
Q413 - Navigation General: Oceans

1. How can the accuracy of an azimuth circle be checked?

- Ensuring that the alignment marks on the inner face of the circle are in line with those on the repeater on relative bearings of 000° and 090°
- Aligning the relative bearing markings so that 000° is on the lubber's line and the line of sight passes over the center of the compass
- Sighting a terrestrial range in line and comparing the observed bearing against the charted bearing
- **Comparing observed azimuths at different altitudes with computed values at the times of observation to see if the difference is constant**

Note:
The accuracy of an azimuth circle is verified by comparing observed azimuths of celestial bodies at different altitudes with computed true azimuths to determine if the resulting difference remains constant. This method isolates instrument error from compass or gyro error, ensuring the circle's scale and sight line are consistent.

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2. When is an air mass termed "warm"?

- If it originated in a high-pressure area
- **If the ground over which it moves is cooler than the air**
- If it originated in a low-pressure area
- If the mass is above 70°F

Note:
An air mass is classified as warm when its temperature is higher than that of the surface it traverses, a distinction based on relative temperature rather than origin or absolute temperature.

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3. The altitude at LAN may be observed by starting several minutes in advance and continuing until a maximum altitude occurs. When should this procedure NOT be used?

- **On a fast vessel on northerly or southerly headings**
- When the declination and latitude are of different names
- If the vessel is stopped or making bare steerageway
- When the declination is greater than and the same name as the latitude

Note:
The maximum-altitude method for determining Local Apparent Noon is unreliable on fast vessels traveling north or south, as the vessel's motion can distort the observed altitude and prevent a clear maximum from being identified.

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4. You are approaching Chatham Strait from the south in foggy weather. You have Coronation Island and Hazy Islands on the radar. Suddenly the radar malfunctions. You then resort to using whistle echoes to determine your distance off Coronation Island. Your stopwatch reads 16.3 seconds for the echo to be heard. How far are you off Coronation Island?

- 1.0 mile
- **1.5 miles**
- 2.0 miles
- 2.5 miles

Note:
The correct answer is determined by dividing the total echo time by two to find the one-way travel time, then multiplying that time by the speed of sound, and finally converting feet to nautical miles, resulting in a distance of approximately 1.5 nautical miles.

5. You are approaching a light fitted with a RACON. How is the light identified on the radar?

- **A radial line appearing on the same bearing originating at a greater range than the light**
- A circle appearing on the scope surrounding the light
- A dashed line originating from the center of the scope and running to the light
- An audible signal when the sweep crosses the light

Note:
A RACON appears on radar as a radial line extending inward from a range beyond the actual light, along the light's bearing.

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6. Which is an area of strong westerly winds occurring between 40°S and 60°S latitude?

- Polar easterlies
- Jet streams
- Prevailing westerlies
- **Roaring forties**

Note:
The Roaring Forties is the established name for the strong westerly wind belt between 40S and 60S latitude in the Southern Hemisphere.

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7. The ARPA may swap targets when automatically tracking if two targets are in which situation?

- **The targets pass close together**
- The targets are tracked on reciprocal bearings
- The targets are tracked at the same range
- The targets are tracked on the same bearing

Note:
An ARPA may swap target tracks when two targets pass close together, causing their radar echoes to fall within each other's tracking gates.

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8. The average height of the surface of the sea for all stages of the tide over a 19 year period is known by which term?

- **Mean sea level**
- Half-tide level
- Mean low water
- Mean high water

Note:
Mean sea level is the average height of the sea surface over a 19-year period, encompassing all tidal stages, making it the correct answer.

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9. What is the average speed of the movement of a hurricane following the recurvature of its track?

- **20 to 30 knots**
- 40 to 50 knots
- 5 to 10 knots
- Over 60 knots

Note:
Following recurvature, hurricanes are influenced by mid-latitude westerlies, resulting in an average forward speed of 20 to 30 knots.

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10. Barometer readings in weather reports are given in terms of pressure at which reference location?

- The weather station
- The broadcasting station
- **Sea level**
- Washington, D.C.

Note:
Barometer readings in weather reports are adjusted to reflect pressure at sea level to allow for comparison between locations at different elevations. Therefore, the reference location is sea level.
