



**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**

**Search and Rescue & Procedures related to Emergencies,  
Communication Failure and Contingencies**

**Monday the 06<sup>th</sup> May 2019**

**Time: 3 hours**

**Index No:**

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**Answer all questions**

**Q 1.** Select the correct answer.

- I. Pilot has reported PAN PAN three times while flying along the M300 state the reason
  - a) For Urgency
  - b) For Emergency
  - c) Both a) and b)
  - d) None of the above
  
- II. Pilot has reported MAY DAY three times state the reason
  - a) For Urgency
  - b) For Emergency
  - c) Both a) and b)
  - d) None of the above
  
- III. When an unlawful Interference taken place in the cockpit pilot in command will Squawk
  - a) A7400
  - b) A7500
  - c) A7600
  - d) A7700
  
- IV. When there is an emergency decent made by an aircraft the pilot in command will Squawk
  - a) A7400
  - b) A7500
  - c) A7600
  - d) A7700

- V. When a Radio Communication Failure is experienced by the pilot in command, he/she will Squawk
- a) A7400
  - b) A7500
  - c) A7600
  - d) A7700
- VI. If pilot in command reported “smoke in cockpit”, what you should not execute as an air traffic controller
- a) Keep all the other aircraft away from the particular aircraft.
  - b) Provide shortest route to approach to the aerodrome.
  - c) Ask the aircraft to descend immediately to 10,000 feet.
  - d) Provide weather information and the available runway length of the aerodrome.
- VII. If VFR aircraft experienced a radio communication failure that aircraft will
- 1) continue to fly in visual meteorological conditions
  - 2) land at the nearest suitable aerodrome
  - 3) report its arrival by the most expeditious means to the appropriate air traffic control unit

Choose the correct statement

- a) Only 1) and 2) Correct
  - b) Only 1) and 3) correct
  - c) All correct
  - d) All incorrect
- VIII. Choose the correct statement out of following regarding the National SAR Organization
- 1) Member States obliged to provide coordination & SAR services in their territories & territorial waters.
  - 2) SAR services available on 24hrs basis.
  - 3) Each State shall establish SRR/RCC
- a) Only 1) and 2) Correct
  - b) Only 1) and 3) correct
  - c) All correct
  - d) All incorrect

- IX. Choose the most appropriate description regarding the Alerting Post
- a) Established to receive information from the general public regarding aircraft in emergency
  - b) Established to forward the information to the associated Rescue Coordination Centers
  - c) Both above statements are correct
  - d) Both above statements are incorrect
- X. If pilot in command reported that the aircraft has a bomb threat, what you should not execute as an air traffic controller
- a) Keep all the other aircraft away from the particular aircraft.
  - b) After landing send the aircraft to a remote bay
  - c) Provide shortest route to approach to the aerodrome and provide weather information and the available runway length of the aerodrome.
  - d) Send the aircraft to rural aerodrome to reduce the risk to other property

**Q 2.** State the below mentioned statement is True or False

- 1) If pilot reported MAY DAY three times controller will reply as “Roger May Day” three times and initiate priority according to the nature of the emergency. (True/False)
- 2) If Pilot reported PAN PAN three times controller will initiate priority according to the nature of the urgency. (True/False)
- 3) An aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, it shall not be given priority over other aircraft. (True/False)
- 4) Rescue Sub Center (RSC) is established to improve the efficiency of SAR Services within a Search and Rescue Region (SAR) (True/False)
- 5) If an aircraft is dumping fuel due an emergency aircraft should maintain a minimum height of 5000 feet. (True/False)
- 6) Distress Phase is defined as a situation wherein, there is a reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance. (True/False)
- 7) Essential traffic is the control traffic to which the provision of separation by ATC is applicable, but which is in relation to a particular controlled traffic does not have the required minimum separation. (True/False)

- 8) If an aircraft flying from WSSS to VCBI is deviating more than 10 NM left without informing to the ATC unit, pilot in command should climb 300 feet from his current level and deviate. (True/**False**)
- 9) If an aircraft is unable to continue flight in accordance with its air traffic control clearance, a revised clearance shall, whenever possible, be obtained prior to initiating any action, using a distress or urgency signal as appropriate. (**True**/False)
- 10) If an aircraft is subject to unlawful interference, the pilot-in-command shall attempt to land as soon as practicable at the nearest suitable aerodrome. (**True**/False)

**(10 Marks)**

### **Q.3**

ALK501 A330, VCBI to EGLL will report port engine failure when passing FL200. What will be the action of the pilot and Controller? Explain separately.

#### *Pilot Action*

- I. Pilot will follow the golden rule during an emergency "Aviate, Navigate & Communicate"*
- II. Will Declare "PAN,PAN"*
- III. Will request to come to the nearest suitable airport, VCBI.*

**(3 Marks)**

#### *Controller Action*

- I. Acknowledge "PANPAN" by saying Roger PANPAN*
- II. Issue a clearance with negative restrictions (Continuous decent), to the nearest runway considering the position of the above aircraft and the wind factor. Keep all the other conflicting traffic away from the aircraft.*
- III. Obtain the remaining fuel on board.*
- IV. Effect coordination with Colombo Approach & BIA Tower.*
- V. Coordinate with approach unit to Facilitate if there is a requirement for fuel dumping.*
- VI. Cancel the estimate with the downstream ATC unit.*
- VII. Ensure the transmission of an Arrival message after the landing of the emergency aircraft.*

**(7 Marks)**

#### Q.4

An aircraft experiencing depressurization, will commence an emergency decent. Explain the ATC actions in the correct sequence to assist the aircraft.

**(10 Marks)**

- I. *Facilitate a continuous decent to 10, 000 ft. Provide the information of any minimum sector altitude restrictions above 10,000ft. Do not transfer the Aircraft to the next sector during the decent phase. (2 marks)*
- II. *Keep all other aircraft away from the emergency descending aircraft.*
- III. *Request the aircraft whether it is a MAY DAY or PAN PAN if aircraft has not declared. (2 marks)*
- IV. *If the traffic density is high transfer all the other aircraft to another frequency.*
- V. *When the aircraft is at 10,000 ft, request the pilot whether continuing with MAY DAY or downgrading to PAN PAN. (2 marks)*
- VI. *Provide Aerodrome information such as weather, runway in use, type of approach or any other essential traffic information.*
- VII. *Inform Approach and Tower according to the emergency situation at 10,000 ft.*

**Question i),iii) and v) will be given two marks each all the others one mark each.**

#### Q.5

An aircraft experiencing smoke in the cockpit, will commence an emergency decent. Explain the ATC actions in the correct sequence to assist the aircraft.

**(10 Marks)**

- i) *Facilitate a continuous decent to 10, 000 ft. Provide the information of any minimum sector altitude restrictions above 10,000ft. Do not transfer the Aircraft to the next sector during the decent phase. (2 marks)*
- ii) *Keep all other aircraft away from the emergency descending aircraft.*
- iii) *Request the aircraft whether it is a MAY DAY or PAN PAN if aircraft has not declared. (2 marks)*
- iv) *If the traffic density is high transfer all the other aircraft to another frequency.*
- v) *When the aircraft is at 10,000 ft, request the pilot whether continuing with MAY DAY or downgrading to PAN PAN. Request the pilot whether a frequency transfer is possible, prior to the transfer to the next sector. If not keep the aircraft with the existing unit until the aircraft is capable for a frequency transfer. (2 marks)*
- vi) *Provide Aerodrome information such as weather, runway in use, type of approach or any other essential traffic information.*
- vii) *Inform Approach and Tower according to the emergency situation at 10,000 ft.*

### Q.6

An aircraft is entering VCCF via position DOGAR, with all prior coordination with Melbourne. But the aircraft failed to contact Colombo via CPDLC or HF. List down the ATC actions in such an event.

**(10 Marks)**

- I. Request Colombo Radio to raise the aircraft on Colombo HF*
- II. Check with Melbourne centre whether the aircraft was transferred via data-link and with correct Colombo High Frequencies.*
- III. Request Brisbane Radio to raise the aircraft on Brisbane HF.*
- IV. Request to raise the aircraft from the aircraft in the vicinity via the inter pilot frequency 123.45 or 121.50.*
- V. Request the operator to raise the aircraft via Satcom or ACARS.*

**(Two marks each)**

### Q.7

ALK 501 from VCBI to EGLL, was expected to call Colombo Airways on 124.90. A/C was not in contact on 124.90. List down the ATC actions in such an event.

**(10 Marks)**

- I. Raise ALK 501 on 124.9 and the other available frequencies 126.0 and 121.5*
- II. Check with Colombo director, whether the aircraft is still on the director frequency.*
- III. Check with Colombo Tower whether the aircraft is with TWR frequency.*
- IV. Check with Trivandrum control whether the aircraft is on the Trivandrum frequency.*
- V. Check with Colombo Radio and request to raise on HF frequencies.*
- VI. Check with Sri Lankan, Flight operations whether the aircraft is on the operations frequency or if not raise through ACARS.*
- VII. Request from the ATC units having surveillance systems to observe whether ALK501 is squawking A7600*
- VIII. Transmit blind to ascertain whether it is a full or a partial communication failure, by requesting to acknowledge the blind transmission, by requesting the pilot to press the transmitter of the aircraft twice or request the aircraft to carry out a specific maneuver and observe for the confirmation of the type of com – failure.*
- IX. If the com-failure is partial, continue to provide air traffic control service, if not initiate, INSERFA*
- X. Keep all the other ATC units informed including the destination aerodrome.*
- XI. Monitor the AFTN messages to receive an Arrival message to ensure that the aircraft has landed.*

### Q.8

- I. What are the main components of a “Global SAR System”?

- 1) ICAO
- 2) IMO
- 3) SRR
- 4) RCC

(2 Marks)

- II. Define the Search and Rescue Region (SRR)

*Is an area of defined dimensions within which SAR services is provided.*

(1 Marks)

- III. Fill in the blanks kept below of the article 25 of Chicago Convention

Each contracting state is required to establish a Search and Rescue Organization for assisting aircraft in distress and to provide search and rescue services within its territories and territorial waters and, if applicable, over specified search and rescue regions.

(4 Marks)

- IV. Mention Three (03) other Annexes to convention on international civil aviation, which supports/assists Annex 12 (Search & Rescue) in organizing and conducting of SAR related activities in respective SRR's.

- I. Annex 2
- II. Annex 6
- III. Annex 9
- IV. Annex 10
- V. Annex 11

(3 Marks)

### Q.9

- I. Name the five (05) stages of a SAR event/incident.

- 1) Awareness stage
- 2) Initial action stage
- 3) Planning stage
- 4) Operations stage
- 5) Mission conclusion stage

(5 Marks)

- II. Mention four (04) other UN Organizations/Bodies which assist and support International Civil Aviation Organization (ICAO) in respect of SAR activities.

- 1) *ITU*
- 2) *WMO*
- 3) *IMO*
- 4) *WHO*

**(2 Marks)**

- III. Mention the three (03) Emergency Phases declared in a SAR incident with their designated Code Names.

- 1) *Uncertainty Phase (INCERFA)*
- 2) *Alert Phase (ALERFA)*
- 3) *Distress Phase (DETRESFA)*

**(3 Marks)**

**Q.10**

1. Compose Flight plan request message and a supplementary flight plan request message for a given flight ADB1234 from YMMM to OMDb on M641 which is diverting to VCBI due to smoke in the cockpit. Full message required.

I. *FF YMMMZTZ X YMMMZQZX YMMMYOYX OMDbZTZ X*  
*170320 VCCCZQZX*  
*(RQP – ADB1234 – YMMM – OMDb)*

II. *FF YMMMZTZ X YMMMYOYX*  
*170320 VCCCZQZX*  
*(RQS – ADB1234 – YMMM – OMDb)*

**(4 Marks)**

2. You have received the estimate for the position SELSU from Jakarta on DSP line but the aircraft has failed to report SELSU or GOTOX on HF or in data link in the given time. Compose an alert message for UAE357 as per given FPL and SPL. The aircraft Last reported ISBIX with WIII on 5670. Full message required

*(FPL-UAE357-IS*  
*-B77W/H-SRWY/SD*  
*-WIII1044*  
*-N0499F320 TULIP1D M766 CE/N0493F340 M766 KAT P570*  
*ITURA M762 BUBIN*  
*-OMDb0754 OOMS*  
*-PBN/A1B1 DOF/140225 REG/A6EBZ EET/WIII0051*  
*VCCF0202 VOMF0347 VABF0446 OOMM0637 OMAE0728 SEL/DFGL)*



The SPL is as follows

(SPL-UAE357-WIII1044-OMDB0754 OOMS-PBN/A1B1 DOF/140225 REG/A6EBZ  
-E1200 P345 R/UV S/M J/UV D25 20 RED C/PUMA)

DD WIIIZQZX WIIIZTZX VCCCZQZX VOMMZQZX VOMMZTZX VABBZQZX VABBZTZX  
OOMMZQZX OOMMZTZX OMAEZQZX OMAEZTZX

171555 VCCCZQZX

(ALR – INCERFA/VCCCZQZX OVERDUE

-UAE357 – IS

-B77W/H-SRWY/SD

-WIII1044

-N0499F320 TULIP1D M766 CE/N0493F340 M766 KAT P570 ITURA M762 BUBIN

-OMDB0754 OOMS

-PBN/A1B1 DOF/140225 REG/A6EBZ EET/WIII0051 VCCF0202 VOMF0347 VABF0446  
OOMM0637 OMAE0728 SEL/DFGL

-E/ E1200 P345 R/UV S/M J/UV D25 20 RED C/PUMA

-ACFT LAST CONTACT ISBIX AT 1410 ON 5670 WITH WIII. NIL CTC WITH VCCC)

**(4 Marks)**

3. QTR905 has entered Colombo FIR and in contact with ACC controller. The aircraft has given the boundary estimate but you are unable to pass the estimate to the relevant centre in DSP link. Hence Compose an Estimate message to the relevant position and center. The FPL is as follows.

(You need to write the full message with the addressees)

(FPL-QTR905-IS

-B77L/H-SDE1FGHIJ4J5M1RWXY/SB1DI

-YMML1255

-N0499F280 DCT ML H345 AD A585 BIDAP/N0501F320 A585 PD R206

SAKTO/M083F320 R206 XMX L897 NIRIS/N0493F340 L897 KAT P570  
OLNIK/N0489F360

P570 EMURU N563 NOBTO Z994 VEBAT P899 MEKMA UP899 KUPSA UB415 DOH

-OTBD1347 OEDF

-PBN/A1B1D1L1O1S1 DOF/140222 REG/A7BBB EET/METAB0444 LATOX0502

WIIF0519 ATMAL0518 WIII0550 VCCF0736 VOMF0927 VABF1027 OOMM1219

OMAE1311 OBBB1338 SEL/JRAC CODE/06A068 OPR/QTR RALT/YPPH WIII WMKK

VCBI OPKC RMK/TCAS)

*FF VOTVZQZX VOMMZQZX*  
*170445 VCCCZQZX*  
*(EST – QTR905 – YMMM – BASUR/0555F280 – OTBD)*

**(2 Marks)**

Moderated by

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