

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 : 12th May 2016

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 IMDG, IMSBC & BLU Codes:
 - a) With reference to IMDG Code, describe the precautions that you take as chief officer before loading any DG packages on board your vessel.

(10 marks)
 - b) With reference to Solid bulk cargo handling, describe the information that the Master and /Shipper or Terminal should exchange as per BLU code.

(10 marks)
 - c) With reference to carriage of Solid bulk cargo, describe the precautions that you should take while loading/carrying Group A, B and C cargo in bulk.

(10 marks)

- 2) Answer the following questions assuming that you are the 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.

(10 marks)
 - c) List the special areas as per MARPOL Annex – 1.

(10 marks)

- 3) Answer the following questions with regard to planned maintenance system (PMS):
- a) Outline the concept of PMS and identify the requirement to have such a system onboard a vessel.
(10 marks)
 - b) Describe the factors that you would be taken in to consideration prior preparing a PMS for deck machinery on a geared container vessel
(10 marks)
 - c) Prepare a planned maintenance system for windlass and mooring winch
(10 marks)
- 4) Answer following questions with regard to operational stability of merchant vessels:
- a) 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 the main factors effecting change of displacement on a timber deck cargo vessel including mitigating actions required to compensate such situations.
(10 marks)
 - b) Listing and reaching Angle of Loll during the voyage is difficult to differentiate at a glance without proper investigation of the situation. At many instances the wrongful corrective actions lead to worsen the situation. Explain how these two situations are differing from each other and the way to investigate including remedial actions pertaining to each situation.
(20 marks)
- 5) Answer the following questions with regard to Harmonised Survey and certificate system:
- a) Harmonised Survey and certificate system redefined the existing survey pattern in order to achieve the goals of harmonisation. These new survey pattern and scopes are the fundamental features govern the harmonisation. Explain in detail survey pattern adopted by the Harmonised survey and certification system.
(15 marks)
 - b) Merchant ships are subjected to various international instruments. But the Harmonised survey and certification system has selected only certain conventions and codes for the purpose of harmonising the survey pattern.
 - i. In relation to above, list the conventions and codes that are being used in Harmonised survey and certification system.
(05 marks)

- ii. Describe the validity and the surveys subjected to the certificates under Harmonised survey and certification system.

(10 marks)

6) Answer following questions with regard to corrosion control of merchant vessels:

- a) A vessel with an area of 5200 m² of vertical bottom is required to be fully coated with two coats of primers with DFT 100 Microns and with one Antifouling paint coat of 125 Microns.

Calculate the required amount of paint and Thinner of following Specifications:

Specification	Primer paint	Anti fouling paint
Colour	Red/Grey	Red
Volume of solids	48 %	52 %
Thinner (Max. Vol)	10 %	5 %

(15 marks)

- b) Merchant ships are protected from environmental deterioration by various means. Painting of vessels are not only enhance the cosmetic appearance of the vessels, but, also to protect the vessels from various processes. Explain in detail the main protections offered by marine paints.

(15 marks)

Answer

Answer – 6(a)

Primer= 2166.7L or 2180L ,

Finish1250L or 1260L ,

Thinner 515.5L or 520L