BMA Syllabus for Certificate of Competency
Officer of the Watch and Master Near Coastal Waters STCW II/3

085-23 METEOROLOGY

(a) To read and understand a barometer (aneroid and precision aneroid), thermometer, and hygrometer. The instruments supplied by the Meteorological Office will be taken as standard.
(b) Barometric pressure; use of barometric observations in conjunction with weather signs
(c) The Beaufort wind scale. Methods of estimating direction and force of wind at sea.
(d) The characteristics of, and weather associated with, the principal pressure systems eg anticyclones, depressions. Relationship between pressure distribution and wind. Buys Ballot's law.
(e) A knowledge of the weather information available to shipping in the Limited Caribbean area including Hurricane warnings.
(f) A knowledge of procedures for the reporting of weather by ships.

EXAMINATION STRUCTURE

Objective Test
32 QUESTIONS
Total marks: 50
Candidates must attempt ALL questions
To achieve a PASS, candidates must obtain at least 25 marks, i.e. 50%
Time allocated is 1 hour

Objective Format Interpretation

(a) 1. Understands the principle and use of the Aneroid and Precision Aneroid Barometers.

1.1. States the basic principle of an aneroid barometer.
1.2. Describes the value of the ordinary aneroid barometer as a means of determining the barometric tendency.
1.3. States the corrections to be made to a reading of the Precision Aneroid Barometer.

(a) 2. Understands the principle, construction and use of the "Mason's Hygrometer".

2.1 Describes the construction of-, and explains the need for the Marine Screen.
2.2 Explains the correct positioning of the Marine Screen.
2.3 Describes the routine care and attention to be given to the "Mason's Hygrometer".
2.4 States the effect of salt spray and/or freezing conditions on the wet bulb reading.
2.5 States the procedures when the wet bulb is affected by salt or ice.
2.6 Given wet and dry bulb reading uses the table in Met. 0.509 to find the Dew Point.

(c) 3. Has a knowledge of the factors involved in making accurate subjective observations of weather elements.

3.1 Describes the method of estimating the wind direction from the appearance of the sea surface.
3.2 Describes the method of estimating the strength of the wind, its mean speed, number and description from the appearance of the sea surface, using the Beaufort Wind Scale.
3.5 States that the effects mentioned below Table 9 in Met. 0.509 modify the Beaufort Sea Criteria.
3.4 Appreciates the difference between the apparent and true winds.

(a) 4 Has a knowledge of the factors involved in making accurate observations of sea surface temperatures.

4.1 States that the sea sample should be taken from over the ship's side well forward of all ejection pipes.
4.2 Explains why the condenser intake water temperature is not used for reporting purposes.
4.3 Describes the procedures and precautions in obtaining temperatures by canvas bucket, rubber bucket and dip stick methods.
4.4 States the reason for having to use the dip stick method.

(a) 5. Has an elementary understanding of the importance and effects of changes in atmospheric humidity.

5.1 Defines ‘water vapor’.
5.2 Defines ‘evaporation’, ‘condensation’.
5.3 Defines ‘dew point temperature’.

(d) 6. Has a basic knowledge of the constituents of a cloud, system of cloud classification.

6.1 States that clouds form when air containing water vapor rises, cools and becomes saturated.
6.2 Can state the name and abbreviation from a given description or picture, of any one of the ten basic cloud types, but not in combination.
6.3 States that the precipitation that may be produced from:
6.3.1 Cumulonimbus is very heavy showers of rain or hail;
6.3.2 Cumulus is showers;
6.3.3 Nimbostratus is continuous rain;
6.3.4 Stratus is drizzle.

(d) 7. Has an elementary understanding of the causes of reductions in visibility, of the processes resulting in the formation and dissolution of various types of fog, and of the areas in which these fogs are likely to be encountered.

7.1 States that visibility is reduced by the presence of particles in the atmosphere, near the Earth's surface.
7.2 Defines: ‘fog’, ‘mist’, ‘haze’.
7.3 Describes the formation of radiation fog, mentioning areas, seasons and reasons for dispersal.
7.4 Describes the formation of advection fog mentioning areas, seasons and reasons for dispersal.

(d) 8. Has an elementary knowledge of selected forms of precipitation and condensation.

8.1 Defines ‘precipitation’.
8.2 Differentiates between ‘rain’, ‘drizzle’, ‘hail’, ‘snow’ and ‘sleet’.
8.3 Defines ‘dew’.

(b) 9. Has a knowledge of the basic properties of, relating to, atmospheric pressure and the definitions.

9.1 States that atmospheric pressure decreases with height above sea level.
9.2 States that ‘high’ and ‘low’ are relative terms and the likely extremes in home waters.
9.3 States a ‘typical’ value for a low-pressure center.
9.4 States a ‘typical’ value for a high-pressure center.
9.5 States that the ‘average’ sea level pressure is 1013 hp.
9.6 Defines isobar, pressure gradient, pressure tendency.

(d) 10. Has an understanding of the relationship between the pressure distribution and wind strength and direction.

10.1 Defines ‘wind’.
10.2 States the surface wind circulation around high and low-pressure centers.
10.3 Inserts surface wind directions on a map showing pressure distribution and indicates various places within the pressure field, where strongest and lightest winds would be expected.
10.4 States "Buys Ballot's Law".
10.5 Gives a simple explanation of the formation of land and sea breezes.
10.6 Describes the regions and conditions favoring the formation land and sea breeze cells.
10.7 Explains the formation of katabatic winds.
10.8 States regions of occurrence of katabatic winds.

(d) 11. Has an elementary understanding of the synoptic patterns of, andweather associated with, pressure systems affecting middle latitudes.

11.1 Defines 'air mass'.
11.2 Defines 'cyclone' and 'anticyclone'.
11.3 Identifies an anticyclone on a surface synoptic or prognostic chart.
11.4 Describes the typical characteristics of an anticyclone.
11.5 Defines 'ridge of high pressure'.
11.6 Identifies a ridge of high pressure on a surface synoptic or prognostic chart.
11.7 Identifies a ridge of high pressure on a surface synoptic or prognostic chart.
11.8 States the weather associated with a ridge of high pressure.
11.9 Defines a non-frontal depression and associated weather.
11.10 Identifies a non-frontal depression on a surface synoptic or prognostic chart.
11.11 Defines 'warm front', 'cold front' and 'occluded front'.
11.12 Knows the symbols for warm, cold and occluded fronts on both.
11.13 Identifies a frontal depression on a surface synoptic or prognostic chart.
11.14 Describes the stages in the life cycle of a polar front depression.
11.15 Describes 'family of depressions'.
11.16 Given a plan of a polar front depression, for the Northern Hemisphere identifies isobars, warm, cold and occluded fronts, wind circulation, warm sector, cloud and precipitation areas.
11.17 Describes the usual movement of a polar front depression.
11.18 Describes the weather changes during the passage of warm, cold, and occluded fronts**.**
11.19 Defines 'trough of low pressure', both frontal and non-frontal.
11.20 Identifies a trough of low pressure on a surface synoptic or prognostic chart.
11.21 States the weather associated with the passage of a trough of low pressure.
11.22 Defines a 'col'.
11.23 Given a synoptic pattern of a col identifies isobars and wind circulation.
11.24 Applies previous concepts to the interpretation of synoptic and prognostic charts to ascertain wind directions, areas of strong winds, cloud and precipitation areas, fog areas and areas of fine weather.

(e) 12. States the weather information available to shipping.

12.1 States the type of weather information available from the following publications:
  12.1.1 ALRS Vols 3 part 2;
  12.1.2 Pilot Books (Sailing Directions).
12.2 States the information contained in local radio and Coastal Radio Station Weather bulletins for shipping, NAVTEX and the transmission times of the former.
12.3 Identifies the approximate location of the forecast areas in home waters.
12.4 States when gale warnings for coastal areas are broadcast on the official Bahamas Radio stations on the appropriate frequency.
12.5 States when gale warnings for limited forecast areas are transmitted by coastal R/T stations.
12.6 Defines the following terms used in weather forecasts:
  12.6.1 terms relating to visibility;
  12.6.2 terms relating to pressure tendency;
  12.6.3 terms relating to times of warnings;
  12.6.4 terms relating to speed of weather systems;
  12.6.5 terms relating to wind shifts.

(f) 13. Has a knowledge of the function and use of the MARID code:

13.1 States the information reported when:
- 13.1.1 In the Caribbean;
- 13.1.2 outside the Caribbean.

13.2 Given data, to code the following groups without the Code Card:
- 13.2.1 Time (GG);
- 13.2.2 Position (LaLaLa) and (LoLoLo);
- 13.2.3 Sea temperature (TiTi);
- 13.2.4 Cloud amount (N);
- 13.2.5 Wind direction (dd);
- 13.2.6 Wind speed (ff).

13.3 States the meaning of the three sections in the group VVww.