

(Or, at the Examiner's discretion, as an alternative to Question 1) :

On 10th August, 1925, at 18 h. 10 m. New Zealand mean time, at ship in approximate position lat. 47° S., long. 171° E., the observed altitude of the star Achernar was $17^{\circ} 2'$. Height of eye, 28 ft. Index error, $2'4$ to add. After steering west (true) for 12 miles, Nuggets Pt. Lt. was sighted bearing N. 40° W. (true).

Required—The position of the ship when the light was sighted.

2. On 10th March, 1925, at 04 h. 15 m., New Zealand mean time, at ship in lat. $45^{\circ} 0'$ S., long. $171^{\circ} 50'$ E., the star Altair bore by compass E.N.E.

Required—The true azimuth and error of the compass by time azimuth tables; and, supposing the variation to be 19° E., find the deviation of the compass for the direction of the ship's head at the time.

4. CHART.

Time allowed 3 hours.

1. Deviation card 12: In a vessel steaming towards Cape Brett Lt. Ho. steering by compass N. 30° W. at 9 knots, Henry Island bore by compass S. 22° W. and Home Point extreme bore S. 75° W. by compass.

State the position of the vessel, and the distance from Home Point.

2. From the position as found in question 1, set course to reach a position with Coal Point bearing 310° 4 miles distant, maintaining a distance of 1 mile off Cape Brett Lt. Ho. and 2 miles off the outer end of the eastern island of the Cavalli Group. On the last course allow for a current which set 340° (N. $34^{\circ}5$ W. mag.) at the rate of 2.5 knots.

Required—The compass courses steered and the distance made good on each course, and the distance that the log should show when in final position supposing it to have been set at the position off Home Point.

3. When steering on the second compass course Ngakotu Raranui Pt. bore by compass S. 6° W., and after continuing on the same course for 4 miles the south end of Cavalli Is. bore by compass S. 58° W. Assuming that the vessel has made good her course and distance between the bearings:

State the position of the vessel and the distance from the south end of Cavalli Is. at the time of taking the second bearing.

4. The following horizontal sextant angles were taken to determine the position of the ship: Between G and D, $42^{\circ} 20'$; between D and F, $37^{\circ} 40'$.

Required—the position of the ship by station pointer.

5. Arriving off Manukau Bar at 14 h. 00 m. New Zealand mean time on 16th September, 1925, state the depth of water you would expect to find on the bar if the soundings on the chart showed $3\frac{1}{2}$ fathoms.

6. Chart 695: Find approximately (without the use of Admiralty or other tide tables) the time of high water on the afternoon of 14th June, 1925, off Stephens Island, and state also the direction of the tidal stream at 10 h. 00 m. on that day.

190. Specimen Set of Examination-papers for Second Mate (F.G.):—

1. NAVIGATION AND NAUTICAL ASTRONOMY.

Time allowed 3 hours.

Draw suitable figures and give the necessary description for each problem.

1. In lat. $41^{\circ} 45'$ the departure made good was 186 m.

Required—The difference of longitude by parallel sailing.