INFRAESTRUCTURES DEL TRANSPORT AERI (ITA)
Mid term Exam - Fall semester 2017

IFR routes [0.25 exam points each]

Using the charts given in Annex, write the best IFR route, **as it would be written for an ATS flight plan** for the following two flights. Write your answers behind the test answers form.

FP-1 Reus (LERS) to Menorca (LEMH)

FP-2 Menorca (LEMH) to Reus (LERS)

Short questions [0.25 exam points each]

Use **maximum 1-2** sentences to answer the following questions. Write your answers behind the test answers form.

SQ-1: Continuous Descent Operations (CDO) are much more efficient than conventional step-down arrivals. Why do you think CDO are not currently implemented in the principal European airports?

SQ-2: Why the minimum separation between two aircraft is bigger in the oceans rather than in the TMA?

SQ-3: When executing an instrumental approach procedure, the pilot must verify two basic criteria in order to decide whether the landing can be performed safely or not: the so called landing minima. Which are these two criteria?

SQ-4: The minimum descent height for an NDB approach can be as low as 350ft, while for a VOR/DME approach can go down to 250ft. Why do you think this height is lower for the VOR/DME approach?

SQ-5: ENAIRE publishes an approach chart for Sevilla airport for aircraft categories A, B, C and D, but Vueling pilots have a chart only with categories A and B. Why?

SQ-6: The approach chart used by Vueling pilots specify a minium runway visual range to land, but this indication is not in the chart published by ENAIRE. Why?

SQ-7: Why the technology used for controller to pilot communications can limit the capacity of a given airspace?

SQ-8: What is the information sent by a transported mode Charlie?

Test [7.5 exam points]

For each question **only one answer** is correct: Correct answer: +1 test point - Incorrect answer: -1/3 test points - Blank answer: 0 points

You have Permutation CODE 0

1. Which of the follwing statements is correct?
   (a) While in controlled airspace an ATS clearance may be required to enter/exit the airspace, in non-controlled airspace no ATS clearance may be required to enter/exit the airspace.
   (b) While in controlled airspace an ATS clearance is required to enter/exit the airspace, in non-controlled airspace no ATS clearance is required to enter/exit the airspace.
   (c) While in controlled airspace an ATS clearance is not required to enter/exit the airspace, in non-controlled airspace an ATS clearance may be required to enter/exit the airspace.
   (d) Both, in controlled and non-controlled airspace separation provision is always provided by Air Traffic Controllers.
2. Airspace Management (ASM) is NOT responsible for:
   (a) civil-military coordination.
   (b) designation of airspace types or classes.
   (c) air traffic flow management.
   (d) the design of the ATS route network.
3. Airspace Management strongly depends on:
   (a) the Communications, Navigation and Surveillance (CNS) infrastructure available.
   (b) the Aeronautical Information Services (AIS) available.
   (c) the Air Traffic Flow Management (ATFM).
   (d) the Air Traffic Control (ATC).
4. 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.
5. According to the ICAO standards, how ATS routes contribute to provide strategic vertical separation between aircraft?
   (a) IFR cruising altitudes are, in general, vertically separated by 1,000 ft from each other. Consecutive flight levels are used to fly in the opposite direction.
   (b) VFR cruising altitudes are, in general, vertically separated by 1,000 ft from each other. Consecutive flight levels are used to fly in the opposite direction.
   (c) IFR and VFR cruising altitudes are, in general, vertically separated by 500 ft from each other.
   (d) all other answers are correct.
6. An IFR aircraft is flying in RVSM airspace with heading 110^o, following the *odd-even* rule to assign a flight level, a possible flight level for the flight could be:
   (a) FL320
   (b) FL325
   (c) FL330
   (d) FL335

7. During a climb, when the pilot reaches the transition altitude, he/she shall...
   (a) change the altimeter setting from QNH to STD.
   (b) change the altimeter setting from STD to QNH.
   (c) change the altimeter setting from STD to QFE.
   (d) do nothing in particular regarding the altimeter setting.
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. 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.
10. Regarding future concepts in airspace management, which of the following statements is correct?
   (a) A functional airspace block (FAB) is as an airspace block based on operational requirements and established regardless of State boundaries.
   (b) The flexible use of airspace (FUA) initiative aims at designing airspace sectors regardless State boundaries.
   (c) Europe does not need further airspace initiatives as airspace sovereignty is fully delegated to the European Union.
   (d) The USA have similar problems as Europe regarding the airspace sovereignty and sectorisation issues.
11. Which is the correct order of these types of airspace/areas if we sort them **from fully segregated to non-segregated**? (TSA: temporary segregated area; RCA: reduced coordination airspace; TRA: temporary reserved area; PCA: prior coordination airspace)
   (a) PCA, RCA, TSA, TRA.
   (b) TRA, TSA, RCA, PCA.
   (c) TSA, TRA, PCA, RCA.
   (d) RCA, PCA, TRA, TSA.
12. Nowadays, 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.
13. Regarding the S/A and A/S GPS functionalities...
   (a) S/A avoids spoofing by encrypting GPS signals (*)
   (b) A/S implements an intentional degradation of public GPS signals (*)
   (c) Both answers labelled with a (*) are correct.
   (d) None of the other answers is correct.
14. 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.
15. Which is the European SBAS system?
   (a) the WAAS.
   (b) the LAAS.
   (c) the EGNOS.
   (d) the Galileo.
16. Which of the following surveillance systems can detect an aircraft that is not willing to "cooperate"?
   (a) The primary surveillance radar.
   (b) The secondary surveillance radar.
   (c) The ADS.
   (d) The TCAS
17. 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 are correct.
18. What does *broadcast* mean, in the context 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.
19. 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 vertical requirements in that case.
20. 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.

21. When establishing the laning 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.

22. 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.

23. 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.

24. In a Locator 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.

25. For a given runway threshold, which of the following approaches will lead (in general) to the highest MDA or DA?

    (a) a NDB circling to approach procedure.

    (b) a NDB straight-in approach procedure.

    (c) a VOR circling to approach procedure.

    (d) a VOR straight-in approach procedure.

26. The missed approach segment...

    (a) is an optinal segement.

    (b) must be only published in precision approaches.

    (c) must be always published.

    (d) must be designed by the aircraft operator and published in a congingency chart.

27. 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.

28. The auto-land capability is required for:

    (a) All ILS approaches.

    (b) ILS CAT II and CAT III approaches.

    (c) All ILS CAT III approaches.

    (d) Only ILS CAT III-C approaches.

29. Which of the following answers **cannot** be considered an approach leg:

    (a) VOR radial.

    (b) DME arc.

    (c) ILS glide path.

    (d) NDB course.

30. 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.

31. In case of no wind...

    (a) heading and track angles are the same.

    (b) the true airspeed and de ground speed are not the same.

    (c) The course and bearing angles are the same.

    (d) All answers are correct.

32. 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.

33. 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.

34. Which type of fix is OLOTI, which appears in the SID chart for RWY20 in Girona airport?

    (a) an intersection.

    (b) a VOR.

    (c) a RNAV waypoint.

    (d) none of the other answers is correct.

35. Regarding the SID MAMUK1H for RWY20 at Girona airport, 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.

36. Regarding the legs that compose the GEANT1H SID for RWY20 at Girona airport, 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.

37. Imagine an aircraft executing the MAMUK1F arrival procedure (see chart annexed to this exam). What defines the IAF for this procedure?

(a) an intersection.

(b) a VOR.

(c) a DME.

(d) an NDB.

38. In which situation the effect of the wind will have a bigger impact on the actual trajectory flown by an aircraft?

(a) when flying a dead reckoning leg.

(b) when flying an NDB course.

(c) when flying a VOR radial.

(d) when flying a DME arc.

39. 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.

40. Which of the following institutions is NOT an aircraft manufacturer or components supplier?

(a) Airbus.

(b) Embraer.

(c) Thales.

(d) Ryanair.

41. 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).

42. What is the main goal of Air Navigation Services (ANS)?

(a) To reduce safety, capacity and efficiency levels without upgrading safety, capacity and efficiency levels.

(b) To increase safety, capacity and efficiency levels without degrading safety, capacity and efficiency levels.

(c) To increase safety, accuracy and efficiency levels without degrading safety, accuracy and efficiency levels.

(d) To reduce safety, accuracy and efficiency levels without upgrading safety, accuracy and efficiency levels.

43. Aeronautical Information Services (AIS) are composed by:

(a) CNS, ATM, Search and Rescue, AIS, and Meteorology services.

(b) Alert services, flight information services and air traffic control.

(c) ASM, ATFM and ATS.

(d) AIP, NOTAM and CIRC.

44. Which of the following systems or techniques are within the self-separation category?

(a) visual separation (*).

(b) ASAS (airborne separation assurance system) (*)

(c) ACAS (airborne collision avoidance system)

(d) both answers marked with (*) are correct.

45. 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.

46. Which kind of collision avoidance manoeuvres can a TCAS II RA provide?

(a) vertical-only manoeuvres.

(b) horizontal-only manoeuvres.

(c) both horizontal and vertical manoeuvres.

(d) RA does not provide any kind of collision avoidance manoeuvre.

47. 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 adqusition of the intruder aircraft, to avoid a mid-air collision.

(d) All answers are correct.

48. The TCAS is conceived as

(a) a procedural separation system.

(b) a self-separation assurance system.

(c) a cooperative collision avoidance system.

(d) All answers are correct.

INFRAESTRUCTURES DEL TRANSPORT AERI (ITA)
Mid Term Exam - Fall semester 2017

Correct answers

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