

count as service at sea for the purpose of obtaining a certificate of competency for a sea-going ship, with the exception stated in paragraph 27.

112. Candidates for examination, when making their application on form Exn. 3, will be required to pay the examination fees before any step is taken whether by inquiry into their service or testing their qualifications, &c. If the candidate is found not to be qualified, the fee will be returned to him less any expense that may have been incurred.

113. The fee for examination must be sent to the Chief Examiner, at the office of the Chief Inspector of Machinery, Wellington, along with the application and testimonials, and must be in money or postal notes. In any case in which a candidate offers money to any officer other than the proper fee to the Chief Examiner, the candidate will be regarded as having committed an act of misconduct, and will be rejected and not allowed to be examined for twelve months, either at the port where the offence was committed, or at any other port.

114. The fees are as follow:—

	£	s.	d.
Restricted-limits engineer's certificate ..	0	10	0
Second-class engineer's certificate ..	0	10	0
First-class engineer's certificate ..	1	0	0

#### Failure.

115. If the applicant for a first-class, second-class, or restricted-limits engineer's certificate fails, he may not present himself for re-examination for three months.

#### Rules as to Examinations.

116. The general rules as to conduct of examinations (paragraphs 60 to 79 herein) shall also apply to these examinations.

## APPENDICES.

(Reprinted from Board of Trade Regulations.)

### APPENDIX A.

FORM TO BE FILLED UP BY ALL CANDIDATES AT THE COMMENCEMENT OF THE EXAMINATION.

#### Form 15b.

Port: . . . . . Class for which examined: . . . . .  
Date: . . . . . Candidate's name: . . . . .

A. Where, and how long, did you serve in works at the making or repairing of engines and boilers?

B. How long, and in what capacity, did you serve in works on shore other than at the making or repairing of engines and boilers?

C. How long have you served in the engine-room at sea, and in what capacities?

D. With what descriptions of engines have you served at sea? What sizes were the engines?

E. With what descriptions of boilers have you served at sea?

F. What engine defects or defects to auxiliary machinery have come under your notice? What caused these defects, and how were they remedied? Give the names of the steamers for verification.

G. What boiler defects have come under your notice? What caused these defects, and how were they remedied? Give the names of the steamers for verification.

## APPENDIX B.

### ELEMENTARY QUESTIONS.

1. What parts of an engine are generally made of wrought iron?

2. What parts of an engine are generally made of cast iron?

3. For what parts of an engine is steel sometimes used?

4. What parts of an engine are generally made of brass or gun-metal?

5. Where is "white metal" sometimes used? On account of what property possessed by it is it adopted? What objection is there to its more general use?

6. For what parts is muntz-metal sometimes used? Is it malleable? For what properties is it valued?

7. What difference is there in the composition of cast iron, of wrought iron, and of steel?

8. How can cast iron, wrought iron, and steel be distinguished from each other?

9. What are the different properties of cast iron, of wrought iron, and of steel?

10. What is meant by the terms "breaking-stress," "proof-stress," "safe-working stress"?

11. What is the cohesive strength, or breaking-stress, of good ordinary wrought iron?

12. Tempering steel: how is it done, and in what order do the colours come?

13. What is case-hardening?

14. Which of the common metals or alloys can be forged, and which of them are brittle or "short"?

15. What is meant by "welding"? Which of the common metals can be welded?

16. The expansion of metals by heat: give examples of this in the engine and in the boiler.

17. In the construction of steel cylindrical marine boilers, for what parts have the plates to be worked hot? What precautionary treatment of these plates is afterwards necessary?

18. In what parts of cylindrical marine boilers is the strongest riveting employed? In which of the shell-seams is it most necessary?

19. What is "caulking," and how are seams prepared for caulking?

20. Describe the different ways of fastening the ends of the main stays of a boiler. What are the merits of or objections to the different plans?

21. What stress per square inch is allowed on boiler-stays?

22. Describe a riveted stay, and state where such stays are commonly used.

23. Where are thin plates to be looked for in a boiler as it wears, and how is the thinness to be detected?

24. How are boiler-tubes fixed? What are "stay-tubes," and how are they secured?

25. Where is it generally that boiler-tubes leak? How is this defect repaired? What are the causes of this leaking?

26. What are the causes of cracked tube-plates? Where are the cracks situated? How are they repaired?

27. What is the difference between a "dry uptake" and a "wet uptake"? Which requires most repair? Why? Where have you seen a wet uptake?

28. What is a superheater? What is its construction? What valves are on it? There is sometimes a gauge-glass on it: what is that for? Are superheaters in general use?