EAST AFRICAN SCHOOL OF AVIATION

ATC COURSE No. 73

FINAL

SUBJECT: AVIATION METEOROLOGY

STREAM: ATC COURSE No. 73   **Duration: 2 Hrs**

DATE: 16/05/2017   **TIME 8.30 – 10.30 AM**

INSTRUCTION TO CANDIDATES

1. This paper consists of *THREE* **(3)** Pages
2. Attempt all questions
3. Read and understand all questions before attempting

QUESTION 1:
(a) List all the thermodynamic variables? **(2marks)**
(b) What is the equation of state for dry air? **(2marks)**
(c) Define an Adiabatic process. **(2marks)**
(d) When is the atmosphere considered stable? **(2marks)**
(e) When a parcel of air is given an initial push and continues to rise,
    the atmosphere is considered to be? **(2marks)**

QUESTION 2:
(a) Define Atmospheric Pressure. **(3marks)**
(b) Name any two (2) instruments that are used in pressure measurements **(2marks)**
(c) List any three (3) corrections required on reading a barometer **(3marks)**
(d) Define an altimeter **(2marks)**

QUESTION 3:
(a) Define the following Q Codes as used in pressure.
  (i)   QNH **(2marks)**
  (ii) QFE **(2marks)**
  (iii) QNE **(2marks)**

(b) Define the following terms as used in Altimetry:
(i) Transition altitude. **(2marks)**
(ii) Transition layer. **(2marks)**

QUESTION 4:
(a) Define a METAR. **(2marks)**
(b) In a Metar/Speci, what is the criteria for reporting cloud groups?
 (Hint:1,3,5) **(2marks)**

(c) In an observation, how is 2/8 Cumulonimbus at 1500ft coded in a
      METAR? **(2marks)**
(d) In an observation, how is vertical visibility assessed when the sky is completely
      obscured? **(2marks)**
(e) Define Highest Minimum Sector Altitude. **(2marks)**

QUESTION 5:
(a) List any three (3) weather hazards you would associate with Stratus clouds (**3marks**)
(b) Which two (2) clouds types would you associate with aircraft turbulence? **2marks)**
(c) List any five (5)weather hazards you would associate with a mature
    thunderstorm cloud. **(5marks)**

QUESTION 6:

(a) Convert the following temperature scales as given below:

(i)	85ºC to ºF	**(2marks)**
(ii)	113ºF to ºC	**(2marks)**
(iii)	298ºK to ºF	**(2marks)**

(b) Define Dew Point Temperature   **(2marks)**

(c) List any two (2) conditions necessary for a large diurnal variation of Temperature.   **(2marks)**

QUESTION 7:

(a) Give two (2) examples of heaped clouds.   **(2marks)**

(b) Which among the following group of clouds are layer clouds?

Cumulus,Nimbostratus, Cirrostratus, Altocumulus   **(2marks)**

(c) What type of precipitation is associated with the following clouds:

(i)	Cirrostratus.	**(2marks)**
(ii)	Nimbostratus.	**(2marks)**
(iii)	Stratus.	**(2marks)**

QUESTION 8:

Briefly describe how and when the following local winds form.

(a)	Land Breeze.	**(2marks)**
(b)	Sea Breeze.	**(2marks**)
(c)	Katabatic Wind.	**(2marks)**
(d)	Anabatic Wind	**(2marks)**
(e)	Fonh Wind.	**(2marks)**

QUESTION 9:

a) In the ICAO International Standard Atmosphere, list all the variables and their values.   **(4marks)**

b) List two (2) purposes that the standard serves in Aviation.   **(4marks)**

c) How are flight levels determined?   **(2marks)**

QUESTION 10:

(a) Decode the METAR below:

METAR HKEL 061200Z 25008G19KT 0800 +SHRA FEW005

FEW020CB SCT025 BKN090 19/18 Q1020 RETS=   **(8marks)**

(b) What is a TREND FORECAST?   **(2marks)**