

METEOROLOGY. (2 hours.)

50. Paper 6. (Written.)

- (a) The principles of the barometer. How to read it and reduce the readings to standard datum.
- (b) How to observe the force and direction of the wind with no other instrument than the compass and use of the Beaufort scale.
- (c) How to observe and log the state of sea and swell, weather, and visibility by the international scales for the use of seamen.
- (d) The principles and use of the thermometer, dry bulb, wet bulb, and sea surface.
- (e) Use of hydrometer.
- (f) General knowledge of the wind and current systems of the oceans. How to deduce the set and drift of currents.
- (g) The Laws of Storms. Buys' Ballot's Law. Rules for handling ships in tropical revolving storms. The seasons and localities of tropical revolving storms and their precursory signs.
- (h) The Visual Storm Warning signals.
- (i) The seven fundamental types of weather.
- (j) The elementary principles of synoptic charts, including a knowledge of how the atmospheric pressure distribution and gradient is obtained. Principal cloud types.
- (k) To draft a wireless weather report and how to decode a weather report made in the International Weather Code, the tables being provided.

51. Oral Portion.

1. (a) Shifting large spars and rigging sheers.
- (b) The handling of heavy weights with special reference to strength of gear used.
- (c) Use and maintenance of all deck and above deck appliances and fittings—winches, capstans, windlasses, emergency steering-gear, and fittings used between anchor and cable locker. Hoisting in boats.
- (d) Bending, setting, and taking in fore and aft sails. Management and equipment of ships' lifeboats and number of persons who may be carried in each class of boat.
2. Anchors—different kinds; advantages and disadvantages of each. How to rig a sea anchor and what means to employ to keep a vessel, disabled or unmanageable, out of the trough of the sea and lessen her lee drift. Cables and their care. Preparations for anchoring. Operation of anchoring with single anchor and use of second anchor. Clearing a foul anchor. Mooring. Clearing a foul hawse. Anchoring in a tideway and in a confined space. Dragging anchor. Anchor watch. Slipping a cable. To carry out an anchor with boats. Getting under way.
3. (a) Effect of propellers on the steering of a ship. Stopping, going astern, and manœuvring. Turning circles. Effects of current, wind, sea, shallows, draft.
- (b) Coming alongside a wharf, &c. Turning a steamship short round, manœuvring in rivers and harbours. Emergency manœuvres. Man overboard.
- (c) Management of steamships in stormy weather.
- (d) To get a cast of the deep-sea lead.
4. (a) Testing lifebuoys and life jackets; other life-saving gear.
- (b) Accidents—*e.g.*, collision, running aground, accidents to hatches, leaks, fires, and their treatment. Running repairs. Handling a disabled ship.
- (c) A practical knowledge of the screening of ships' navigation lights.
- (d) Preparation for dry-docking. Use of shores, bilge blocks and bilge shores.
5. Regulations for prevention of collision at sea—as para. 42, Section 5 (Oral) Second Mate.
6. Signals.—As para. 42, Section 6 (Oral), Second Mate.
7. The Examiner may ask the candidate questions arising out of the written work, if he deems it necessary on account of weakness shown by the candidate.