

INFRAESTRUCTURES DEL TRANSPORT AERI (ITA)

Final Exam - Spring semester 2019

June 7th 2019

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

CODE 1 - GROUP 00

1. In an hypothetical scenario with airborne separation assurance systems (ASAS) operations...
 - (a) there is no need for collision avoidance systems.
 - (b) the capacity of the ATS sectors will significantly increase.
 - (c) free route airspace will be mandatory.
 - (d) procedural control will be mandatory.
2. Why do ATS routes exist?
 - (a) In order to provide alert, flight information and ATC services.
 - (b) In order to enhance flight efficiency with more direct routes.
 - (c) In order to provide some strategic separation of air traffic flows and guarantee, in this way, some airspace capacity.
 - (d) In order to ensure a given target level of safety.
3. An IFR aircraft is flying in RVSM airspace with heading 189°. 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
4. 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
5. A pilot is reporting "we are at flight level two zero zero". This means:
 - (a) The barometric altimeter of the aircraft indicates 20 000 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 20 000 ft and it is calibrated with respect to the local QNH.
 - (c) The barometric altimeter of the aircraft indicates 2 000 ft and it is calibrated with respect to the standard pressure at sea level (1013.25 hPa).
 - (d) The barometric altimeter of the aircraft indicates 2 000 ft and it is calibrated with respect to the local QNH.
6. 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.
7. Why TMA sectors are typically smaller than en-route sectors?
 - (a) The statement is not true. TMA sectors are typically bigger than en-route sectors.
 - (b) In order to reduce the workload for the ATC to acceptable levels and guarantee some airspace capacity.
 - (c) Because TMAs cover typically smaller areas if compared with FIRs and UIRs.
 - (d) Because radar screens at the airport tower are typically smaller than in the area control centres.
8. How could you significantly reduce the workload of air traffic controllers?
 - (a) with collision avoidance systems.
 - (b) by enabling more APV approaches.
 - (c) by introducing more wake-vortex categories for en-route horizontal separation.
 - (d) none of the other answers are correct.
9. What is a TRA (temporary reserved 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.
10. Regarding the flexible use of airspace (FUA) concept, the first level (strategic level) deals with:
 - (a) The definition of national airspace policy and predetermined airspace structures.
 - (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 the sectorisation and capacity of the military airways.
11. The main objective of air traffic flow management (ATFM) is:
 - (a) provide flight information services to civil aircraft according to the class of airspace
 - (b) keep the forecast demand below estimated capacity in airports and airspace sectors by issuing different flow management initiatives
 - (c) develop a network of ATS routes and airspace structures to try to accommodate the forecast air traffic volumes
 - (d) all the answers are correct.
12. Which of the following causes might trigger ATFM regulations?
 - (a) Bad weather conditions.
 - (b) Lack of aerodrome capacity.
 - (c) Special events such as large scale military exercises.
 - (d) all the answers are correct.
13. Which of the following ATFM initiatives is the most efficient in terms of fuel consumption?
 - (a) Ground holding.
 - (b) Air holding.
 - (c) Level capping.
 - (d) All initiatives are similar in terms of fuel consumption.
14. Which of the following ATFM initiatives is the most efficient in terms of minimising arrival delay?
 - (a) Ground holding.

- (b) Air holding.
(c) Level capping.
(d) All initiatives are similar in terms of arrival delay.
15. 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 CFMU, an independent and transparent service run by IATA.
(d) all answers are correct.
16. 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 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.
17. Stockholm Arlanda airport is affected by a powerful snow storm reducing, considerably, airport capacity. Which aircraft will be likely affected by ATFM regulations (if any)?
- (a) ATFM is not used when congestion affects airports.
(b) Aircraft inbound Stockholm airport.
(c) Aircraft outbound Stockholm airport.
(d) Aircraft inbound/outbound all Swedish airports.
18. In the context of ATFM, what is the CTOT (calculated take-off time)?
- (a) The original take-off time of an aircraft before it is affected by an ATFM regulation.
(b) The take-off time as calculated by the airport operator.
(c) The take-off time as calculated by the air navigation service provider.
(d) The new take-off time assigned to an aircraft affected by an ATFM regulation.
19. An airspace sector has been regulated and its maximum capacity is set to 6 aircraft per hour. Table 1 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, what is the ATFM delay that would be assigned to AZA164 according to the computed assisted slot allocation (CASA) algorithm?
- | Flight | ETO | Flight | ETO |
|--------|-------|--------|-------|
| RYR23A | 10:01 | IBE43R | 10:24 |
| DAL982 | 10:06 | ICC956 | 10:40 |
| AFR123 | 10:07 | SIA543 | 11:02 |
| AZA164 | 10:11 | BER122 | 11:05 |
- (a) No delay.
(b) 1 minute.
(c) 4 minutes.
(d) 19 minutes.
20. Taking into account the previous question, 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) SIA543
(c) AZA164
(d) IBE43R
21. Taking into account the previous question, what is the ATFM delay that would be assigned to SIA543 according to the computed assisted slot allocation (CASA) algorithm?
- (a) No delay.
(b) 2 minutes.
(c) -2 minutes.
(d) 1h and 2 minutes.
22. Pre-tactical ATFM should:
- (a) Balance flights next day with available ATC Capacity.
(b) Match long-term demand and needed ATC capacity.
(c) Manage current flights with existing ATC capacity.
(d) Define the national airspace policy and predetermined airspace structures.
23. Which of the following CFMU systems implements the Computer Assisted Slot Allocation (CASA) algorithm?
- (a) The RPL
(b) The IFPS
(c) The ETFMS
(d) The PREDICT
24. Mark the **correct** statement:
- (a) Flight information Services are provided when Air Traffic Control is provided.
(b) Flight Information Services are provided when Alert Services are provided.
(c) Air Traffic Control is provided when Alert Services are provided.
(d) All the answers are correct.
25. 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 prevent collisions between aircraft (*).
(c) To provide advice and information useful for the safe and efficient conduct of flights.
(d) the two answers labeled with (*) are correct.
26. If an aircraft declares an emergency, communicating that the fuel on board is insufficient for a safe landing, which of the following phases shall be activated?
- (a) Uncertainty phase.
(b) Alert phase.
(c) Distress phase.
(d) Awareness phase.
27. Which of the following transponder codes indicates *unlawful interference*?
- (a) 7500.
(b) 7600.
(c) 7700.
(d) None of the other answers is correct.
28. Which of the following VHF frequencies is the emergency or guard frequency?
- (a) 121.50 MHz
(b) 177.00 MHz
(c) 175.00 MHz
(d) 123.50 MHz
29. 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?
- (a) The message is a separation instruction to prevent a mid-air collision.
(b) It is a distress signal message.
(c) It is a collision hazard flight information message.
(d) It is a urgency signal message.
30. What ATIS stands for? (when talking about the provision of ATS)

- (a) Automatic Terminal Information Service.
 - (b) Aircraft Transponder Information Service (transponder mode S).
 - (c) Aircraft Transmission Incertitude System (awareness system).
 - (d) Autonomous Test for Integrity System.
31. In airspace class C, separation services are provided...
- (a) only between two conflicting VFR flights.
 - (b) only between two conflicting IFR flights.
 - (c) between two conflicting IFR flights, between an IFR conflicting with a VFR or SVFR, and between two SVFR flights.
 - (d) to all IFR and VFR flights in the airspace.
32. A VFR flight is flying inside an airspace of class D. 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 D.
33. A VFR flight is flying inside an airspace of class B. 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 B.
34. Which of the following options is NOT a source of information for the ATC?
- (a) Voice position reports.
 - (b) Surveillance systems (PSR, SSR, ADS, etc).
 - (c) Visual acquisition.
 - (d) All the other options are in fact a source of information for the ATC.
35. North Atlantic oceanic airspace is...
- (a) A free-route area.
 - (b) A free-flight area.
 - (c) An area with only RNAV airways.
 - (d) A free-route area with an organised track system (called north Atlantic tracks).
36. In the frame of ATS, who is responsible for executing transfers of aircraft between two ATC sectors?
- (a) The tactical controller.
 - (b) The supervisor controller.
 - (c) The planner controller.
 - (d) None of the other answers is correct.
37. 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.
38. 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.
39. In an hypothetical scenario with controller to pilot data link communications (CPDLC)...
- (a) there is no need for VHF radiotelephony.
 - (b) there is no need for collision avoidance systems.
 - (c) the capacity of the ATS sectors will significantly increase.
 - (d) procedural control will be mandatory.
40. What is the main consequence of **not** having atomic clocks in GPS receivers?
- (a) We need at least a fourth satellite to calculate the position of the receiver.
 - (b) We need at least a fifth satellite to calculate the position of the receiver.
 - (c) All GPS receivers, in fact, are equipped with atomic clocks.
 - (d) None of the other answers is correct.
41. Regarding the S/A (selective availability) and A/S (antispoofing) GPS functionalities...
- (a) A/S avoids spoofing by encrypting some GPS signals (*)
 - (b) S/A implements an intentional degradation of some elements in the GPS navigation message (*)
 - (c) Both answers labelled with a (*) are correct.
 - (d) None of the other answers is correct.
42. Which of these statements is correct:
- (a) The SBAS geostationary satellites compute the position of the user receiver (like, for instance an aircraft) and send this information to this user with at least 4 satellites to ensure a certain level of redundancy.
 - (b) The SBAS geostationary satellites send to the user receiver different kinds of information, which are then used by this receiver to improve integrity and accuracy in the positioning.
 - (c) The SBAS geostationary satellites only mimic the GPS satellites in order to improve the availability of the system.
 - (d) The SBAS geostationary satellites provide advanced features such as ADS-B in remote areas (like oceans).
43. Who actually computes a GPS position?
- (a) The receiver, using the information sent by the GPS satellites.
 - (b) One or more GPS satellites, using the information sent by the receiver.
 - (c) The GPS ground station, using the information sent by the receiver via the GPS satellites.
 - (d) The receiver and at least 4 GPS satellites: the receiver computes the 3D coordinates and the satellites compute the different time stamps.
44. Which is the **main reason** that explains why the aviation industry has developed ground or satellite based augmentation systems for GPS?
- (a) in order to enhance GPS positioning accuracy.
 - (b) in order to meet the requirements for integrity and continuity of service needed in civil aviation.
 - (c) in order to enhance navigation capabilities in oceanic or remote areas.
 - (d) in order to augment the coverage of GPS.
45. Regarding the Instrumental Approach Chart (IAC) **Amarillo Intl. (AMA) VOR/DME RWY 22** annexed to this exam, the minimum descent altitude for an aircraft of **Category C** in a straight-in approach is
- (a) 4080 ft.
 - (b) 3960 ft
 - (c) 500 ft
 - (d) None of the other answers is correct.
46. Regarding the same chart, the decision altitude for an aircraft of Category C in a straight-in approach is
- (a) 4080 ft.
 - (b) 3960 ft
 - (c) 354 ft
 - (d) None of the other answers is correct.

47. Regarding the same chart, the landing minima for an aircraft of **Category C** in approach to **runway 31** (yes!, runway 31) are:
- 4080 ft altitude and 1.5 statute miles of visibility.
 - 4080 ft altitude and 1 statute mile of visibility.
 - 3960 ft altitude and 0.5 statute miles of visibility.
 - 400 ft altitude and 0.5 statute miles of visibility.
48. Regarding the same chart, an aircraft starting an approach at the DEXBE IAF will execute, as initial approach segment:
- a base turn reversal procedure.
 - a racetrack procedure.
 - a direct approach following the VOR PNH.
 - a 45/180 reversal procedure.
49. Regarding the same chart, an aircraft starting an approach at the JILPY IAF will execute, as initial approach segment:
- a 45/180 reversal procedure folowed by a DME arc.
 - a DME arc.
 - a racetrack procedure folowed by a DME arc.
 - a direct approach following Radial 176 of PHN VOR.
50. Regarding the same chart, the final approach segment is
- a NDB course.
 - a dead-reckoning leg.
 - a VOR (or TACAN) radial.
 - there is no final segment in this procedure.
51. Regarding the same chart, the holding fix of the holding procedure defined at the end of the missed approach procedure is defined by:
- the intersection of two NDB courses.
 - the intersection of two VOR radials.
 - the intersection of a VOR radial and a DME arc.
 - the PNH VOR/DME facility.
52. Regarding the same chart, imagine an aircraft established in the final approach segment for runway 22 and in present strong wind conditions **from the south**. If we assume that the pilot is correctly using the final approach radionavigation guidance, the **heading** of the aircraft will be:
- approximately 055
 - approximately 235
 - greater than 235
 - smaller than 235
53. Regarding the same chart, imagine an aircraft established in the final approach segment for runway 22 and in present strong wind conditions **from the south**. If we assume that the pilot is correctly using the final approach radionavigation guidance, the **track** of the aircraft will be:
- approximately 055
 - approximately 235
 - greater than 235
 - smaller than 235
54. Regarding the same chart, imagine an aircraft is instructed to hold at JILPI after executing the missed approach procedure. The aircraft will enter the hold with...
- a racetrack entry procedure.
 - a direct or offset entry procedure.
 - an offset or parallel entry procedure.
 - a parallel or direct entry procedure.
55. Regarding the same chart, how is the MAPt defined?
- in this procedure, there is no MAPt.
 - the MAPt is defined over the PNH VOR/DME facility at the MDA.
 - the MAPt is defined at the intersection $235^{\circ}/0.5\text{NM}$ of PNH VOR/DME and at the MDA.
 - the MAPt is defined by a timing of 0.5 minutes after overflying the FAF and at the MDA.
56. Regarding the same chart, how is the FAF defined?
- in this procedure, there is no FAF.
 - the FAF is defined over PNH VOR/DME.
 - the FAF is defined at the intersection $235^{\circ}/0.5\text{NM}$ of PNH VOR/DME.
 - the FAF is defined at the intersection $235^{\circ}/5\text{NM}$ of PNH VOR/DME.
57. Regarding the same chart, the area P-47 that appears North of the IAF DEXBE is...
- a Dangerous area.
 - a Parachuting area.
 - a Prohibited area.
 - a Restricted area.
58. Regarding the same chart, which of the following statements is correct?
- The approach starting at DEXBE is a circling-to approach, while the approach starting at JILPY could be a straight-in approach.
 - The approach starting at JILPY is a circling-to approach, while the approach starting at DEXBE could be a straight-in approach.
 - Both approaches starting at JILPY and DEXBE are circling-to approaches.
 - Both approaches starting at JILPY and DEXBE could be straight-in approaches.
59. An APV is a:
- an approach with vertical guidance but with navigation performance worse than precision approaches.
 - a RNAV non precision approach.
 - a circling to approach.
 - a visual approach.
60. Regarding an approach procedure, which of the following items is a responsibility of the aircraft operator
- to compute the minimum descent altitude or decision altitude.
 - to compute the obstacle clearance altitude.
 - to compute the minimum safety distance with other conflicting procedures in the same area.
 - all other answers are correct.
61. The MDA...
- is the altitude that once reached the pilot must decide whether to continue or abort a non-precision approach.
 - is the minimum altitude to overfly the runway threshold, just before landing.
 - is the minimum altitude for circling approaches, while the DA is the minimum altitude for straight-in approaches.
 - None of the other answers are correct.
62. The OCA...
- is the safety margin between the aircraft and the highest obstacle in the final approach segment.
 - is the minimum visibility required for an instrumental approach procedure.
 - is a synonym of minimum descent altitude.
 - None of the other answers are correct.
63. In a Localizer only approach procedure, the decision to land or to execute a missed approach must be taken, at the latest...
- when reaching the MDA.
 - when reaching the DA.
 - when reaching the OCA.

- (d) when reaching the MAPt.
64. In which case you will find a non-precision approach procedure with no FAF?
- in case the approach can only be executed as a circling to approach.
 - in case the initial segment consists in a 45/180 procedure turn given by some timing and there is no intermediate segment.
 - in case the glide slope is not available.
 - in case there is no final segment.
65. In which of the following procedures the final approach segment will start at the FAP?
- In an ILS approach.
 - In a VOR approach.
 - In a Localizer approach.
 - In any approach that the intermediate segment ends at the *end of turn*.
66. A racetrack procedure...
- is a type of holding pattern.
 - could be, for instance, a 45/180 procedure turn.
 - is when an aircraft uses an active runway to taxi in the opposite direction from which it will take off or has landed.
 - None of the other answers is correct.
67. 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 VOR/DME.
 - A NDB.
 - A Locator.
 - All three radionavigation aids are valid.
68. In a precision approach, the final segment ends:
- at the MAPt.
 - at the FAF or FAP.
 - at the end of turn.
 - when reaching the DA while following the final approach track.
69. Imagine a 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 **aviate** function of the aircraft crew would be:
- to safely control the aircraft trajectory with the loss of power and to manage to extinguish the fire and shut down the engine.
 - to check if there is a contingency departure published for that airport and execute it.
 - to send a distress message to the air traffic control.
 - to revert to manual control and visual flight to safely land as soon as possible.
70. The direction, with respect to the North, that join two waypoints (or fixes), is called...
- track.
 - heading.
 - course.
 - bearing.
71. Which of the following sentences is correct?
- In IMC an aircraft must always fly according to VFR.
 - In VMC an aircraft must always fly according to IFR.
 - In IMC an aircraft can fly according to IFR or VFR.
 - In VMC an aircraft can fly according to IFR or VFR.
72. In which situation the effect of the wind will have a bigger impact on the actual trajectory flown by an aircraft?
- when flying a dead reckoning leg.
 - when flying an NDB course.
 - when flying a VOR radial.
 - when flying a DME arc.
73. Which of the following statements is **false**?
- Not all airports have published STARs.
 - Not all airports have published SIDs.
 - In general, all aircraft begin the descent when overflying the first fix of the STAR.
 - A SID procedure can only be executed in IFR.
74. Which of the following answers enumerate three different legs of the standard airfield traffic pattern?
- downwind, base and final.
 - VOR radial, DME arc and NDB course.
 - inbound, outbound and timing.
 - racetrack, reversal and dead-reckoning.
75. Which of the following actions has a more strategic nature in the context of air traffic management?
- The majority of the tasks done by the planner air traffic controller.
 - The design and implementation of ATS sectorisations.
 - Air traffic flow management.
 - The majority of the tasks done by the ATC supervisor.
76. Which of the following items highly depends on the CNS (communications, navigation and surveillance) infrastructure available?
- The design of ATS sectors.
 - the on-board cooperative collision avoidance systems.
 - the international radiotelephony alphabet.
 - the ATFM slot allocation algorithm.
77. Imagine Barcelona's El Prat airport (which has 3 runways). The airport needs to do some maintenance in runway 07L-25R meaning this runway will be closed for a whole week. This fact is known with a couple of months in advance. Which of the following answers is correct?
- Some airlines will be forced to cancel some flights arriving/departing Barcelona airport.
 - Some airlines will be forced to deviate some flights to surrounding airports, such as Girona or Reus airports.
 - Very likely, there will be ATFM delays for flights leaving from or arriving to Barcelona airport.
 - Very likely, Barcelona airport will reduce the number of IATA slots allocated for that week.
78. Which of the following statements is correct?
- Tromboning procedures in terminal airspace are mainly designed to improve the efficiency of the flights, if compared with continuous descent operations.
 - Tromboning procedures in terminal airspace are mainly designed to improve airspace and airport capacity, if compared with holding patterns.
 - Tromboning procedures in terminal airspace are one of the collision avoidance layers.
 - All other answers are correct.
79. 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.
80. The TCAS is conceived as
- a procedural separation system.
 - a self-separation assurance system.
 - a cooperative collision avoidance system.
 - All answers are correct.

INFRASTRUCTURES DEL TRANSPORT AERI (ITA)

Final Exam - Spring semester 2019

Correct answers

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

P 49	b	c	b	d
P 50	c	c	d	b
P 51	c	d	d	a
P 52	d	c	d	b
P 53	b	a	d	d
P 54	c	d	c	a
P 55	c	a	b	c
P 56	d	a	d	c
P 57	c	c	d	d
P 58	d	a	c	c
P 59	a	a	a	d
P 60	a	b	d	b
P 61	d	d	b	a
P 62	d	a	c	d
P 63	d	a	a	b
P 64	b	b	a	a
P 65	a	c	a	a
P 66	d	d	d	a
P 67	d	d	d	b
P 68	d	a	b	a
P 69	a	c	a	a
P 70	c	b	a	c
P 71	d	d	a	c
P 72	a	a	b	a
P 73	c	d	b	d
P 74	a	c	a	d
P 75	b	a	d	c
P 76	a	d	b	b
P 77	c	c	a	b
P 78	b	c	c	b
P 79	c	c	a	a
P 80	c	c	c	c