

HONG KONG POLYTECHNIC
DEPARTMENT OF NAUTICAL STUDIES

COURSE : Certificate of Proficiency in Ship Command
CLASS : Part B
SESSION : 1989/90
SUBJECT : Shipboard Operations
DATE : 22 May 1990
TIME ALLOWED : 3 hours

Instructions to candidates : Attempt SEVEN questions.
This paper contains eight questions.
All questions carry equal marks.

Available from invigilator :

1. (a) Outline the information contained in the IMO publication, "Code of Safe Practice for Solid Bulk Cargoes".
- (b) Select any one cargo for the above publication and state its particular requirements with respect its properties, segregation and stowage, and special requirements.
2. A load of 3 tonnes is to be discharged using a Union Purchase Rig as shown in the attached diagram. The securing point for the inboard standing guy is restricted to point X, Y or Z along the deck a-a'.
 - (a) State, with reasons, which point you would use for securing the inboard guy.
 - (b) Assuming each derrick has a SWL of 5 tonnes, comment upon the suitability of this rig for discharging this weight.
3. Identify the particular safety problems which may be associated with loading cargo on a chemical carrier. Outline the special precautions which should be taken in each case.
4. (a) According to the International Convention on Load Lines 1966, all seagoing ships must satisfy certain minimum stability criteria. With the aid of a GZ diagram, list and illustrate such criteria.
- (b) State any one example whereby a ship that complies with the above criteria may still have deficient stability.
5. From the following information calculate the moment of statical stability for an angle of heel of 15° at the loaded draught.

Prior to loading : displacement 8,600 tonnes KG 5.5m
 Cargo to load : (i) 1000 tonnes, Kg 5.0m
 (ii) 500 tonnes, Kg 6.5m

The righting lever at the loaded draught for KG=5.8m and a heel of 15° is 0.2m.

6. Your vessel is loading a timber deck cargo when it is discovered that due to an error in the stated cargo weights the displacement of 8100 tonnes gives a KG of 7.21m and a KM of 7.32m. In order to improve the GM it is decided to fill an undivided double bottom tank 16.0m long by 12.0m wide. The capacity of the tank is 160 tonnes of salt water.

Given the following data:

Displacement	KM	KB
8100	7.33	3.81
8200	7.32	3.83
8300	7.29	3.86

Calculate the consequences of this action.

7. From the following information calculate the draughts fore and aft when your vessel is loaded to her summer draught in sea water.

Present draughts : Forward 8.008m Aft 8.420m
Port, the lower edge of the summer loadline is 104mm above the waterline.
Starboard: the lower edge of the summer loadline is 86mm above the waterline.

Dock water density : 1015 kg/m³
Summer draught : 8.325m
Summer freeboard : 2.026m
Space available for cargo is 8m forward of amidships
FWA=160mm ; TPC=18
MCTC=168 tonnes m. ; CF is amidships

8. A vessel of displacement 5100 tonnes, KG=4.3m has a divided double bottom tank 18.4m x 11.06m x 1.12m. Both sides are filled with fresh water.

Calculate the angle of heel if 60 tonnes of water is discharged from the starboard side of the tank. KM=5m.

INBOARD
STANDING GUY

LOAD = 3t

X

Y

Z

α

α'

