



DIRECTORATE OF MERCHANT SHIPPING
GOVERNMENT OF SRI LANKA
CERTIFICATE OF COMPETENCY EXAMINATION

GRADE : CHIEF MATE ON SHIPS OF 500 GT OR MORE (UNLIMITED)
SUBJECT : SHIP BOARD OPERATIONS
DATE : 22nd February 2017

Time allowed THREE hours	Total marks : 180
ANSWER ALL QUESTIONS	Pass marks : 60%

Formulae and all intermediate steps taken in reaching your answer should be clearly shown. You may draw sketches wherever required. Electronic devices capable of storing and retrieving are **not** allowed.

- 1) Answer the following questions with regard to cargo care and ship's stability:
 - a) A comprehensive cargo plan will greatly eliminate delays and other cargo related claims. Explain what details should contain in a ship's cargo plan.

(08 marks)
 - b) Ship shore safety check list is becoming very common on many of merchant shipping trades. Explain the significance of "Ship Shore Safety Checklist" and state the basic contents of a ship shore safety check list.

(07 marks)
 - c) Vessel's freeboard is one of the main concerns during navigation and at ports. There are many importance of vessel's freeboard and this may vary according to application. Explain with a suitable statical stability curve the effect of change in freeboard for a vessel with constant beam, draught and KG including causes for the changes in freeboard.

(15 marks)

- 2) Answer the following questions with regard to carriage of timber cargoes on deck:
 - a) A vessel loaded with timber deck cargo from Baltic to US experienced a considerable list during the voyage. When the vessel departed the loading port vessel left with an upright condition and experienced severe weather during the voyage. Explain in detail your investigation procedure and the actions taken to according to your identified situations.

(15 marks)
 - b) In order to maintain sufficient stability throughout the voyage on timber deck cargo vessels it is required to have substantial knowledge at the planning stage of the particular loading condition. Explain in detail main factors effecting change of displacement on a timber deck cargo vessel including mitigating actions required to compensate such situations.

- (10 marks)
- c) There are many concerns relating to the height of timber deck cargoes. Explain under what situations you will restrict the height of timber deck cargoes.
- (05 marks)
- 3) Answer the following questions with regard to corrosion and painting:
- a) Due to the operational environments, vessels are subjected to corrosion and deterioration. Various effective measures are being taken to minimize corrosion process on merchant vessels. Explain in detail these corrosion control methods used onboard a ship.
- (10 marks)
- b) Merchant ships are protected from environmental deterioration by various means. Painting of vessels, not only enhance the cosmetic appearance of the vessels, but, it also to protect the vessels from various processes. Explain in detail main protections offered by marine paints.
- (10 marks)
- c) Calculate paint and thinner requirement for painting 5 cargo hold hatch covers if following information provided.
- | | |
|---------------------------------|---------------------|
| Surface area of one hatch cover | = 380m ² |
| Required DFT | = 125Microns |
| Volume of Solids | = 42% |
| Thinning requirement | =10% |
- (10 marks)
- 4) Answer the following questions with regard to tanker operations:
- a) Explain how a buildup of static electricity can occur during a discharging operation of crude oil.
- (10 marks)
- b) What measures and precautions are adopted to prevent and eliminate such a buildup causing accidents?
- (10 marks)
- c) Explain the main features of a shipboard oil pollution emergency plan
- (10 marks)
- 5) You are chief officer on a multi-purpose container vessel trading between Europe and South Africa.
- a) Describe what precautions the vessel shall take while discharging machinery space bilges when in special areas and when in out-side of special areas.
- (10 marks)
- b) On the above mentioned vessel how do you comply with MARPOL Annex V requirement in special areas and outside special areas.

- c) List are the special areas as per MARPOL Annex – I (10 marks)
- (10 marks)
- 6) Answer the following questions with regard to parametric rolling:
- a) Especially, the large container vessels are subjected to dangerous parametric rolling. Explain in detail what is parametric rolling. (10 marks)
- b) Describe the dangers that a vessel liable to encounter due to parametric rolling. (10 marks)
- c) Describe the warning sign of parametric rolling and describe how to minimize the parametric rolling, if you are the Master. (10 marks)

Answer

Answer 3(c)

Paint: 565.5Ltrs , Thinner: 57Ltrs or 60 Ltrs.