



AIRPORT & AVIATION SERVICES (SRI LANKA) LIMITED
CIVIL AVIATION TRAINING CENTRE –SRI LANKA
Air Traffic Services Training Wing
Area Control (Non RADAR) Course – ICAO 055
Final Examination
Area Control Practices and Procedures 2

Time: 3 hours

Friday the 03rd May 2019

Index No:

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Answer all questions

Q.1 Choose the correct answer

1) Choose from below the standard phraseology used by an aircraft to indicate that it is confronted either with a distress or urgency situation.

- I. The words 'MAY DAY' transmitted 3 times at the beginning of an 'Urgency situation' and the words 'PAN PAN' transmitted 3 times at the beginning of a 'Distress Situation'
- II. The words 'S.O.S.' transmitted 3 times at the beginning of a 'Distress situation' and the transmission of the words 'PAN PAN' 3 times at the start of a 'Urgency Situation'
- III. The words 'MAY DAY' spoken 3 times at the start of an 'Distress Situation' and the words 'S.O.S' spoken 3 times at the start of an 'Urgency Situation'
- IV. The words 'MAY DAY' spoken 3 times at the beginning of a 'Distress transmission' and the words 'PAN PAN' spoken 3 times at the beginning of an 'Urgency transmission'

2) Select the correct frequency for Chennai Area Control Frequency

- I. 132.5 MHZ
- II. 132.5 KHZ
- III. 134.25 MHZ
- IV. 134.25 KHZ

3) Over high terrain or mountainous areas, where no minimum flight altitude has been established, flights in accordance with IFR shall be flown at a level which is at least

- I. 1 000 ft above the highest obstacle located within 8 km of the estimated position of the aircraft.
- II. 2 000 ft above the highest obstacle located within 8 km of the estimated position of the aircraft.
- III. 1 000 ft above the highest obstacle located within 10 NM of the estimated position of the aircraft.
- IV. 2 000 ft above the highest obstacle located within 10 NM of the estimated position of the aircraft.

4) When does Air Traffic Control Services have the responsibility to prevent collisions with terrain?

- I. ATS only provides prevention when an aircraft is flying IFR in IMC.
- II. Always when ATS are provided.
- III. ATS never prevent collisions with terrain.
- IV. When a flight in accordance with IFR is vectored by RADAR.

5) Chose the correct order of voice circuit estimate message between Colombo and Melbourne

- I. Aircraft identification, Flight level, FIR boundary position and time, Assigned Mach Number
- II. Aircraft identification, FIR boundary position and time, Flight level, Assigned Mach Number
- III. Aircraft identification, FIR boundary position and time, Assigned Mach Number, Flight level
- IV. None of above

6) Chose the correct statement

- I. Male Control operating frequency is 128.3 MHZ.
- II. Flights departing from Male to Colombo the estimates shall be passed 30 minutes prior to the TCP.
- III. No PDC levels on route P762 west bound is FL320 and, east bound is FL290
- IV. On route L896 FL290 not available for east bound and FL 300 not available for west bound traffic.

7) Choose the incorrect statement

- I. In the event of a requested level being occupied or is not available as informed by the adjacent FIR, an alternative flight level should be offered.
- II. In order to assist in establishing separation, pilots may be requested to provide ad- hoc position information in addition to routine position reports.
- III. Controllers should avoid Entering into non-operational conversation with pilots.
- IV. To ensure that successive climbing aircraft maintain the required vertical separation during climb, a limiting rate of climb (R.O.C) instruction should not be issued.

8) Coordination requirements for ATS Route N628 are

- I. West bound traffic Colombo ACC transfer primary guard to Male ACC at DADAR
- II. West bound traffic Colombo should not pass any estimate to Melbourne
- III. East bound traffic Male ACC Transfer Primary guard to Colombo ACC at SABEK
- IV. East bound traffic Melbourne shall pass the estimate for DADAR to Colombo at least 30 minutes prior to DADAR

9) Pick the incorrect statement regarding ATS route designation system

- I. Permit the identification of any ATS route in a simple and unique manner
- II. Avoid redundancy
- III. Does not necessarily have to be usable by both ground and airborne automation systems
- IV. Provide sufficient possibility of extension to cater for any future requirements without the need for fundamental changes

10) Pick the incorrect statement regarding Oceanic Flight Information Regions

- I. Airspace over International waters where no individual state claim authority is divided into Oceanic Flight Information Regions and delegated to the largest controlling facility bordering that region.
- II. The division among facilities is done by international agreement through ICAO
- III. There is no standard size for FIRs.
- IV. In some cases, there is a vertical division of the FIR, in which case the airspace above is named Upper Information Region (UIR).

(10 Marks)

Q. 2 Mark the following statements True or False.

- 1) ACC shall not provide identification, type and point of departure of arriving traffic. (True/False)
- 2) For flights not departing from Colombo or Male the estimates shall be passed 30 minutes prior to the TCP and, for flights departing from Colombo or Male the estimates shall be passed 15 minutes prior to the TCP. (True/False)
- 3) Estimate shall be passed to Jakarta control 20 minutes prior to common FIR boundary on routes P570, L896, P756, M300 and on route P627 it is 30 minutes prior to common FIR boundary. (True/False)
- 4) Unit providing approach control service shall keep the ACC promptly advised on lowest vacant level at the holding fix available for use by ACC. (True/False)
- 5) Information on arriving aircraft shall be forwarded not less than 30 minutes before ETA and shall be revised as necessary. (True/False)
- 6) Aeronautical Mobile Service is a mobile service between aeronautical stations and aircraft stations, or between aircraft stations. (True/False)
- 7) The EAT shall be transmitted to aircraft well in advance and preferably not later than at the commencement of its initial descent from cruising level. (True/False)
- 8) The transition from a conventional ATS route to User Preferred Route or vice versa must take place at a published waypoint on a conventional ATS route segment. (True/False)
- 9) Approach shall inform ACC promptly regarding average time intervals or distance between successive arrivals as determined by the unit providing approach control service. (True/False)
- 10) The buffer area of a holding pattern is the area extending 5.0 NM beyond the boundary of the holding area. (True/False)

(10 Marks)

Q.3

- a) What are the three primary responsibilities of a regular station in a radio telephony network?
1. *Be responsible for designating suitable primary and secondary frequencies for its communications with the aircraft.*
 2. *Receive all position reports and handle other messages from and to the aircraft essential to the safe conduct of the flight.*
 3. *Be responsible for the action required in case of failure of communications.*
- (06 Marks)**
- b) When an aeronautical station has been unable to establish contact with an aircraft station after calls on the frequencies on which the aircraft is believed to be listening, what are the two immediate actions that has to be taken by the aeronautical station?
1. *Request other aeronautical stations to render assistance by calling the aircraft and relaying traffic.*
 2. *Request other aircraft on the route to attempt to establish communication with the aircraft and relay traffic.*
- (04 Marks)**

Q.4

- I. State 4 factors to be considered before giving an EAT to an aircraft.
- I. *ETA or flight status – Emergency/Hospital/VVIP*
 - II. *Elapsed time for the flight*
 - III. *Level/Route*
 - IV. *Type of aircraft (faster aircraft is given priority)*
 - V. *Prevailing weather conditions (Turbulence/Thunderstorms)*
 - VI. *Conditions of Runway and Ground Visibility*
- (4 Marks)**
- II. Explain Onward Clearance time.
- The time at which an aircraft can expect to leave the holding fix at which it is being held.*
- (2 Marks)**
- III. 'HZAKD'/CL60 is inbound to Katunayake from WIII and makes initial contact with you over position 'GODAV' at F320. Since you have a doubt with regard to the Aircraft's RVSM status you verify the fact with the aircraft. In response 'HZAKD' says he is not RVSM approved but advises you that he is an Ambulance Aircraft. State the ensuing phraseology that would take place between you as the duty Area controller and the Aircraft.
- "HZAKD, Colombo Airways, confirm RVSM approved"*
- "Colombo Airways, HZAKD negative RVSM, ambulance mission/ ambulance aircraft"*
- (2 Marks)**

- IV. If an aircraft informs you that he is on a TCAS RA while being under your control what should your immediate action be? Assume the aircraft in question is UAE348 and you've just asked him to climb to F350 to which he responds by saying he's on a TCAS RA and unable to comply with your instructions. State the ensuing phraseology that would take place while adhering to the TCAS RA and once clear of conflict.

"Colombo airways, UAE348, Unable TCAS RA"

"UAE348, Airways, Roger"

"Colombo UAE348 clear of conflict, resuming climb F350"

(3 Marks)

Q.5

- a) What is a Position report?

A report over a known location as transmitted by an aircraft to ATC.

(1 Mark)

- b) when can an aircraft be exempted from making a position report?

Under conditions specified by the appropriate ATS authority, flights may be exempted from the requirement to make position reports at each designated compulsory reporting point or interval. This is intended to apply in cases where adequate flight progress data are available from other sources, e.g. radar or ADS-B, or ADS-C.

(2 Marks)

- c) To whom should a flight make its' position report?

The position reports shall be made to the ATS unit serving the airspace in which the aircraft is operated. In addition, when so prescribed by the appropriate ATS authority in aeronautical information publications or requested by the appropriate ATS unit, the last position report before passing from one FIR or control area to an adjacent FIR or control area shall be made to the ATS unit serving the airspace about to be entered.

(2 Marks)

- d) Name the contents of a voice position report

The position reports shall contain the following elements of information, except that elements d), e) and f) may be omitted from position reports transmitted by radiotelephony, when so prescribed on the basis of regional air navigation agreements.

a) Aircraft identification

b) Position

c) Time

d) Flight level or altitude, including passing level and cleared level if not maintaining the cleared level

e) Next position and time over

f) Ensuing significant point

(3 Marks)

e) What is a routine air report?

*When operational and/or routine meteorological information is to be included in a position report it assumes the form of a routine **air-report**.*

(2 Marks)

Q.6

1) Fill in the blanks using correct words given below.

Common, agreed solution, art of communicating, planning, co-ordination.

Coordination is the art of communicating with another with a view of reaching an agreed solution to a common Problem without coordination, planning has no meaning.

(4 Marks)

2) Give the four stages of the dialog effected between successive ATC units.

- a) Notification of the flight in order to prepare for coordination as necessary.*
- b) Coordination of conditions of transfer of control by the transferring ATC unit.*
- c) Coordination, if necessary and acceptance of conditions of transfer of control by the accepting ATC unit.*
- d) The transfer of control to the accepting ATC unit or control sector.*

(2 Marks)

3) Give a brief coordinating procedure for traffic on route N628 Eastbound and Westbound separately.

West Bound—

Colombo shall relay the estimate for DADAR to Melbourne prior to the aircraft passing KETIV. Melbourne provide Male Control with an estimate for SABEK. Colombo transfer primary guard to Male at SABEK.

After passing DADAR estimate to Melbourne Colombo has to coordinate any level change with Melbourne prior to issue.

East Bound—

Melbourne shall pass the estimate for SABEK to Colombo at least 30 minutes prior to SABEK.

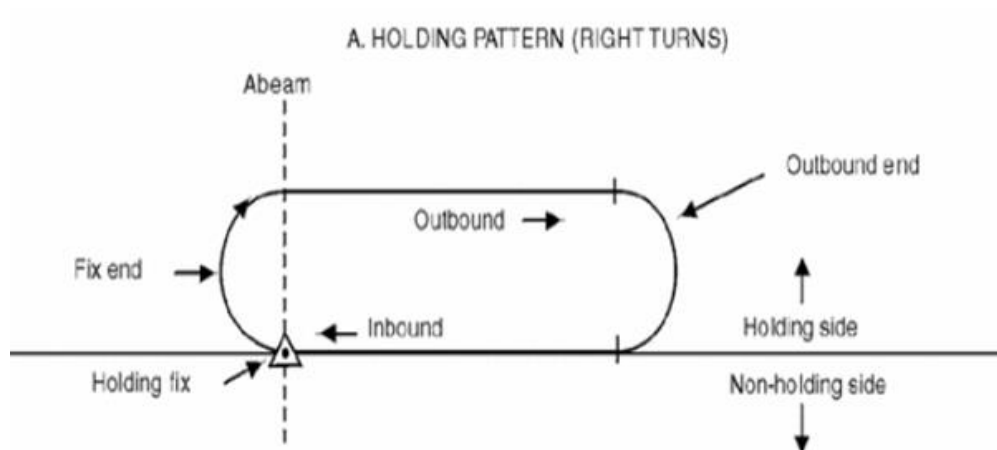
Male transfer primary guard to Colombo at SABEK.

Until aircraft passes BASEV, Colombo shall coordinate all level changes with Melbourne prior to issue.

(4 Marks)

Q.7

a) Draw a diagram of a Holding pattern and name the sectors

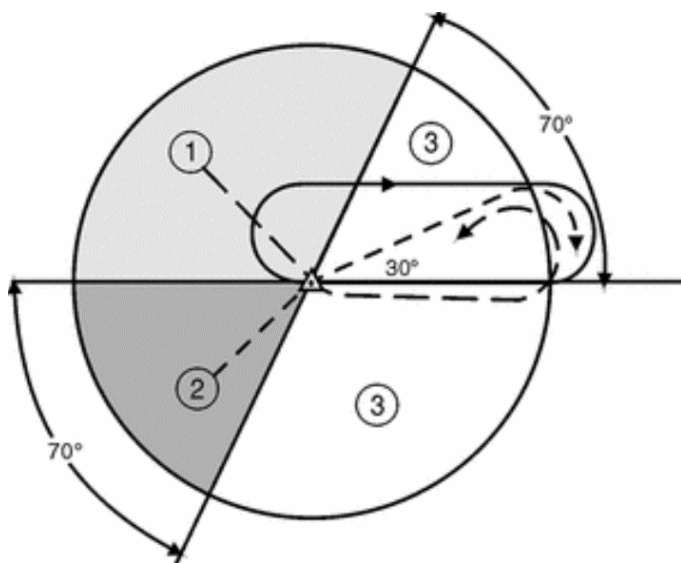


(4 Marks)

b) Name the three entry Procedures to Holding Pattern, draw the diagram and describe one.

- a) *Parallel Entry*
- b) *Offset Entry*
- c) *Direct Entry*

(3 Marks)



Parallel Entry (Sector 1 Procedure):

Having reached the fix, the aircraft is turned left onto an outbound heading for the appropriate period of time then the aircraft is turned left onto the holding side to intercept the inbound track or to return to the fix and then on second arrival over the holding fix, the aircraft is turned right to follow the holding pattern.

Offset Entry (Sector 2 Procedure):

a) Having reached the fix, the aircraft is turned onto a heading to make good a track making an angle of 30° from the reciprocal of the inbound track on the holding side; then

b) The aircraft will fly outbound:

1. For the appropriate period of time, where timing is specified, or

2. Until the appropriate limiting DME distance is attained, where distance is specified, or

3. Where a limiting radial is also specified, either until the limiting DME distance is attained or until the limiting radial is encountered, whichever occurs first; then

c) The aircraft is turned right to intercept the inbound holding track; then

d) On second arrival over the holding fix, the aircraft is turned right to follow the holding pattern.

Direct Entry (Sector 3 Procedures)

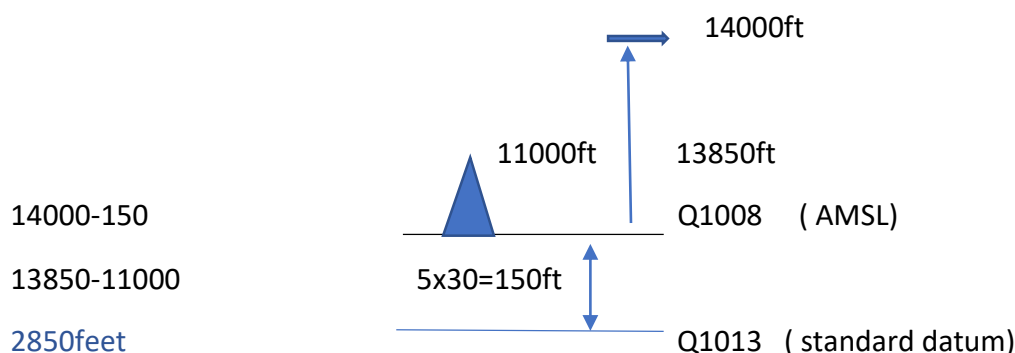
Having reached the fix, the aircraft is turned right to follow the holding pattern.

(3 Marks)

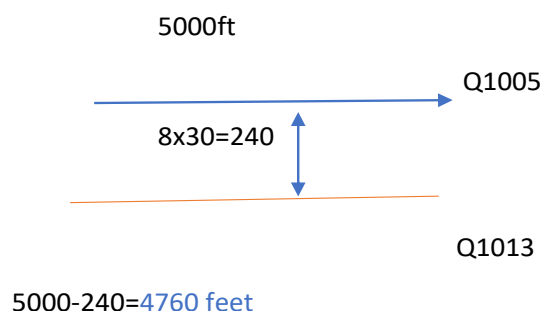
Q.8 For following questions use QNE is 1013 Mb and 1Mb = 30ft

- 1) An aircraft flying at FL140 and it is flying over a mountain of 11000ft above mean sea level, when the QNH is 1008 what will be the actual terrain clearance of that aircraft

(2 Marks)



- 2) When an Aircraft is coming to land and asked to hold at 5000ft, pilot forgot to change his pressure altitude setting to QNH which is 1005 what will be the actual altitude he is holding over that air field.



(3 Marks)

3) Fill in the blanks

- i) Elevations: Vertical position of a Point or a level, on or affixed to the surface of the earth, measured from the mean sea level.

(1 Mark)

- ii) Flight Level: A surface of constant atmospheric pressure, which is related to a specific pressure datum of 1013.2 millibars and is separated from other such surfaces by specific pressure intervals.

(1 Mark)

- iii) The transition level shall be the lowest flight level available for use above the transition altitude.

(1 Mark)

- iv) Minimum thickness of the transition layer should not be less than 1000 feet.

(1 Mark)

- v) Except when specifically authorized by the appropriate authority, cruising levels below the minimum flight altitude established by the State shall not be assigned.

(1 Mark)

Q.9

- a) Describe briefly the purpose for establishing an Air Defense Identification Zone.

Air Defense Identification Zones (ADIZ) are airspaces established over land or over water for the purpose of identification, location, and control of civil aircraft in the interest of national security.

(3 Marks)

- b) Write down expected actions from the air traffic control unit according to the governing regulations regarding AIDZ in respect of

- i) A departing aircraft going out of the departure aerodrome for more than 5 nautical miles.

- *For all departing aircraft going out of the departure aerodrome for more than 5 NM, the tower controller shall coordinate with the Air Defense Command and Control Centre and obtain an ADC number for the particular flight.*
- *The ADC number shall be passed to the pilot with the start-up clearance.*

(2 Marks)

ii) An overflying aircraft entering ADIZ from outside the territory & territorial waters.

- *For all flights entering ADIZ from outside the territory & territorial waters, the Area Controller at the Area Control center shall coordinate with the Air Defense Command and Control Center and obtain an ADC number.*
- *The ADC number shall be passed to the pilot before entering the ADIZ.*

(2 Marks)

c) A small portion of airspace in Chennai FIR adjacent to North-Western boundary to Colombo has been delegated to Sri Lanka for the purpose of providing air traffic control service. What are the vertical limits of that portion of airspace?

- *From 10 000ft to FL460*

(1 Mark)

d) What are the minimum requirements an aircraft need to fulfill in order to be considered eligible for filing a flight plan to fly on a User Preferred Route within the Colombo portion of the Arabian Sea Indian Ocean UPR Geographic zone?

- *RNP10 Certified*
- *ADS-C / CPDLC capable*

(2 Marks)

Q 10.

a) ATS routes are defined by route specifications of which ATS route designator is an integral part. Write down two other elements in a route specification.

- *The track to or from significant points (waypoints)*
- *Distance between significant points*
- *Reporting requirements*
- *The lowest safe altitude*

(2 marks for any two from above list)

b) ICAO mandates that each ATS route shall be designated by a route designator, which consists of a basic route designator and some additional components.

i. Explain what is denoted by the supplementary letter added after the basic designator

It indicates the type of service provided along the route or on a portion of the route as applicable.

(2 Marks)

ii. There are four basic types of routes under which the route designators are categorized. Each of these types are identified by a character in the basic route designator. Write down two such route types, giving one possible character for each category

- *A, B, G, R for routes which form part of the regional networks of ATS routes and are not area navigation routes*
- *L, M, N, P for area navigation routes which form part of the regional networks of ATS routes*
- *H, J, V, W for routes which do not form part of the regional networks of ATS routes and are not area navigation routes*
- *Q, T, Y, Z for area navigation routes which do not form part of the regional networks of ATS routes.*

(4 marks for any two of the above four)

c) Certain selected significant waypoints established along ATS route segments are sometimes used as reporting points.

Write down four factors to be considered when establishing a waypoint as a reporting point.

- *the type of air traffic services provided*
- *the amount of traffic normally encountered*
- *the accuracy with which aircraft are capable of adhering to the current flight plan;*
- *the speed of the aircraft*
- *the separation minima applied*
- *the complexity of the airspace structure*
- *the control method(s) employed*
- *the start or end of significant phases of a flight (climb, descent, change of direction, etc.)*
- *transfer of control procedures;*
- *safety and search and rescue aspects;*
- *the cockpit and air-ground communication workload.*

(2 marks for any four from the above list)

Moderated by

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