

INFRAESTRUCTURES DEL TRANSPORT AERI (ITA)

Final Exam - Spring semester 2021

June 18th 2021

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) "... runway 27L closed for maintenance ..."
 - (b) "... traffic at 11 o'clock at 2NM, 200ft below, Cessna 172 crossing from left to right... "
 - (c) "... wind is 280 at 20 kt, visibility is 5km, ... "
 - (d) All answers are correct.
2. Which of the following pieces of aeronautical information could potentially appear in a flight information service (FIS) message?
 - (a) "... runway 27L closed for maintenance ..."
 - (b) "... traffic at 11 o'clock at 2NM, 200ft below, Cessna 172 crossing from left to right... "
 - (c) "... wind is 280 at 20 kt, visibility is 5km, ... "
 - (d) All answers are correct.
3. Which of the following pieces of aeronautical information could potentially appear in an ATIS message?
 - (a) "... traffic at 11 o'clock at 2NM, 200ft below, Cessna 172 crossing from left to right... "
 - (b) "... sectorisation in Barcelona TMA from 10h to 12h is 11 Victor... "
 - (c) "... transition level is seven zero, ..."
 - (d) All answers are correct.
4. Which air navigation service is the responsible to disseminate the visual approach charts to the aircraft operators?
 - (a) The airspace management (ASM) service.
 - (b) The flight information service (FIS).
 - (c) The aeronautical information service (AIS).
 - (d) The aerodrome traffic zone (ATZ) service.
5. How can Airspace Management (ASM) improve airspace capacity?
 - (a) by designing strategically de-conflicted terminal flight procedures.
 - (b) by means of radar vectoring.
 - (c) by removing RNAV procedures.
 - (d) all other answers are correct.
6. What is a flight information region (FIR)?
 - (a) A specified airspace assigned to one air traffic controller (or two if working in pairs) providing flight information services.
 - (b) A specified airspace assigned to one air traffic controller (or two if working in pairs) providing alert services.
 - (c) A specified airspace in which flight information and alert services are provided. It is the largest regular division of airspace in use in the world today.
 - (d) A specified airspace above an airfield where flight information is provided to aircraft in the airfield traffic pattern.
7. An IFR aircraft is flying in RVSM airspace with heading 310°. According to the ICAO flight level allocation scheme (*odd-even* rule), a possible flight level for this flight could be:
 - (a) FL320
 - (b) FL325
 - (c) FL330
 - (d) FL335
8. A pilot is reporting "our altitude is six thousand feet". This means:
 - (a) The barometric altimeter of the aircraft indicates 6 000 ft and it is calibrated with respect to the standard pressure at sea level (1013.25 hPa).
 - (b) The barometric altimeter of the aircraft indicates 6 000 ft and it is calibrated with respect to the local QNH.
 - (c) The radio altimeter of the aircraft indicates 6 000 ft and it is calibrated with respect to the standard pressure at sea level (1013.25 hPa).
 - (d) The radio altimeter of the aircraft indicates 6 000 ft and it is calibrated with respect to the local QNH.
9. The ATZ typically encompasses...
 - (a) the SIDs and STARs.
 - (b) the instrumental approach procedures.
 - (c) the visual airfield traffic pattern.
 - (d) all the other answers are correct.
10. Who and when is in charge to design the shape and size of an ATS sector?
 - (a) the ATC supervisor, the day before of operations, as a function of the expected traffic demand for next day in his/her control center.
 - (b) the ATC officer, few minutes before starting his/her service, as a function of the actual traffic demand in his/her sector.
 - (c) a team of engineers and ATC officers of the ANSP, many months in advance, after performing a thorough study checking the safety, capacity and efficiency of the operations.
 - (d) a team of engineers and ATC officers of the ANSP, the day before of operations, as a function of the expected traffic demand for next day in his/her control center.
11. Regarding ATS sector sizes, which is the correct statement?
 - (a) Bigger sectors usually deal with less traffic.
 - (b) Smaller sectors are more often used in TMA.
 - (c) Sector size depends on traffic complexity.
 - (d) All the other answers are correct.
12. What is a TSA (temporary segregated area)?
 - (a) a volume of airspace temporary reserved for IFR terminal manoeuvres where VFR traffic might transit under an ATC clearance
 - (b) a volume of airspace temporary reserved for IFR terminal manoeuvres where VFR traffic cannot transit under any circumstance
 - (c) a volume of airspace temporary reserved and allocated for specific use where civil traffic might transit under an ATC clearance.
 - (d) a volume of airspace temporary reserved and allocated for specific use where civil traffic cannot transit under any circumstance.
13. Schedule (or IATA) slots...

- (a) are slots aiming to regulate demand when the airport is under IMC (instrument meteorological conditions).
- (b) are seasonal slots aiming to prevent airlines to plan operations above a fixed value of airport capacity.
- (c) are the slots computed by the Network Manager, an independent and transparent service run by IATA.
- (d) all answers are correct.
14. A strike (union action) is announced by the ATC staff working in Marseille area control centre, meaning that the ATC capacity of Marseille UIR will be significantly reduced, leading to ATFM regulations. If we ignore those aircraft that were already flying when the regulations are issued, these regulations will affect...
- (a) ... all flights with a flight plan crossing Marseille UIR and arriving/departing from one of its airports below.
- (b) ... all flights with a flight plan crossing Marseille UIR and departing from an airport in a CFMU (Network Manager) member state.
- (c) ... all flights with a flight plan crossing Marseille UIR.
- (d) ... any potential flight arriving/departing from an airport in a CFMU member state, even if the flight plan is not crossing Marseille UIR.
15. An airspace sector has been regulated and its maximum capacity is set to 6 aircraft per hour. Table below depicts the Estimated Time Over (ETO) the concerned sector for a given set of aircraft. What is the ATFM delay that would be assigned to EZY078 according to the computed assisted slot allocation (CASA) algorithm?
- | Flight | ETO | Flight | ETO |
|--------|-------|--------|-------|
| BAW123 | 10:01 | DAL077 | 10:24 |
| IBE222 | 10:06 | BAW444 | 10:40 |
| RYR069 | 10:07 | AFR022 | 11:02 |
| EZY078 | 10:11 | AZA333 | 11:05 |
- (a) No delay.
- (b) 1 minute.
- (c) 4 minutes.
- (d) 19 minutes.
16. An airspace sector has been regulated and its maximum capacity is set to 6 aircraft per hour. The table above depicts the Estimated Time Over (ETO) the concerned sector for a given set of aircraft. What is the ATFM delay that would be assigned to AZA333 according to the computed assisted slot allocation (CASA) algorithm?
- (a) No delay.
- (b) 1 minute.
- (c) 5 minutes.
- (d) 10 minutes.
17. An airspace sector has been regulated and its maximum capacity is set to 6 aircraft per hour. The table above depicts the Estimated Time Over (ETO) the concerned sector for a given set of aircraft. What is the ATFM delay that would be assigned to BAW444 according to the computed assisted slot allocation (CASA) algorithm?
- (a) No delay.
- (b) 1 minute.
- (c) 5 minutes.
- (d) 10 minutes.
18. An airspace sector has been regulated and its maximum capacity is set to 6 aircraft per hour. The table above depicts the Estimated Time Over (ETO) the concerned sector for a given set of aircraft. If the first slot (slot #1) is given at 10h00, which aircraft will take slot #7?
- (a) This slot will not be used by any aircraft.
- (b) AFR022
- (c) EZY078
- (d) DAL077
19. An airspace sector has been regulated and its maximum capacity is set to 6 aircraft per hour. The table above depicts the Estimated Time Over (ETO) the concerned sector for a given set of aircraft. What is the ATFM delay that would be assigned to AFR022 according to the computed assisted slot allocation (CASA) algorithm?
- (a) No delay.
- (b) 4 minutes.
- (c) 10 minutes.
- (d) 19 minutes.
20. What is the primary information sent by aircraft operators to the CFMU (or Network Manager)?
- (a) sector and airport capacities.
- (b) flight plans.
- (c) accurate weather data.
- (d) slots and reroutings.
21. What is a Flow Management Position (FMP)?
- (a) a special position within an ATC center devoted to ATFM issues and interfacing the center with the CFMU.
- (b) the European implementation of ATFM, managed by Eurocontrol.
- (c) the results of running the CFMU PREDICT system the day before of operations (D-1) allowing Eurocontrol to define the ATFM measures that will be applied the D day.
- (d) the CFMU system (or facility) that processes the flight plans sent by the aircraft operators.
22. Flight information services shall be provided to...
- (a) all aircraft provided with ATC service (*).
- (b) any aircraft known by the ATS (*).
- (c) only VFR flights.
- (d) the two answers labeled with (*) are correct.
23. Which of the following is a clear objective of the air traffic control (ATC) service?
- (a) To expedite and maintain an orderly flow of air traffic.
- (b) To provide advice and information useful for the safe and efficient conduct of flights.
- (c) To notify appropriate organisations regarding aircraft in need of search and rescue aid, and assist such organisations as required.
- (d) All answers are correct.
24. Air Traffic Control (ATC) services shall be provided to:
- (a) All VFR flights in airspace classes B, C, and D.
- (b) All IFR flights.
- (c) All aircraft known by the ATS.
- (d) None of the other answers is correct.
25. In the context of ATS, what is a flight information sector?
- (a) In the context of ATS, sectors are only used to provide ATC services.
- (b) A volume of airspace under the responsibility of one person (or a pair) who provide ATC, flight information and alert services within it.
- (c) A volume of airspace under the responsibility of one person (or a pair) who provide flight information and alert services within it.
- (d) In the context of ATS, sectors are only used to provide ATC and alert services.
26. Which of the following emergency ATS phases is the first one to be activated?
- (a) Incerfa
- (b) Alerfa
- (c) Detresfa
- (d) Palerfa

27. What is the international radiotelephony **urgency** signal for aviation?
- The word *MayDay*.
 - The word *MayDay* repeated three times.
 - The word *Pan-Pan*.
 - The word *Pan-Pan* repeated three times.
28. An air traffic controller issues the following radiotelephony message: *Echo Charlie Uniform Papa Charlie, traffic at your 10 o'clock position, Cessna 172 westbound at 4 miles, 300 ft below*. Which of the following answers is correct?
- The message is a separation instruction to prevent a mid-air collision.
 - It is a distress signal message.
 - It is a collision hazard flight information message.
 - It is a urgency signal message.
29. A VFR flight is flying inside an airspace of class E and has contacted the ATC. Which of the following answers is correct?
- the ATC will ignore this flight.
 - a VFR flight cannot fly in airspace class E.
 - the ATC will provide separation services to this aircraft whenever possible.
 - the ATC will provide traffic information services to this aircraft whenever possible.
30. Imagine you are providing Air Traffic Control services within a sector in the middle of the ocean, with NO radar coverage and no ADS information. How could you provide such services in these conditions?
- Without radar coverage or ADS information, Air Traffic Control services cannot be provided.
 - By means of position reports and flight plan information.
 - By means of position reports, flight plan information and transponder codes.
 - By means of position reports, flight plan information and visual acquisition of the aircraft.
31. Which of the following summarises the three high-level tasks that are always performed by an air traffic controller?
- Aviate, Navigate and Communicate.
 - Coordinate clearances with other ATC units, coordinate civil-military operations, coordinate emergencies.
 - Gather and process data from flights and/or ground vehicles, issue clearances, coordinate clearances with other ATC units.
 - Gather and process data from flights and/or ground vehicles, separate aircraft, give flight information instructions.
32. The letters of agreement (LoA) define the conditions for:
- The coordination between IFR flights and the ATS.
 - The coordination between adjacent sectors.
 - The correlation between the transponder code and the flight plan.
 - The coordination between the CFMU and the ATS centres to manage departure slots.
33. Who is responsible to coordinate the transfer of an aircraft which is not going to respect the Letter of Agreement (LoA) between two ATC sectors?
- The strategic controller
 - The tactical controller.
 - The pilot non-flying.
 - The ATC supervisor.
34. What ATC dependency is typically in charge to issue taxi clearances?
- The en-route control.
 - The ground control.
 - The IFR clearance delivery.
 - The tower control.
35. At present, which is the principal communications method in continental Europe to link pilots with air traffic controllers?
- VHF voice communications.
 - HF voice communications.
 - Data-link communications.
 - Satellite based communications.
36. The reduction of the VHF channel spacing is crucial in the European civil aviation...
- to enhance the aircraft navigation accuracy.
 - to minimise the errors in radio telephone (RTF) communications.
 - to create a new set of pilot-controller communication messages.
 - because more frequency channels could be needed to increase the capacity of the overall system.
37. Which of the following statements is true?
- ACARS uses CPDLC to transmit controller-pilot communication messages (*).
 - CPDLC permits, amongst other things, the communication between pilots and flight operation centres (FOC) (*).
 - Both answers labelled with a (*) are correct.
 - None of the answers is correct.
38. Which of the following options is correct, when talking about an ILS?
- the glideslope is the ground-based system and the localiser is the on-board system, both sending the appropriate navigation signals.
 - the localiser is the ground-based system and the transponder is the on-board system, both sending the appropriate navigation signals.
 - the localiser and the glideslope are ground-based systems that send different navigation signals.
 - the localiser and the glideslope are ground-based systems that send the same redundant navigation signal.
39. The main difference between a VOR and an NDB is that...
- the VOR emits with much more signal power than the NDB.
 - the NDB emits with much more signal power than the VOR.
 - with an NDB the pilot only knows a relative bearing to the NDB station, while with the VOR the pilot knows the position of the aircraft.
 - with an NDB the pilot only knows a relative bearing to the NDB station, while with the VOR the pilot has directional information (relative to the magnetic North) with respect to the VOR station.
40. What is the main difference between a Locator and a Localiser?
- they are the same radionavigation system.
 - the Locator provides 3D guidance, while the Localiser provides only 2D guidance.
 - the Locator is essentially the same system as the Localiser, but with a lower radio coverage.
 - None of the other answers is correct.
41. In the context of air navigation, what is an aircraft based augmentation system (ABAS)?
- A suite of algorithms and mathematical checks, embedded in the GNSS receiver, that are capable to detect misleading information from certain navigation satellites.

- (b) An enhanced antenna and amplifier that allows to significantly improve the GPS position accuracy.
 - (c) The corresponding on-board receiver of a ground-based augmentation system, which allows to significantly improve the GPS integrity.
 - (d) A technology that allows to improve GPS integrity based on a set of messages cooperatively interchanged among several aircraft flying in the same geographical area.
42. Why in the majority of satellite based augmentation systems (SBAS) there are three geostationary satellites?
- (a) Because at least three satellites are needed to compute a 3D position.
 - (b) For redundancy reasons and in order to guarantee the high levels of integrity required.
 - (c) For coverage reasons.
 - (d) For interoperability reasons.
43. Which of the following statements is correct?
- (a) While accuracy is the proximity of measurement results to the true value, precision is a measure of the repeatability or reproducibility of the measurement.
 - (b) While precision is the proximity of measurement results to the true value, accuracy is a measure of the repeatability or reproducibility of the measurement.
 - (c) The accuracy is defined as the probability that the precision requirement will be supported by the navigation system throughout a flight operation or flight hour.
 - (d) The precision is defined as the probability that the accuracy requirement will be supported by the navigation system throughout a flight operation or flight hour.
44. Which of the following surveillance systems transmits at the highest power?
- (a) The primary surveillance radar (PSR).
 - (b) The secondary surveillance radar (SSR).
 - (c) The automatic dependent surveillance - broadcast (ADS-B).
 - (d) The aircraft communications addressing and reporting system (ACARS).
45. What system is the precursor of the secondary surveillance radar (SSR)?
- (a) Identification friend or foe (IFF).
 - (b) The automatic dependence surveillance (ADS)
 - (c) SSR is a novel system, without any precursors.
 - (d) None of the other answers is correct.
46. In civil aviation, which of the following transponder modes corresponds to the simplest system?
- (a) Mode A.
 - (b) Mode B.
 - (c) Mode C.
 - (d) Mode S.
47. What is the *transponder* or *squawk*?
- (a) It is the device that allows to encrypt information transmitted by ATC to pilots.
 - (b) It is the radio equipment that enables voice communications between pilots and ATC.
 - (c) It is the on-board device that replies to surveillance radar interrogations.
 - (d) It is an emergency beacon that activates in case of a crash in order to help search and rescue operations.
48. What is the cruise phase?
- (a) The phase of the flight after the whole climb where the aircraft is at a constant altitude.
 - (b) The phase of the flight that follows the departure procedure.
 - (c) The phase of the flight that precedes the arrival.
 - (d) All answers are correct.
49. 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.
50. Regarding the descent gradient of the standard terminal arrival routes published in the AIP, which of the following statements is correct?
- (a) it is always fixed at 3.3%.
 - (b) if not otherwise stated in the chart, it is assumed to be 3.3% in nominal conditions.
 - (c) if not otherwise stated in the chart, it is assumed to be 3.3% in contingency conditions.
 - (d) none of the other answers is correct.
51. Which of the following answers enumerate three different legs of the standard airfield traffic pattern?
- (a) downwind, base and final.
 - (b) VOR radial, DME arc and NDB course.
 - (c) inbound, outbound and timing.
 - (d) racetrack, reversal and dead-reckoning.
52. According to Figure 2, the airfield traffic pattern leg marked with a star (*) is:
- (a) The downwind leg for traffics to runway 07.
 - (b) The downwind leg for traffics to runway 25.
 - (c) The base leg for traffics to runway 07.
 - (d) The base leg for traffics to runway 25.
53. According to Figure 2, the airfield traffic pattern leg marked with a star (*) is:
- (a) The final leg for traffics to runway 07.
 - (b) The final leg for traffics to runway 25.
 - (c) The crosswind leg for traffics to runway 07.
 - (d) The crosswind leg for traffics to runway 25.
54. What is the point marked with a "W" inside a circle in Figure 2?
- (a) It is a VFR reporting point for helicopter arrivals.
 - (b) It is a IFR reporting point for helicopter arrivals.
 - (c) It is a the intersection of radial 101 and DME distance 2.5NM of the SDE VOR/DME
 - (d) All answers are correct.
55. Standard airfield traffic patterns are...
- (a) with turns to the right and at 1000 ft above the aerodrome elevation.
 - (b) with turns to the right and at 2000 ft above the aerodrome elevation.
 - (c) with turns to the left and at 1000 ft above the aerodrome elevation.
 - (d) with turns to the left and at 2000 ft above the aerodrome elevation.
56. When executing an airfield traffic pattern, how is the aircraft guided?

- (a) there is no guidance, the traffic pattern is always executed visually.
 - (b) with an ILS.
 - (c) with one or more conventional radionavigation systems.
 - (d) with an RNAV system.
57. ICAO regulations classify the aircraft according to their speed at the threshold as:
- (a) Heavy, Medium and Light.
 - (b) A, B, C, D, E and H.
 - (c) CAT-I, CAT-II, CAT-IIIa, CAT-IIIb and CAT IIIc.
 - (d) APV-I and APV-II.
58. In what situation an approach procedure cannot be a straight-in approach?
- (a) when the angular difference between the final track alignment and the runway track exceeds a given value*
 - (b) when the final descent gradient exceeds a given value*
 - (c) both answers marked with a (*) are correct.
 - (d) in case the procedure is a non-precision approach.
59. An ILS approach is generally a:
- (a) Straight-in approach and a precision approach.
 - (b) Straight-in approach and a non precision approach.
 - (c) Circling to approach and a precision approach.
 - (d) Circling to approach and a non precision approach.
60. Which is the minimum vertical accuracy required by a GNSS system if we want to execute non-precision approaches with it?
- (a) 6 to 4 meters.
 - (b) 8 meters.
 - (c) 20 meters.
 - (d) there are no minimum vertical requirements in this case.
61. An approach procedure using a Locator as principal guidance system in the final approach segment is...
- (a) a precision approach.
 - (b) a non-precision approach.
 - (c) an APV approach.
 - (d) a Locator cannot be used as principal guidance system in the final approach segment.
62. Regarding an approach procedure, which of the following items is a responsibility of the aircraft operator
- (a) to compute the minimum descent altitude or decision altitude.
 - (b) to compute the obstacle clearance altitude.
 - (c) to compute the minimum safety distance with other conflicting procedures in the same area.
 - (d) all other answers are correct.
63. 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.
64. 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.
65. In a VOR 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.
66. 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 reversal procedure given by a timed outbound leg and there is no intermediate segment.
 - (c) in case the glide slope is not available.
 - (d) in case there is no final segment.
67. The IF can be defined...
- (a) above a radionavigation facility.
 - (b) at the intersection between two VOR radials.
 - (c) at a given time after overflying the IAF.
 - (d) all answers are correct.
68. 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.
69. A procedure turn 45/180...
- (a) is a type of holding pattern.
 - (b) is a type of initial approach segment.
 - (c) is when an aircraft uses an active runway to taxi in the opposite direction from which it will take off or has landed.
 - (d) None of the other answers is correct.
70. 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 VOR/DME.
 - (b) A NDB.
 - (c) A Locator.
 - (d) All three radionavigation aids are valid.
71. The minimum decision height for an ILS CAT-II approach is:
- (a) 300ft.
 - (b) 200ft.
 - (c) 100ft.
 - (d) 0ft.
72. The auto-land capability is required for:
- (a) All ILS approaches.
 - (b) ILS CAT II and all CAT III approaches.
 - (c) All ILS CAT III approaches.
 - (d) Only ILS CAT III-C approaches.
73. Regarding Figure 1, the radionavigation aid labeled as AV is
- (a) an NDB.
 - (b) a Locator.
 - (c) a VOR.

- (d) a Localiser.
74. Regarding Figure 1, the initial approach segment to runway 11, starting at AST IAF is...
- a 45/180 procedure turn.
 - a racetrack procedure.
 - a racetrack procedure followed by a 45/180 procedure turn.
 - an NDB course.
75. Regarding Figure 1, the missed approach segment is composed by:
- two dead reckoning legs.
 - two NDB courses.
 - a dead reckoning leg followed by an NDB course.
 - an NDB course followed by a dead reckoning leg.
76. Regarding Figure 1, how is the MAPt of the approach to runway 11 defined?
- a Locator.
 - a Localiser.
 - an NDB.
 - the threshold of runway 11.
77. Regarding Figure 1, how is the FAF of the approach to runway 11, starting at AST IAF, defined?
- there is no FAF in this approach.
 - above AST.
 - above AV.
 - at the intersection of courses 118° and 343°.
78. Regarding Figure 1, what is the intermediate segment of the approach to runway 11, starting at AST IAF?
- there is no intermediate segment in this approach.
 - the leg with course 298°, from AST to the intersection with the leg with course 343°.
 - the leg with course 118°, from the end of turn to the intersection with the leg with course 343°.
 - the leg with course 343°.
79. Regarding Figure 1, what is the final approach segment to runway 11?
- there is no final segment in this approach.
 - a dead reckoning leg.
 - an NDB course.
 - a Locator course.
80. Regarding Figure 1, where does the final approach segment to runway 11 begins?
- above AV.
 - above AST
 - at an end of turn.
 - there is no final segment in this approach.
81. Air Navigation Services (ANS) are composed by:
- CNS, ATM, Search and Rescue, AIS, and Meteorology services.
 - Alert services, flight information services and air traffic control.
 - ASM, ATFM and ATS.
 - AIP, NOTAM and CIRC.
82. Which of the following indicators could be representative to measure flight efficiency in a terminal manoeuvring area?
- The average number of people exposed above a certain noise level.
 - The average length of trajectory level-offs in departures and/or arrivals.
 - The number of aircraft executing approaches for a given period of time.
 - The number of air traffic controllers divided by the amount of controlled time, and for a given period of time.
83. Which of the following indicators could be representative to measure flight efficiency in the en-route phase?
- The difference, in terms of additional flight distance, between the actual trajectory and the optimal trajectory.
 - The average separation between aircraft for a given period of time.
 - The number separation violations between aircraft reported in a given period of time.
 - The average number of aircraft inside an air traffic control sector for a given period of time.
84. ICAO regulations classify the aircraft according to their wake turbulence as:
- Heavy, Medium and Light.
 - A, B, C, D, E and H.
 - CAT-I, CAT-II, CAT-IIIa, CAT-IIIb and CAT IIIc.
 - APV-I and APV-II.
85. What it is the most important element to operate in RVSM (reduced vertical separation minima) space?
- An accurate 3D radar.
 - A certified altimeter.
 - Certified instrumental en-route charts.
 - A certified radio-navigation system.
86. Which of the following statements is NOT correct?
- Radar vectoring is a useful technique to sequence and merge arrival traffic flows, while maintaining high levels of capacity.
 - Radar vectoring is a useful technique to maintain separation in case of a potential conflict between two aircraft.
 - Radar vectoring requires a constant data-link communication between ground and air.
 - Radar vectoring can only be applied when providing radar control.
87. Which is the main purpose of radar vectoring?
- To give fast and simple separation instructions to aircraft crew.
 - To increase airport capacity when sequencing traffic into final approach.
 - To increase airspace capacity when merging arrival traffic flows.
 - All answers are correct.
88. Which is the principal inconvenience of radar vectoring?
- It can only be used with procedural control.
 - It can only be used for area control (en-route).
 - The pilot loses the situational awareness of the aircraft trajectory in the near future (for example, the remaining distance to the runway threshold).
 - It increases significantly the aircraft crew's workload.
89. Regarding the airborne separation assurance systems (ASAS) and airborne collision avoidance systems (ACAS), which of the following statements is correct?
- Traffic collision avoidance system (TCAS) is a commercially available ACAS system.
 - ASAS serves as a last-resort safety net irrespective of any separation standards.
 - ACAS could be an enabler of the Free Flight concept.
 - All the answers are correct.
90. Which of the following statements is true regarding TCAS?

- (a) TCAS provides separation provision between aircraft.
 (b) TCAS is a non-cooperative collision avoidance systems.
 (c) TCAS is a cooperative collision avoidance system.
 (d) None of other answers is correct.
91. Which of the following statements, regarding the Traffic-alert and Collision Avoiding System (TCAS), is correct?
- (a) A TCAS resolution advisory (RA) has a higher priority
 than any ATC instruction given to avoid a mid-air collision.
 (b) A TCAS traffic advisory (TA) has a higher priority than any ATC instruction given to avoid a mid-air collision.
 (c) A TCAS traffic advisory (TA) has a higher priority than any pilot action, after visual adquisition of the intruder aircraft, to avoid a mid-air collision.
 (d) All answers are correct.

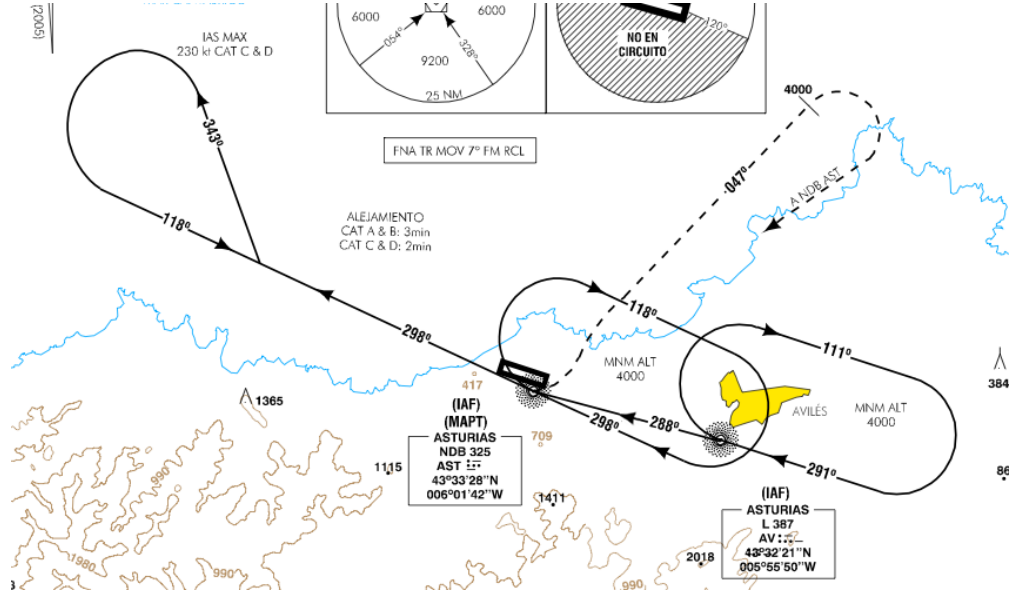


Figure 1: Snippet from Asturias approach chart

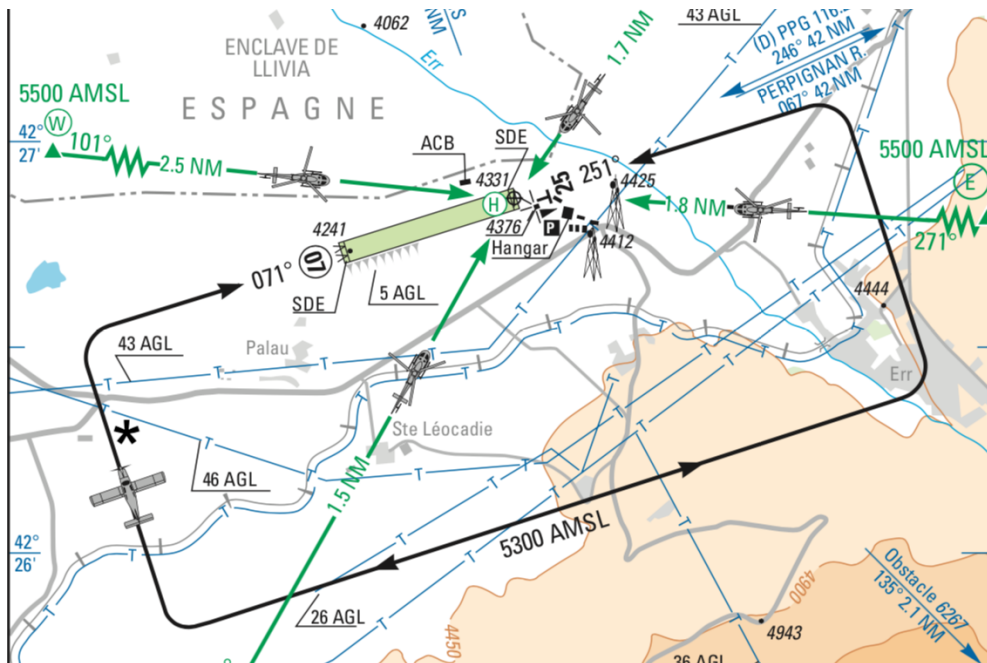


Figure 2: Snippet from LFYS approach chart

INFRASTRUCTURES DEL TRANSPORT AERI (ITA)

Final Exam - Spring semester 2021

Correct answers

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

P 49	a	a	a	a
P 50	d	c	d	a
P 51	a	c	a	a
P 52	c	d	a	d
P 53	d	c	b	b
P 54	a	b	d	c
P 55	c	c	c	a
P 56	a	c	d	d
P 57	b	d	a	d
P 58	c	b	a	a
P 59	a	b	a	a
P 60	d	a	d	c
P 61	b	a	b	c
P 62	a	b	a	b
P 63	d	a	a	c
P 64	a	b	d	b
P 65	d	a	c	b
P 66	b	d	a	d
P 67	d	a	b	d
P 68	a	a	b	b
P 69	b	c	b	a
P 70	d	d	a	a
P 71	c	b	b	a
P 72	c	b	b	d
P 73	b	d	d	b
P 74	a	b	c	c
P 75	b	a	a	a
P 76	c	b	c	d
P 77	a	c	a	d
P 78	a	a	a	d
P 79	c	a	a	d
P 80	c	c	a	b
P 81	a	c	c	c
P 82	b	b	b	c
P 83	a	a	a	d
P 84	a	d	c	a
P 85	b	d	d	a
P 86	c	d	c	a
P 87	d	a	d	d
P 88	c	c	b	b
P 89	a	d	b	c
P 90	c	a	a	a
P 91	a	c	c	d