OCA for the same runway.

(c) is typically lower in CAT-II approaches than in CAT-I approaches, for the same runway.

(d) None of the other answers are correct.

34. The OCA...

(a) is also known as the minima-minima altitude.

(b) is the lowest altitude in the final approach segment regarding obstacle clearance.

(c) is the minimum visibility available for an instrumental approach procedure.

(d) is a synonym of minimum descent altitude.

35. When establishing the landing minima, the operator must take into account:

    (a) the dimension and characteristics of the runways (*).

    (b) the adequacy and performance of the available visual and non-visual ground aids (*).

    (c) Answers marked with (*) are correct.

    (d) None of the other answers are correct.

36. Which of the following statements is *not correct*?

    (a) when reaching the MDA, if the aircraft crew cannot see the landing runway they must immediately initiate the missed approach procedure.

    (b) when reaching the DA, if the aircraft crew cannot see the landing runway they must immediately initiate the missed approach procedure.

    (c) when reaching the MAPt, if the aircraft crew cannot see the landing runway they must immediately initiate the missed approach procedure.

    (d) for the same airport, the MDA for a circling to approach procedure would be typically higher than the MDA for an straight-in approach procedure.

37. One of the following 3 statements might be **false**. Which one? (otherwise answer "All statements are correct")

    (a) Aircraft operators must compute the DA appearing in the charts used by their pilots.

    (b) Aircraft operators must compute the MDA appearing in the charts used by their pilots.

    (c) Aircraft operators must compute the MAPt appearing in the charts used by their pilots.

    (d) All statements are correct.

38. In a Localiser approach, the approach minima are given by:

    (a) A decision altitude and a minimum visibility.

    (b) A minimum descent altitude.

    (c) A minimum descent altitude and a minimum obstacle clearance altitude.

    (d) A minimum descent altitude and a minimum visibility.

39. In a NDB approach procedure, the decision to land or to execute a missed approach must be taken, at the latest...

    (a) when reaching the MDA.

    (b) when reaching the DA.

    (c) when reaching the OCA.

    (d) when reaching the MAPt.

40. In which case you will find an non-precision approach procedure with no FAF?

    (a) in case the approach can only be executed as a circling to approach.

    (b) in case the initial segment consists in a 45/180 procedure turn given by some timing and there is no intermediate segment.

    (c) in case the glide slope is not available.

    (d) in case there is no final segment.

41. Which of the following procedures the final approach segment can start at the *end of turn*?

    (a) Only in a precision approach.

    (b) Only in a non-precision approach.

    (c) Only in an APV approach.

    (d) The final approach segment can never start at the *end of turn*.

42. In which of the following procedures the final approach segment will start at a POINT and not a FIX?

    (a) In an ILS approach.

    (b) In a VOR approach (*).

    (c) In a Localizer approach (*).

    (d) The answers labelled with (*) are correct.

43. The MAPt can be defined...

    (a) above a VOR.

    (b) at the intersection of an NDB course and a DME arc.

    (c) at a given time after overflying the FAF.

    (d) all answers are correct.

44. A racetrack procedure...

    (a) is a type of initial approach segment.

    (b) is a type of holding pattern.

    (c) could be, for instance, a 45/180 procedure turn.

    (d) is when an aircraft uses an active runway to taxi in the opposite direction from which it will take off or land.

45. Which of the following radionavigation aids **cannot** be used as the main aid providing guidance in the final approach segment of a non-precision approach procedure?

    (a) A Locator.

    (b) A DME.

    (c) An ILS localizer.

    (d) All three radionavigation aids are valid.

46. If the misalignment of the final approach track with respect to the runway centre line exceeds 90 degrees...

    (a) only a circling to approach is possible.

    (b) only a precision approach is possible

    (c) a straight-in approach is possible if the final descent gradient does not exceed some specific limits.

    (d) an instrumental approach cannot be designed in such circumstances.

47. The minimum decision height for an ILS CAT-I approach is:

    (a) 300ft.

    (b) 200ft.

    (c) 100ft.

    (d) 0ft.

48. Consider the VFR chart of the area around Limoges, provided in annex to this exam. The airspace class over the NDB LSU (south-west of Limoges airport) at 4500 ft QNH is:

    (a) Class C.

    (b) Class D.

    (c) Class E.

    (d) Class G.

49. An aircraft **with no VHF radio equipment** flying under VFR wants to take-off from *St Junien (LFBJ)*, located at the west of Limoges, and take heading 030^o approximately. Check the VFR chart provided in annex to this exam. Which of the following answers is correct?

    (a) This flight cannot be done without a VHF radio.

    (b) This flight can be done if the aircraft remains always outside the CTR of Limoges.

    (c) This flight can be done if the aircraft remains always outside the CTR of Limoges and always below 1000 ft above ground level.

    (d) This flight can be done if the aircraft remains always outside the CTR of Limoges and always between 1000 ft above ground level and 4000ft above the mean sea level.

50. An IFR flight is crossing the Limoges airspace at **4000ft QNH** following a straight line from **south to north** that overflies Limoges airport (dotted linne in the VFR chart provided in annex to this exam). At which point this aircraft will need a clearance to enter controlled airspace?

    (a) Before entering the TMA Limoges 2 (aproximatelly over St. Yrieix-la-Perche).

    (b) Before entering the TMA Limoges 1 (aproximatelly over Nexoh).

    (c) Before entering the CTR Limoges 1.

    (d) Before entering the CTR Limoges 2.

51. An IFR flight is crossing the Limoges airspace at **2000ft QNH** following a straight line from **south to north** that overflies Limoges airport (dotted linne in the VFR chart provided in annex to this exam). At which point this aircraft will need a clearance to enter controlled airspace?

    (a) Before entering the TMA Limoges 2 (aproximatelly over St. Yrieix-la-Perche).

    (b) Before entering the TMA Limoges 1 (aproximatelly over Nexoh).

    (c) Before entering the CTR Limoges 1.

    (d) Before entering the CTR Limoges 2.

52. A IFR flight is crossing the Limoges airspace at **2500ft QNH (2000 ft above ground level approximately)** following a straight **north to south** line, which overflies Limoges airport. According to the VFR chart provided in annex to this exam, at which point this aircraft will need a clearance before entering controlled airspace?

    (a) Before entering the TMA Limoges 2.

    (b) Before entering the TMA Limoges 1.

    (c) Before entering the CTR Limoges 1.

    (d) Before entering the CTR Limoges 2.

53. A small aircraft **with no VHF radio equipment** flying in VFR wants to fly the black dotted line over the Limoges area from **sourth to north** at a constant altitude. Is this flight possible? If yes, at which of the following altitudes?

    (a) This flight cannot be done without a VHF radio.

    (b) 500ft ASFC.

    (c) 2000ft QNH.

    (d) 4500ft QNH.

54. An helicopter is over the mountain of 1886 ft that appears in the south-est corner of the Limoges chart provided in this exam. The helicopter will be inside Restricted Area 166C if:

    (a) its altitude is 500 ft above ground level.

    (b) its altitude is 2500 ft QNH

    (c) its altitude is 3500 ft QNH

    (d) its altitude is 5000 ft QNH

55. An helicopter is over the mountain of 1886 ft that appears in the south-est corner of the Limoges chart provided in this exam. The helicopter will be inside Restricted Area 68B if:

    (a) its altitude is 500 ft above ground level.

    (b) its altitude is 2500 ft QNH

    (c) its altitude is 3500 ft QNH

    (d) its altitude is 5000 ft QNH

56. What is the airspace class at 1500 ft over the Limoges VOR?

    (a) Class A

    (b) Class D

    (c) Class E

    (d) Class G

57. Regarding Figure 1, the radionavigation aid labeled as AV is

    (a) an NDB.

    (b) a Locator.

    (c) a VOR.

    (d) a Localiser.

58. Regarding Figure 1, the initial approach segment to runway 11, starting at AST IAF is...

    (a) a 45/180 procedure turn.

    (b) a racetrack procedure.

    (c) a racetrack procedure followed by a 45/180 procedure turn.

    (d) an NDB course.

59. Regarding Figure 1, the initial approach segment to runway 11, starting at AV IAF is...

    (a) an NDB course followed by a 45/180 procedure turn.

    (b) a racetrack procedure.

    (c) a racetrack procedure followed by an NDB course.

    (d) there is no initial approach segment for the approach starting at this IAF.

60. Regarding Figure 1, the missed approach segment is composed by:

    (a) two dead reckoning legs.

    (b) a dead reckoning leg followed by an NDB course.

    (c) the NDB course 047 followed by a dead reckoning leg.

    (d) the NDB course 047 followed by a direct NDB course.

61. Regarding Figure 1, how is the MAPt of the approach to runway 11 defined?

    (a) a Locator.

    (b) a Localiser.

    (c) an NDB.

    (d) the threshold of runway 11.

62. Regarding Figure 1, how is the FAF of the approach to runway 11, starting at AST IAF, defined?

    (a) there is no FAF in this approach.

    (b) above AST.

    (c) above AV.

    (d) at the intersection of courses 118^o and 343^o.

63. Regarding Figure 1, what is the intermediate segment of the approach to runway 11, starting at AST IAF?

    (a) there is no intermediate segment in this approach.

    (b) the leg with course 298^o, from AST to the intersection with the leg with course 343^o.

    (c) the leg with course 118^o, from the end of turn to the intersection with the leg with course 343^o.

    (d) the leg with course 343^o.

64. Regarding Figure 1, what is the final approach segment to runway 11?

    (a) there is no final segment in this approach.

    (b) a dead reckoning leg.

    (c) an NDB course.

    (d) a Locator course.

65. Regarding Figure 1, where does the final approach segment to runway 11 begins?

    (a) above AV.

    (b) above AST

    (c) at an end of turn.

    (d) there is no final segment in this approach.

66. In the San Francisco airport (SFO), two parallel approaches are executed if visibility meteorological conditions (VMC) are met. Otherwise, only one instrumental approach is executed in one of the runways. Which of the following statements is correct?

    (a) In VMC, runway capacity in SFO is increased at the expense of reducing safety.

    (b) In VMC, flight efficiency of SFO arrivals is increased at the expense of reducing safety.

    (c) In VMC, flight efficiency of SFO arrivals is increased at the expense of reducing capacity.

    (d) None of the other answers is correct.

67. Minimum aircraft separation standards in oceanic areas are much larger than separation in continental areas with radar coverage. This is a illustrative example of a trade-off, or interdependency, between:

    (a) flight efficiency and environmental impact.

    (b) flight efficiency and safety.

    (c) capacity and safety.

    (d) capacity and flight efficiency.

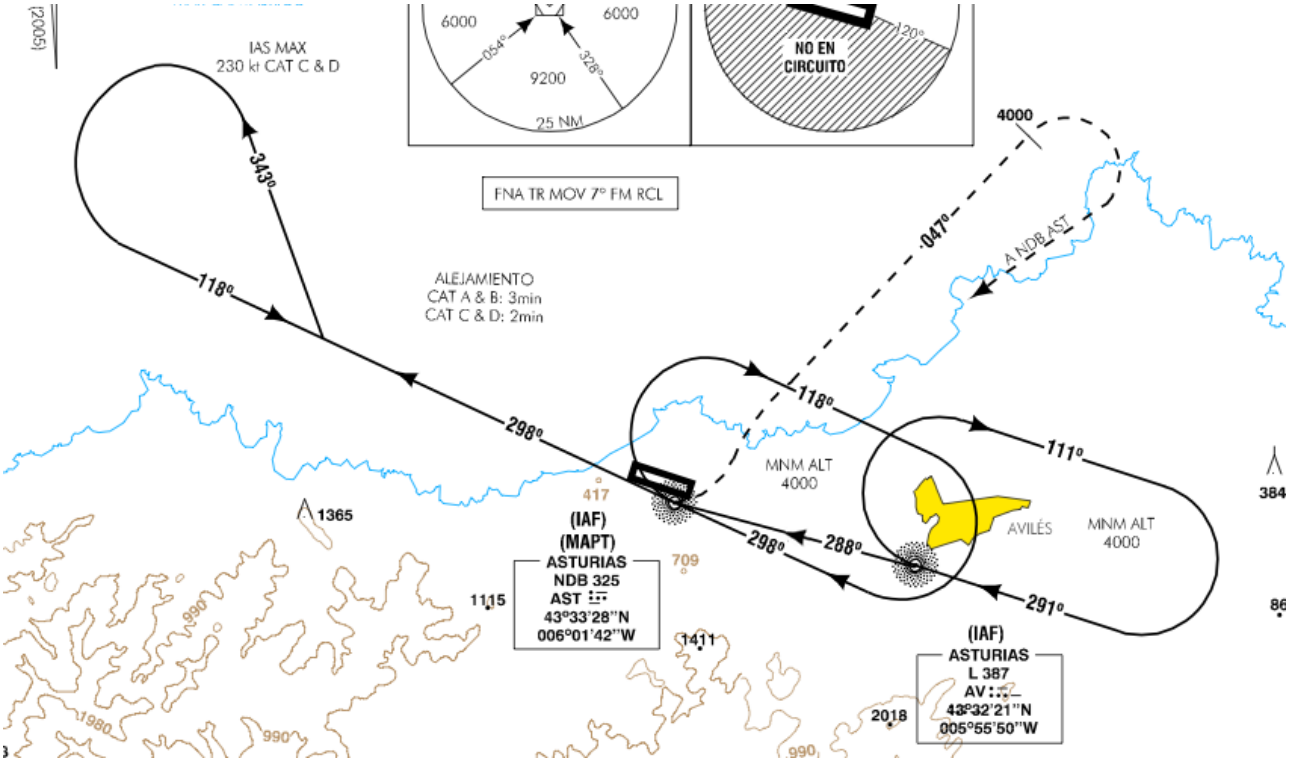

Figure 1: Snippet from Asturias instrument approach chart

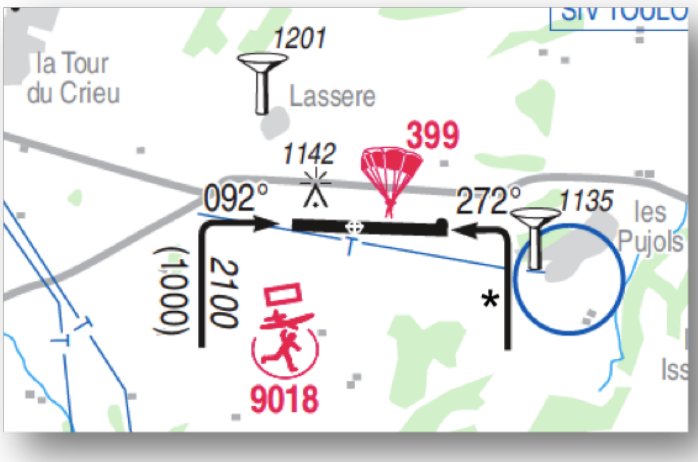

Figure 2: Airfield traffic pattern

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Correct answers

Question	CODE 0	CODE 1	CODE 2	CODE 3
Q 01	b	d	d	b
Q 02	c	a	a	d
Q 03	a	d	b	b
Q 04	b	c	b	c
Q 05	a	a	c	a
Q 06	a	b	a	c
Q 07	a	c	a	d
Q 08	d	c	c	a
Q 09	a	b	a	a
Q 10	a	c	a	d
Q 11	b	c	c	a
Q 12	d	c	b	d
Q 13	b	c	c	d
Q 14	d	b	b	a
Q 15	c	b	b	a
Q 16	d	a	d	b
Q 17	a	b	d	c
Q 18	d	c	b	b
Q 19	b	d	a	d
Q 20	a	b	a	d
Q 21	a	a	a	d
Q 22	a	b	d	b
Q 23	c	b	b	a
Q 24	c	a	c	c
Q 25	b	c	a	b
Q 26	d	b	d	a
Q 27	a	c	d	b
Q 28	b	d	a	d
Q 29	b	c	b	b
Q 30	c	a	c	c
Q 31	a	d	b	a
Q 32	d	a	c	b
Q 33	d	a	c	a
Q 34	b	a	a	a
Q 35	c	a	a	d
Q 36	a	c	a	c
Q 37	c	b	d	b
Q 38	d	a	a	b
Q 39	d	c	d	b
Q 40	b	b	d	a
Q 41	b	b	c	a
Q 42	a	d	b	c
Q 43	d	c	c	c
Q 44	a	c	b	a
Q 45	b	b	b	a
Q 46	a	b	d	b
Q 47	b	d	d	a
Q 48	c	a	b	a

Q 49	b	c	a	b
Q 50	a	a	a	b
Q 51	b	a	a	a
Q 52	b	b	d	d
Q 53	d	a	b	a
Q 54	c	a	c	c
Q 55	d	d	a	d
Q 56	c	d	d	a
Q 57	b	c	d	a
Q 58	a	d	a	b
Q 59	a	b	a	d
Q 60	d	b	c	d
Q 61	c	a	c	a
Q 62	a	a	b	d
Q 63	a	c	c	b
Q 64	c	a	b	d
Q 65	c	c	b	b
Q 66	d	c	d	c
Q 67	c	a	a	c