

**SHIP'S BUSINESS.**

Paper 5 (2 hours).

1. What is an Official Log? What are the chief entries to be made therein?
2. A seaman reports sick at sea. What action do you take?
3. What is meant by "Clearing Outwards"?  
Where do you go to clear the vessel and what documents do you require to clear from the U.K.?
4. In a foreign-going steamer of 5,000 tons gross, what certificated men must be carried?
5. What are the chief items embodied in a Charter Party?
6. You have drawn freight in a foreign port and wish to remit it to your owners. How would you do it?
7. What is Particular Average?
8. State the functions of a Classification Society.
9. What Life-Saving Appliances is a foreign-going steamer required to carry?
10. Sketch the loadline markings on the starboard side of a steamer, 300 ft. in length.

**MAGNETIC COMPASS.**

Paper 6 (2 hours).

1. What effect has the change in strength of the Earth's Horizontal Force upon the value of the deviation of the compass? Give your answer in full by examining the effect upon the deviation caused by each of the coefficients A, B, C, D, and E.
2. If the Deviation of the compass caused by hard iron when heading South, where the H.F. = 1.1, is  $10^{\circ}$  W., find the deviation from the same source when the H.F. = 1.6.
3. Should the compensation of that part of Coefficient B, caused by soft iron, be made before or after the heeling error is corrected? Give full reasons.
4. Describe clearly how you would proceed to find the value of Coefficient D., and having found it, how would you proceed to correct it?
5. All other errors having been properly corrected, the heeling error of compass situated at middle length of a ship built in a high North latitude is carefully corrected by a vertical magnet (Red end up) under the compass. What alteration, if any, in the position of this magnet would you expect to be necessary to ensure the absence of heeling error as the ship proceeded on a passage towards a high Southerly latitude?
6. What difference, if any, is there between the compensation of heeling error of a compass with a carefully corrected + D. and that of a compass with a similarly corrected - D., the D. in both cases being caused by an athwartships arrangement of iron?

**ENGINEERING KNOWLEDGE.**

Paper 7 (3 hours).

1. What is meant by the "pitch" of a screw propeller? If the pitch of propeller is 18 ft. and the number of revolutions 86,470, calculate the slip if the day's run by log is 243 miles.
2. What is meant by "circulating" the boilers? How much notice should be given to raise main steam on ordinary multitubular marine boilers?
3. What is meant by—  
(a) Welding.  
(b) Caulking.
4. What are water-gauges and where are they placed? Of what use are they?
5. What is meant by the tail end shaft being down? If the wear down is excessive, what does this entail?
6. Give a brief description of—  
(a) Bottom end.  
(b) Thrust block.  
(c) Hotwell.
7. How does coal consumption vary with regard to speed?  
A vessel steams 12 knots on a daily consumption of 42 tons of coal. Calculate the consumption when speed is reduced to 10 knots.
8. Describe the principle of any refrigerating system with which you are acquainted.