## INFRAESTRUCTURES DEL TRANSPORT AERI (ITA) Mid term Exam - Spring semester 2019

## You have Permutation CODE 0 - GROUP 00

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

- 1. Airspace Management strongly depends on:
  - (a) the Aeronautical Information Services (AIS) available.
  - (b) the actual weather conditions.
  - (c) the Communications, Navigation and Surveillance (CNS) infrastructure available.
  - (d) all the answers are correct.
- 2. How can the Airspace Management (ASM) improve air transportation efficiency:
  - (a) by creating more direct routings.
  - (b) by managing modular ATC sector schemes.
  - (c) by enhancing civil-military concepts of operation.
  - (d) all other answers are correct.
- 3. 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.
- 4. What is the main reason why airspace is separated into FIR and UIR nowadays?
  - (a) to separate turboprop aircraft from jets. Turboprops use FIR while jets use UIR.
  - (b) to separate turboprop aircraft from jets. Turboprops use UIR while jets use FIR.
  - (c) for historical reasons. In fact, not all states distinguish between FIR and UIR nowadays.
  - (d) none of the other answers are correct.
- 5. An IFR aircraft is flying in RVSM airspace with heading 110°. 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
- 6. A VFR aircraft is flying in RVSM airspace with heading 295°. According to the ICAO flight level allocation scheme (odd-even rule), a possible flight level for this flight could be:
  - (a) FL120
  - (b) FL125
  - (c) FL130
  - (d) FL135
- 7. In a descent, at which moment the pilot sets the altimeter to the QNH setting?
  - (a) At FL100.
  - (b) At the crossover altitude.
  - (c) At the transition altitude.
  - (d) At the transition level.

- 8. In a climb, at which moment the pilot sets the altimeter to the standard setting?
  - (a) At FL100.
  - (b) At the crossover altitude.
  - (c) At the transition altitude.
  - (d) At the transition level.
- 9. Imagine an airport with SIDs going into all directions and STARs coming from all directions, such as Barcelona airport. Which of the following measures, aiming to reduce the workload of air traffic controllers, is the more **strategic** one?
  - (a) Publish SIDs and STARs such that they cross at points where conflicting aircraft will be typically flying at very different altitudes.
  - (b) Apply an ATFM measure (regulation) in case the forecast demand exceeds the estimated capacity.
  - (c) Apply an ATFM measure (regulation) in case the actual demand exceeds the existing capacity.
  - (d) Give direct-to instructions (radar vectoring) to aircraft, by air traffic controllers, to avoid potential conflicts at crossing points.
- 10. In which of the following airspace classes VFR flights are not allowed?
  - (a) VFR flights are allowed in all airspace classes, providing that they are conveniently equipped with VHF radio equipment and secondary radar transponder if so required.
  - (b) in airspace class E.
  - (c) in airspace class G.
  - (d) in airspace class A.
- 11. What is the most important characteristic of controlled airspace?
  - (a) aircraft need a clearance to enter.
  - (b) separation services are always provided to all aircraft inside the airspace.
  - (c) aircraft must be equipped with a mode Sierra transponder
  - (d) all answers are somehow equally important and all them characterize controlled airspaces.
- 12. Which of the following airspace volumes is, in general, the smallest one?
  - (a) TMA.
  - (b) CTR.
  - (c) ATC.
  - (d) ATZ.
- 13. Which of the following controlled airspace zones is sized to accommodate, approximately, the intermediate and final segments of an instrumental approach procedure?
  - (a) The ATZ.
  - (b) The CTR.
  - (c) The TMA.
  - (d) The CTA.
- 14. Which of the following controlled airspace zones is sized to accommodate, approximately, all the aircraft flying standard terminal arrival routes?
  - (a) The ATZ.
  - (b) The CTR.

- (c) The TMA.
- (d) The CTA.
- 15. What is an airspace opening scheme?
  - (a) It defines how the shape of the sector assigned to a specific air traffic controller will change along the day.
  - (b) It defines the sequence of different sector configurations planned along the day.
  - (c) It defines the number of open sectors at the begining of the day.
  - (d) It defines the maximum number of open sectors along the day.
- 16. Which of the following answers is correct?
  - (a) the ATC supervisor designs the size and shape of the different ATC sectors as a function of the traffic demand in his/her control center.
  - (b) the ATC supervisor decides the best sectorisation to apply as a function of the traffic demand in his/her control center.
  - (c) the ATC supervisor decides the best regulation to apply in case the traffic demand exceeds the capacity in one or more sectors of his/her control center.
  - (d) all answers are correct.
- 17. 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.
- 18. Which of the following items **do not** affect the capacity value of an en-route sector:
  - (a) the route structure of the sector.
  - (b) the expected traffic demand on that sector.
  - (c) the forecast weather conditions for that sector.
  - (d) all other items can affect the capacity of the sector.
- 19. A functional airspace block (FAB) is:
  - (a) a portion of flexible used airspace (FUA)
  - (b) a synonym of airspace sector
  - (c) an initiative of the single European sky that establishes airspace blocks regardless of the different state boundaries
  - (d) a restricted or prohibited volume of airspace
- 20. What is a TSA (temporary segregated area)?
  - (a) a volume of airspace temporary reserved for IFR terminal manoeuvers where VFR traffic might transit under an ATC clearance
  - (b) a volume of airspace temporary reserved for IFR terminal manoeuvers 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.
- 21. Regarding the flexible use of airspace (FUA) concept, the third level (tactical level) deals with:
  - (a) The definition of the sectorisation and capacity of the military airways.
  - (b) The day-to-day allocation of airspace, according to users requirements.
  - (c) The real-time use and management of available airspace.

- (d) The definition of national airspace policy and predetermined airspace structures.
- 22. Alerting services shall be provided to...
  - (a) For all aircraft provided with ATC service.
  - (b) To any aircraft known or believed to be the subject of unlawful interference.
  - (c) As far as practicable, to all other aircraft having filed a flight plan or otherwise known to the air traffic services.
  - (d) All are correct.
- 23. 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.
- 24. Mark the **wrong** statement:
  - (a) Alert Services are provided when Air Traffic Control is provided.
  - (b) Flight Information Services are provided when Air Traffic Control is provided.
  - (c) Alert Services are provided when Flight Information Services are provided.
  - (d) Air Traffic Control is provided when Flight Information Services are provided.
- 25. If no communication has been received from an aircraft in 30 minutes, or it fails to arrive at a given reporting fix/waypoint within the same amount of time, which of the following phases shall be activated?
  - (a) Uncertainty phase.
  - (b) Alert phase.
  - (c) Distress phase.
  - (d) Awareness phase.
- 26. What is the international radiotelephony distress signal for aviation?
  - (a) The word MayDay.
  - (b) The word MayDay repeated three times.
  - (c) The word Pan-Pan.
  - (d) The word Pan-Pan repeated three times.
- 27. Which of the following transponder codes indicates a lost of radio communications?
  - (a) 1215
  - (b) 7500
  - (c) 7600
  - (d) 7700
- 28. Which of the following information items is not typically given by a flight information service?
  - (a) Volcanic activity in a certain area.
  - (b) Traffic information assisting the pilot to avoid collision conflicts.
  - (c) The frequency of a specific radionavigation aid.
  - (d) Minimum descent altitudes for a specific approach.
- 29. What is a VOLMET?
  - (a) A radio station broadcasting meteorogical information of a certain area, including some relevant airports.
  - (b) A radio station broadcasting meteorogical information of a specific airport, indicating as well, the runway in service, the preferred IFR approach, the transition level and any other relevant information regarding airport operations.
  - (c) A radio station broadcasting volcanic activity information in a certain area.

- (d) A special message issued by the International Volcanic Meteorology Office, regarding volcanic activity.
- 30. In which of the following situations an air traffic controller shall give traffic information (information regarding collision hazards with other aircraft) to a VFR flight?
  - (a) When the aircraft is inside a CTR.
  - (b) When the aircraft is inside a TMA.
  - (c) When the aircraft is inside any airspace of class D.
  - (d) All the answers are correct.
- 31. A VFR flight is flying inside an airspace of class C. The air traffic controller is responsible to separate it from:
  - (a) all other IFR flights.
  - (b) all other VFR flights.
  - (c) all other VFR and IFR flights.
  - (d) the controller has no separation responsibility with VFR flights in airspace class C.
- 32. A VFR flight is flying inside an airspace of class E. The air traffic controller is responsible to separate it from:
  - (a) all other IFR flights.
  - (b) all other VFR flights.
  - (c) all other VFR and IFR flights.
  - (d) the controller has no separation responsibility with VFR flights in airspace class E.
- 33. 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?
  - (a) Without radar coverage or ADS information, Air Traffic Control services cannot be provided.
  - (b) By means of position reports and flight plan information.
  - (c) By means of position reports, flight plan information and transponder codes.
  - (d) By means of position reports, flight plan information and visual acquisition of the aircraft.
- 34. Which of the following summarises the three high-level tasks that are always performed by an air traffic controller?
  - (a) Aviate, Navigate and Communicate.
  - (b) Coordinate clearances with other ATC units, coordinate civil-military operations, coordinate emergencies.
  - (c) Gather and process data from flights and/or ground vehicles, issue clearances, coordinate clearances with other ATC units.
  - (d) Gather and process data from flights and/or ground vehicles, separate aircraft, give flight information instructions.
- 35. North Atlantic oceanic control typically require the aircraft crew to:
  - (a) Report their position only when requested by the ATC.
  - (b) Report periodically their position every 2h.
  - (c) Report periodically their position every  $10^o$  of longitude.
  - (d) Switch-off the transponder.
- 36. North Atlantic tracks (NAT) are...
  - (a) the static airway network in the North Atlantic airspace.
  - (b) an organised track system that is updated every day as a function of the wind field forecast.
  - (c) the set of actual trajectory tracks flown by all aircraft crossing the North Atlantic in a given period of time.
  - (d) the name that is given to the oceanic clearances in the North Atlantic airspace.

- 37. Which of the following statements is correct with respect to the exit flight level (XFL) of an aircraft inside an ATC sector?
  - (a) The strategic controller of the following sector defines the XFL and the strategic controller of the current sector ensures it by clearing the aircraft to it.
  - (b) The ATC supervisor defines the XFL and the strategic controller ensures it by clearing the aircraft to it.
  - (c) The strategic controller defines and ensures the XFL by clearing the aircraft to it.
  - (d) The strategic controller defines the XFL and the tactical controller ensures it by clearing the aircraft to it.
- 38. The letters of agreement (LoA) define de conditions for:
  - (a) The coordination between IFR flights and the ATS.
  - (b) The coordination between adjacent sectors.
  - (c) The correlation between the transponder code and the flight plan.
  - (d) The coordination between the CFMU and the ATS centres to manage departure slots.
- 39. In general, in which of the following ATC dependencies radar vectoring (heading instructions) is mostly provided?
  - (a) In area control (en-route control).
  - (b) In aerodrome control Tower (TWR).
  - (c) In ground control (GND).
  - (d) In approach control (APP).
- 40. At present, what is the principal communications method in continental Europe to link pilots with air traffic controllers?
  - (a) VHF voice communications.
  - (b) HF voice communications.
  - (c) Data-link communications.
  - (d) Satellite based communications.
- 41. Which of the following statements is NOT a new concept/system regarding the **communications** in the future CNS systems for ATM?
  - (a) Reduced VHF frequency spacing (8.33 kHz).
  - (b) Automatic Dependent Surveillance (ADS).
  - (c) Aircraft Communications Addressing and Reporting System (ACARS).
  - (d) Controller-Pilot DataLink Communications (CPDLC).
- 42. The reduction of the VHF channel spacing is crucial in the European civil aviation...
  - (a) to enhance the aircraft navigation accuracy.
  - (b) to minimise the errors in radio telephone (RTF) communications.
  - (c) to create a new set of pilot-controller communication messages.
  - (d) because more frequency channels could be needed to increase the capacity of the overall system.
- 43. Which physical transmission layer is used by the ACARS?
  - (a) Very high frequency (VHF) subnetwork.
  - (b) Satellite communication.
  - (c) High Frequency (HF) subnetwork.
  - (d) All answers could be correct.
- 44. Which physical transmission layer is mainly used for ATC communications when aircraft are flying over populated continental regions?
  - (a) A Very high frequency (VHF) subnetwork.
  - (b) Satellite communication.
  - (c) A High Frequency (HF) subnetwork.
  - (d) All answers are correct.

- 45. In the near future, the ATC will have automatic dependent surveillance broadcast (ADS-B) receivers (the so called ADS-B in), but not the aircraft. In this case, what is the benefit of this technology?
  - (a) It will enable airborne separation assurance system (ASAS) applications.
  - (b) There will be zero benefits because aircraft cannot share surveillance data among them.
  - (c) It will enhance the controller situational awareness.
  - (d) None of the other answers is correct.
- 46. What does dependent mean, in the acronym of ADS-B?
  - (a) that all ADS-B messages rely on the performance of the navigation system on-board the aircraft.
  - (b) that the ADS-B messages rely on the performance of the communication system on-board the aircraft.
  - (c) that the ADS-B messages rely on the performance of the ground surveillance system (such as secondary radar).
  - (d) that the ADS-B messages rely on the performance of the ground air traffic control working position.
- 47. What does broadcast mean, in the acronym of ADS-B?
  - (a) that all ADS-B messages are automatically stored in a database.
  - (b) that the ADS-B messages are automatically computed without the active action of the pilot.
  - (c) that the ADS-B messages are continuously transmitted.
  - (d) that the ADS-B messages are continuously requested by ground ATC facilities.
- 48. In what situation an approach procedure cannot be a straight-in approach?
  - (a) when the angular diference between the final track alignement 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.
- 49. Which of the following statements is correct?
  - (a) A VOR approach is always a NPA (non precision approach) procedure (\*).
  - (b) A NPA (non precision approach) is always a VOR procedure (\*).
  - (c) The answers marked with (\*) are correct.
  - (d) None of the other answers is correct.
- 50. 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.
- 51. 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.
- 52. An approach procedure only using a Localiser as principal guidance system in the final approach segment is...
  - (a) a precision approach.
  - (b) a non-precision approach.
  - (c) an APV approach.

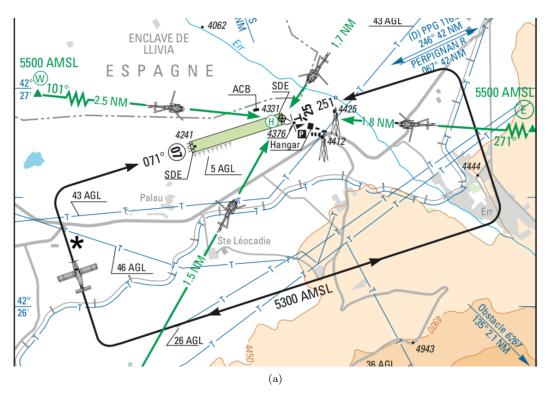
- (d) a Localiser cannot be used as principal guidance system in the final approach segment.
- 53. Which of the following answers **cannot** be considered an approach leg:
  - (a) VOR radial.
  - (b) DME arc.
  - (c) ILS glide path.
  - (d) NDB course.
- 54. In navigation, the track angle is defined as:
  - (a) the azimuthal angle between the wind and the aircraft heading.
  - (b) the azimuthal angle of the ground speed vector.
  - (c) the azimuthal angle of the true airspeed vector.
  - (d) None of the other answers is correct.
- 55. The navigation process by which a navigator calculates its current position by using a previously determined position and known or estimated speeds over an elapsed time and course is known as:
  - (a) Instrumental Flight Rules (IFR) navigation.
  - (b) Special Visual Flight Rules (SVFR) navigation.
  - (c) dead reckoning.
  - (d) conventional navigation.
- 56. The Visual Flight Rules (VFR) airfield traffic pattern leg by which an aircraft flies in parallel and in the opposite direction of the landing runway is called:
  - (a) upwind.
  - (b) crosswind.
  - (c) downwind.
  - (d) base.
- 57. According to Figure 1(b)...
  - (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 31 and to the left for runway 13.
  - (d) Turns in the airfield traffic pattern are to the left for runway 31 and to the right for runway 13.
- 58. The Visual Flight Rules (VFR) airfield traffic pattern leg by which an aircraft flies perperdicular to the runway and starts descending is called:
  - (a) upwind.
  - (b) crosswind.
  - (c) downwind.
  - (d) base.
- 59. Imagine an twin engine aircraft departing in IMC from a controlled airport. Few seconds after take-off, it hits birds, which cause 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 revert to manual control and visual flight to safely land as soon as possible.
  - (d) to send a distress message to the air traffic control.
- 60. Imagine an twin engine aircraft departing in IMC from a controlled airport. Few seconds after take-off, it hits birds, which cause a fire in one of the engines and loosing all of its power. In this situation, the **communicate** function of the aircraft crew would be:

- (a) to send a distress message to the air traffic control.
- (b) to revert to manual control and visual flight to safely land as soon as possible.
- (c) to safely control the aircraft trajectory with the loss of power and to manage to extinguish the fire and shut down the engine.
- (d) to check if there is a contingency departure published for that airport and execute it.
- 61. The direction, with respect to the North, to which the nose of the aircraft is pointing to, is called...
  - (a) track.
  - (b) heading.
  - (c) course.
  - (d) bearing.
- 62. The angle, with respect to the North, of the line formed by the actual position of the airraft and a given destination waypoint or fix is called...
  - (a) track.
  - (b) heading.
  - (c) course.
  - (d) bearing.
- 63. 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, the airspeed indicator and the altimeter
  - (c) the aviate function is always executed visually and no instruments are required.
  - (d) all engine related instruments.
- 64. If the visibility is good enough for visual flight, then...
  - (a) we are in IMC and must fly according to IFR.
  - (b) we are in VMC and must fly according to IFR.
  - (c) we are in VMC and must fly according to VFR.
  - (d) we are in VMC and can fly according to VFR or IFR.
- 65. What is required to fly according to IFR?
  - (a) Certified radionavigation equipment on-board the aircraft.
  - (b) A special training (and rating) for the pilot.
  - (c) To file an ATS flight plan.
  - (d) All answers are correct.
- 66. Which of the following methods is not valid to define an IFR radionavigation FIX:
  - (a) Overflying a facility.
  - (b) Some timing after overflying a facility.
  - (c) The intersection of a VOR radial and a NDB course.
  - (d) An important visual landmark.
- 67. In what situation the effect of the wind will have a bigger impact on the actual trajectory flown by an aircraft?
  - (a) when the aircraft is following a given heading.
  - (b) when the aircraft is following a given track.
  - (c) when the aircraft is following a given VOR radial.
  - (d) when the aircraft is following a given NDB course.
- 68. In which case radionavigation is optional for the whole flight?
  - (a) In VMC and flying according to VFR (\*).
  - (b) In VMC and flying according to IFR (\*).
  - (c) In IMC and flying according to IFR.
  - (d) The answers labelled with (\*) are correct.

- 69. Which of the following statements is correct?
  - (a) In general, the majority of aircraft will arrive at the cruise altitude when finishing the SID (\*).
  - (b) In general, the majority of aircraft will start the descent from the cruise altitude when starting the STAR (\*).
  - (c) Both answers marked with a (\*) are correct.
  - (d) None of the other answers is correct.
- 70. What is an omnidirectional instrumental departure?
  - (a) The departure that typically execute VFR flights.
  - (b) The departure that typically execute VFR flights, but only in non busy airports.
  - (c) The possibility to directly proceed to the desired airway, immediately after the take-off, by following a VOR radial or a NDB course.
  - (d) It is the name it takes the chart containing all the standard instrumental departures of a given airport.
- 71. Who is the responsible to publish a contingency instrumental departure for a given runway?
  - (a) the ANSP.
  - (b) the aircraft operator.
  - (c) the aircraft manufacturer.
  - (d) The national safety agency.
- 72. Who is the responsible to publish the standard operational procedures for an aircraft, such as the best moment to retract flaps/slats, deploy the landing gear, etc.
  - (a) the ANSP.
  - (b) the aircraft operator.
  - (c) the aircraft manufacturer.
  - (d) The national safety agency.
- 73. Which of the following sequence is correct for a visual approach procedure following a standard airfield traffic pattern?
  - (a) base, upwind and final.
  - (b) base, downwind and final.
  - (c) upwind, base and final.
  - (d) downwind, base and final.
- 74. Regarding Figure 1(b), what does the point Echo (E) in the chart indicate?
  - (a) a VOR.
  - (b) an NDB.
  - (c) a visual reference point for the arrival procedure.
  - (d) a visual reference point for the departure procedure.
- 75. According to Figure 1(a), 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.
- 76. According to Figure 1(a), 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.
- 77. What is the point marked with a "W" inside a circle in Figure 1(a)?
  - (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.
- 78. Which of the following institutions is neither an aeronautical national/international authority nor a safety agency?
  - (a) The Federal Aviation Administration (FAA).
  - (b) The International Civil Aviation Organization (ICAO).
  - (c) The European Agency for the Safety in Aviation (EASA).
  - (d) National Aeronautics and Space Agency (NASA).
- 79. Due to bad weather conditions, a given airport goes from 90 landings per hour to only 60 landings per hour. What has been lost?
  - (a) Capacity.
  - (b) Efficiency.
  - (c) Safety.
  - (d) Inter-operability.
- 80. How can we measure efficiency in an airport?
  - (a) Counting, for instance, the nubmer of take-off per unit of time.
    - (b) Counting, for instance, the fuel burnt in taxi operations.
    - (c) Counting, for instance, the number of runway incursions.
    - (d) All the other answers are correct.
- 81. What separation procedure is mainly used in oceanic airspace?
  - (a) Radar separation.
  - (b) Self separation.
  - (c) Procedural separation.
  - (d) TCAS-only separation.
- 82. ICAO regulations classify the aircraft according to their wake turbulence 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.
- 83. What it is the most important element to operate in RVSM (reduced vertical separation minima) space?
  - (a) An accurate 3D radar.
  - (b) A certified altimeter.
  - (c) Certified instrumental en-route charts.
  - (d) A certified radio-navigation system.
- 84. Which is the main purpose of radar vectoring?
  - (a) To give fast and simple separation instructions to aircraft crew
  - (b) To increase airport capacity when sequencing traffic into final approach.
  - (c) To increase airspace capacity when merging arrival traffic flows.
  - (d) All answers are correct.
- 85. Which is the principal inconvenience of radar vectoring?
  - (a) It can only be used with procedural control.

- (b) It can only be used for area control (en-route).
- (c) The pilot loses the situational awareness of the aircraft trajectory in the near future (for example, the remaining distance to the runway threshold).
- (d) It increases significantly the workload of the pilot.
- 86. When talking about the Short Term Conflict Alert (STCA) system, which of the following statements is wrong?
  - (a) The STCA function alerts the controller to potential aircraft to aircraft collisions prior to loss of separation.
  - (b) The STCA does not take into account the possible clearances given to the aircraft.
  - (c) Future aircraft positions are estimations based on the velocity vectors of the aircraft.
  - (d) The STCA communicates with the on-board TCAS and when a TCAS alarm triggers, also does the STCA alarm and vice-versa.
- 87. When talking about the Medium Term Conflict Detection (MTCD) system, which of the following statements is wrong?
  - (a) The MTCD is the future version of the STCA, where conflicts will be detected much in advance.
  - (b) The MTCD can issue contextual warnings, where no loss of separation is likely if the aircraft is cleared according to the plan, but the encounter should be considered if one of the aircraft involved requests an alternative level.
  - (c) The MTCD takes into account the flight plan data to detect conflicts.
  - (d) The MTCD alerts the controller that a loss of separation is likely to occur within the limits of the current clearance.
- 88. The TCAS I (Traffic-alert and Collision Avoidance System 1) provides:
  - (a) resolution advisories (RA).
  - (b) traffic advisories (TA).
  - (c) Ground proximity warnings
  - (d) All answers are correct.
- 89. The TCAS II (Traffic Collision Avoidance System II) uses for its operation:
  - (a) both the replies from the transponders of other aircraft and the ground based radar echoes.
  - (b) the echoes of collision avoidance radar system especially installed on board.
  - (c) the echoes from the ground air traffic control radar system.
  - (d) the replies from the transponders of other aircraft.
- 90. 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.



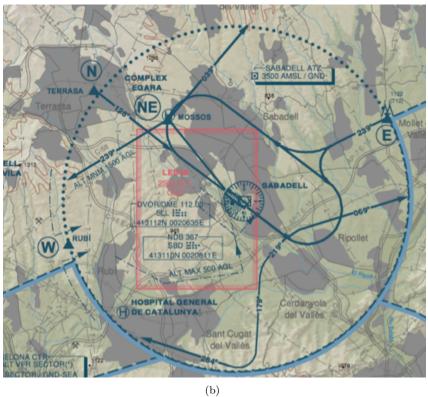


Figure 1:

## INFRAESTRUCTURES DEL TRANSPORT AERI (ITA)

## ${\bf Mid~Term~Exam~-~Spring~semester~2019}$

Correct answers

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

a	a	d	c
a	a	a	b
b	a	$\mathbf{c}$	a
b	d	a	d
$^{\mathrm{c}}$	b	d	b
b	$\mathbf{c}$	d	b
$\mathbf{c}$	a	a	b
$\mathbf{c}$	d	$\mathbf{c}$	d
$\mathbf{c}$	d	d	d
d	a	$\mathbf{c}$	$^{\mathrm{c}}$
$\mathbf{a}$	a	$\mathbf{c}$	a
$\mathbf{a}$	$\mathbf{c}$	b	a
b	$\mathbf{c}$	c	$^{\mathrm{c}}$
d	b	a	$\mathbf{c}$
b	$\mathbf{c}$	d	d
d	b	b	a
d	b	$\mathbf{c}$	a
d	d	a	a
$\mathbf{a}$	d	$\mathbf{c}$	$^{\mathrm{c}}$
$\mathbf{a}$	b	$\mathbf{c}$	d
d	a	d	$^{\mathrm{c}}$
$\mathbf{c}$	a	a	b
b	a	$\mathbf{c}$	a
$\mathbf{c}$	d	a	d
d	b	d	b
$\mathbf{c}$	$\mathbf{c}$	d	b
$^{\mathrm{c}}$	a	a	b
d	d	$\mathbf{c}$	d
$\mathbf{a}$	d	d	d
d	a	$\mathbf{c}$	$^{\mathrm{c}}$
a	a	$^{\mathrm{c}}$	a
b	$\mathbf{c}$	b	a
$\mathbf{c}$	b	b	b
a	$\mathbf{c}$	a	b
b	$\mathbf{c}$	a	$^{\mathrm{c}}$
d	$\mathbf{c}$	a	a
$\mathbf{c}$	a	$\mathbf{c}$	$^{\mathrm{c}}$
d	a	$\mathbf{c}$	d
a	d	$^{\mathrm{c}}$	$\mathbf{c}$
b	d	a	b
d	a	$^{\mathrm{c}}$	$\mathbf{c}$
a	a	b	a
	abbccbccdaabdcaabdcaabdcdaabdcbdaabdcbdaabd	a a   b a   b d   c b   c a   c d   d a   a a   a a   d b   d b   d d   d a   d	a a   b a   c b   d a   c d   c d   d d   d a   c d   d d   d a   c d   d a   d