

HONG KONG POLYTECHNIC  
DEPARTMENT OF NAUTICAL STUDIES

---

COURSE : Certificate of Proficiency in Ship Command  
CLASS : Part B  
SESSION : 1989-90  
SUBJECT : Shipboard Operations  
DATE : 11 June 1990 (re-exam.)  
TIME ALLOWED : 3 hours

---

Instructions to  
candidates : Attempt any SEVEN questions  
All questions carry equal marks  
This paper has eight questions

---

Available from  
invigilator :

---

PAPER C

- ✓ 1. You are onboard a general cargo tween deck ship and are about to load a general cargo which includes large consignments of steel plates and bagged rice.  
Describe the principles to be observed in the planning of the stowage of this cargo and all the preparations required.
  
- ✓ 2. (a) State the documentation to be kept onboard a cargo ship concerning the tests and inspections of lifting gear.  
(b) State the periodical inspections to be carried out on lifting gear.  
(c) Who is authorised to carry out these tests and inspections?
  
- ✓ 3. You are onboard a Liquefied Gas Carrier equipped with re-liquefaction plant. Describe how you would prepare the cargo tanks for receiving Liquefied Petroleum Gas.
  
4. A ship displacing 8,100 tonnes has  $KG=6.70m$ ,  $KM=7.32m$  and floats upright in water of relative density 1.025. A DB side tank 16m long, 6m wide and cg 3.0m from the centre line is partially filled with 80 tonnes of sea water,  $Kg 0.5m$ . Calculate the resulting angle of heel.
  
5. A box shaped barge 90m x 12m x 8m,  $KG=3.7m$  is floating at an even keel draught of 4.8m in water of relative density 1.025.  
(i) Calculate the righting moment when the barge is inclined by an external force so that the upper edge of the deck is just awash.  
(ii) Explain the effect on the value of this righting moment if the barge is heeled slightly further.
  
6. The following particulars are for a ship which is about to drydock:  
  
Displacement : 7100 tonnes                       $KG=7.9m$                $KM=8.6m$   
Draughts : 4.11m F, 5.11m A                       $MCTC = 146$  tonnes metre  
Centre of flotation 69m from AP  
  
(i) Calculate the GM at the instant the vessel takes the blocks fore and aft.  
(ii) If this value of GM is considered unsatisfactory what practical steps could be taken to increase it.

7. The following data refers to a vessel of 10,500 tonnes displacement:

Heel	0°	10°	20°	30°	40°
Righting lever (m)	0	0.47	1.34	1.96	2.37

- (a) Calculate :
- (i) the dynamical stability to 40°
  - (ii) the moment of statical stability at 40°
- (b) Explain the difference between dynamical stability and statical stability at 40°.
8. (a) A box shaped vessel 78m x 12m x 7m is floating at an even keel draught of 4m. There is a deep tank amidships, 14m in length and 4.2m deep extending the full breadth of the vessel, stowed with cargo of relative density 1.05 and stowage factor 1.5, the lid of the tank is secured watertight. If this deep tank becomes bilged find the new draughts.
- (b) Explain the effect of the flooding in (a) on the vessel's stability.