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 construction

DATE : 04th April 2017

Time allowed THREE hours	Total marks	: 120
ANSWER ANY SIX QUESTIONS	Pass marks	: 50%

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 As a chief officer write a dry dock specification for the repair of following damage that has occurred, stating what factors must be considered when costing the repairs.

Approx. 2 meters of damage to Forepeak tank which caused the shell plating to be removed and replaced the relevant damaged stiffeners.

In your specification, include the services required, accessory work required and final tests required to ensure satisfactory completion of the repair.

(20 marks)

(03 marks)

- 2 a) What are the reasons for dry-docking a vessel?
 - b) In order to be assigned the Class Notation IW (In- Water Survey) what are the items checked and requirements to comply by the vessel?

(07 marks)

c) On arrival dry dock what are the items to be discussed in the initial meeting with the yard personal?

(05 marks)

d) Why it is important to have regular meetings with yard during a dry docking of a vessel and what are the items discussed?

(05 marks)

3 a)	Describe possible faults which may be found during a dry dock inspection of the				
	following and the remedial actions taken.				
	i) Hull indentations				
		(03 marks)			
	ii) Anchor and chain				
		(03 marks)			
	iii) sea chest				
		(02 marks)			
b)	Describe EACH of the following, stating what component parts of the ships.				

i) panting (05 marks)
ii) pounding (05 marks)
iii) dry docking stresses (02 marks)

4) a) Sketch and describe a transverse section of a cargo tank of double hull tanker with the arrangement of web frame and longitudinals (half of the view web frame and the other half longitudinals)

(14 marks)b) Indicate areas of corrosion in a cargo space of above tanker and the reasons for such corrosion

(06 marks)

- 5) a) A ship can be broadly divided into three areas, such as:
 - i) continually immersed;
 - ii) alternating between immersed and above water (boot topping).
 - iii) continually above water;

Reference to above discuss in **detail** the regions of localized corrosion in each location with corrosion preventive methods

b) Discuss the reasons for a coating failure in a DB tank

(06 marks)

c) What are the rules and regulations related to antifouling coatings

(06 marks)

6)	a)	Explain the two types of stern constructions	
			(06 marks)
	b)	Sketch stern construction arrangement of a ship and describe	(14 marks)
7)	Wi	th reference to large container carriers	
,		a) Sketch a transverse section of a modern container carrier	
		b) Explain how the stresses raised due to large hatch openings are compense	(14 marks) sated (06 marks)
8)	a) Discuss the advantages and disadvantages of sacrificial anodes and ICCP (im current cathodic protection system)	pressed
	1		(05 marks)
	b) make a simple diagram of ICCP system and describe	(10 marks)
	c) What are the circumstances that a ICCP system is kept switched off	(10 marks)
			(05 marks)
9)	a)	Name the types of rudders	
	1 \		(03 marks)
	D)	Sketch and name a rudder pintle bearing arrangement indicating important de	(12 marks)
	c)	How to carry out a pressure test of a rudder after a repair and indicate ta applied	he pressure

(05 marks)