

3-1879

1) A chart projection depicting the poles and a small area on either side of a connecting meridian, that is sometimes used for star charts, is the \_\_\_\_\_.

**A. azimuthal gnomonic projection**

Incorrect: An azimuthal gnomonic projection is produced when a plane is placed tangent to the earth and all other points are projected geometrically from the center of the earth. All bearings from the point of tangency are represented without distortion and the projection indicates true azimuths. This projection is not centered on a connecting meridian.

**B. Lambert conformal projection**

Incorrect: This projection is formed by using a secant cone to intersect the earth at two standard parallels. The area between the two standard parallels is compressed, and the area beyond is expanded proportionally. When the spacing of the parallels is altered so that the distortion is the same along them as along the meridians, the projection becomes conformal.

**C. transverse Mercator projection**

Correct Answer: This is a special case Mercator projection in which the cylinder is tangent to a meridian. It is used for charts covering a large band of latitude but extending a relatively short distance on either side of the tangent meridian. This display may be used for star charts to show the sky at various seasons of the year.

**D. polyconic projection**

Incorrect: This projection eliminates the latitude limitations of a secant conic projection by using a series of cones with each cone tangent to a parallel of latitude. At the edges of the chart, the area between the parallels is expanded to eliminate gaps. The scale is correct along any parallel and along the central meridian. It is not adaptable for star charts.

3-2474

2) A vessel is heading magnetic north and its magnetic compass indicates a heading of 356°. What action should be taken to remove this error during compass adjustment?

Basic compass adjusting knowledge:

1. Red indicates the north seeking pole and blue the south seeking pole of a compass.
2. A magnetic north heading on a magnetic compass is 360°.
3. To remove the compass error in this question the compass card must be rotated counter clockwise.

**A. If the blue ends of the magnets are to port, and the athwartship tray is at the top, you should remove some of the magnets.**

Incorrect: Removing magnets from the tray would decrease their combined magnetic field. The blue ends to port would have less attraction on the red north end of the compass and less repulsion on the blue south end of the compass allowing the card to rotate clockwise increasing the error.

**B. If the blue ends of the magnets are to starboard, and the athwartship tray is at the bottom, you should remove some magnets.**

Correct Answer: This would likewise decrease the combined magnetic field of the corrector magnets. However, in this case the blue ends are to starboard. Lessening the attraction of the blue ends on the north end of the compass and decreasing the repulsion on the south end would permit the compass card to rotate counterclockwise, thereby removing the error.

**C. If the red ends of the magnets are to starboard, and the athwartship tray is at the bottom, you should reverse the magnets.**

Incorrect: Previously the red ends on the starboard were repelling compass north and now with the blue ends to starboard the corrector magnets are attracting the north end of the compass. Reversing the field of the corrector magnets would cause the compass card to rotate clockwise, thereby increasing the error.

**D. If the blue ends of the magnets are to starboard, you should raise the athwartship tray.**

Incorrect: Raising the tray would increase the effect of the magnetic field of the corrector magnets on the magnetic compass. This would increase the attraction of the blue ends on the starboard side to the north end of the compass causing the card to rotate clockwise, thereby increasing the error.

3-3070

**3) The database information that should be shown when a chart is first displayed on ECDIS is the \_\_\_\_\_.**

Note: An electronic chart display and information system (ECDIS) is a navigational information system, which, with adequate back-up arrangements, can be accepted as complying with the up-to-date chart required by regulation V/20 of the 1974 SOLAS Convention. It assists the navigator in route-planning and route-monitoring by displaying selected information from a system electronic navigational chart (SENC) with positional information from navigation sensors. The system is capable of displaying additional navigation-related information, if required.

**A. display base information**

Incorrect: This is the level of SENC information which cannot be removed from the display, consisting of information which is required at all times in all geographical areas and in all circumstances. This level of information alone is not intended to be sufficient for safe navigation and it is not displayed first.

**B. standard display information**

Correct Answer: This is the level of SENC information that should be shown when a chart is first displayed on the ECDIS. The level of the information it provides, for route-planning or route-monitoring, includes the display base information and may be supplemented with additional information to suit the navigator's needs.

**C. system electronic navigational chart**

Incorrect: This is a database resulting from: (1) the transformation of the electronic navigational chart (ENC) by ECDIS for appropriate use, (2) updates to the ENC by loading up-to-date files, and (3) other data added by the mariner. It is this database that is actually accessed by ECDIS for the display generation and other navigational functions, and is the equivalent to an up-to-date paper chart. However, this is more information than should be displayed at one time on the ECDIS.

**D. chart display information**

Incorrect: This is not a recognized technical standard phrase used to describe a particular set of ECDIS display information.

**4) INTERNATIONAL ONLY: If a towing vessel and her tow are severely restricted in their ability to deviate from their course, the towing vessel shall show lights in addition to her towing identification lights. These additional lights shall be shown if the tow is \_\_\_\_\_.**

Note: There is a difference between the International Rules and the Inland Rules in this respect.

The International Rule 27(c) requires the restricted in ability to maneuver lights (RAM) only when towing astern.

The Inland Rule 27(c) requires the RAM lights regardless of the position of the tow.

Also note that the International Rule refers to vessels towed in Rule 24(a) only, while the Inland Rule refers to all the vessels towed in Rule 24.

**A. pushed ahead**

Incorrect: These additional lights would be required for a vessel pushing ahead under the Inland Rules.

**B. towed alongside**

Incorrect: These additional lights would be required for a vessel towing alongside under the Inland Rules.

**C. towed astern**

Correct Answer: The International Rule 27(c) states that only towing vessels in Rule 24(a) (towing astern) shall show the additional lights for a vessel restricted in its ability to maneuver when the towing vessel and its tow are severely restricted in their ability to deviate from their course.

**D. All of the above**

Incorrect: Because this question pertains only to the International Rule, choices "A" and "B" are incorrect.