

CERTIFICATES OF COMPETENCY FOR ENGINEERS (YACHT)

**EXAMINATIONS ADMINISTERED BY THE
SCOTTISH QUALIFICATIONS AUTHORITY
ON BEHALF OF
MARITIME AND COASTGUARD AGENCY**

**SMALL VESSEL CHIEF ENGINEER UNLIMITED
SMALL VESSEL CHIEF ENGINEER LIMITED**

059-02 - AUXILIARY EQUIPMENT PART II

FRIDAY, 24 September 2021

1400-1600 hrs

Examination paper inserts:

--

Notes for the guidance of candidates:

- | |
|--|
| <ol style="list-style-type: none">1. Candidates should note that 100 marks are allocated to this paper. To pass candidates must achieve 50 marks.2. Non-programmable calculators may be used3. All formulae used must be stated and the method of working and ALL intermediate steps must be made clear in the answer. |
|--|

Materials to be supplied by examination centres:

Candidate's examination workbook

AUXILIARY EQUIPMENT PART II

Attempt ALL questions

Marks for each part question are shown in brackets

1. (a) Explain why a hydraulic actuator is preferred for a vessel's stabiliser over an electrical actuator. (5)
- (b) Sketch a hydraulic circuit for a single stabiliser, suitable for a constant pressure system. (5)
2. Sketch a hydraulic system for adjusting the angle of fin stabilisers, labelling ALL parts. (10)
3. With reference to load sharing of a.c. generators:
 - (a) state the meaning of the term *speed droop*; (3)
 - (b) explain the effect of running generators in parallel with different speed droop settings for EACH of the following:
 - (i) when the generators are sharing the load equally; (3)
 - (ii) when the load suddenly increases. (4)
4. Describe, with the aid of a sketch, the operation of a diesel generator speed and load sensing electronic governor, labelling the MAIN components. (10)
5. (a) List FOUR reasons for a refrigeration compressor to stop unexpectedly, after running for a short period. (4)
- (b) Describe the faults which lead to TWO of the reasons for the stoppage, listed in part (a). (6)
6. Describe EACH of the following vapour compression refrigeration faults, outlining a possible cause for EACH:
 - (a) undercharge; (3)
 - (b) overcharge; (3)
 - (c) short cycling. (4)

7. The lifting arrangement shown in the figure, has two slings, A, with a SWL of 5 tonnes, four slings, B, with a SWL of 2.5 tonnes with a ring and beam each of which have a SWL of 12 tonnes.

Explain the suitability or otherwise of this arrangement for lifting a generator engine, including flywheel, weighing 8.5 tonnes that has certified lifting points, 2 at each of the entablature, 6 m apart.

(10)

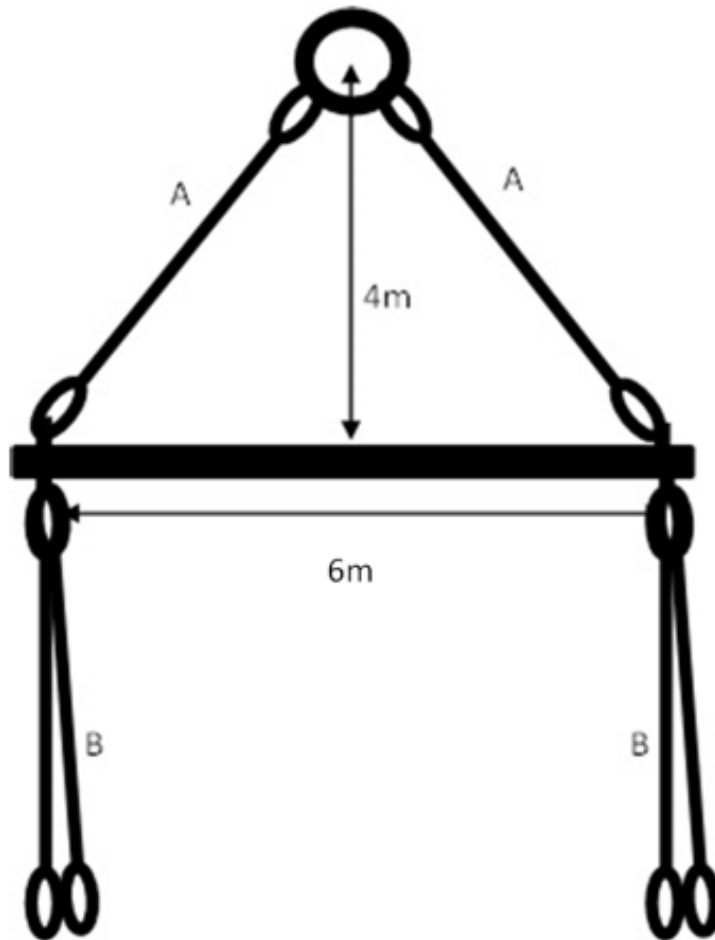


Fig Q7

8. Describe the annual airtight integrity test and examination that is required to be carried out on an inflatable or rigid inflatable craft.

(10)

9. (a) State the purpose of the collision bulkhead and the regulations appertaining to its dimensions and position.

(4)

- (b) Explain the difference between A, B and C class bulkheads.

(6)