



## **SEAGOING DECK OFFICER CLASS 3**

### **CERTIFICATE OF COMPETENCY**

**PAPER 3**

#### **GENERAL SHIP KNOWLEDGE**

Time Allowed : 3 hours

***INSTRUCTION :-***

This paper contains NINE questions where

Candidates should answer questions 1, 2 & 3 plus any FOUR questions from the remainder.

Questions do not carry equal marks and candidates are advised to allocate their time accordingly.

The full mark for this paper is 100 and the pass mark is 50 (50%).

Materials to be supplied:

1. Stability Booklet : M.V. Examiner-1

***CANDIDATES ARE NOT ALLOWED TO WRITE ON OR DEFACE THIS PAPER***

***This paper consists of this page and FOUR other printed pages.***

**Notes to Candidates:-**

- i) Write down your name in the top right-hand corner on the first page of the answer sheets.
- ii) Write down the question number in the top left-hand corner on each page.
- iii) Answer each question on a new page.
- iv) No need to copy the questions' details onto the answer sheets.
- v) **Switch off all your mobile phones and communication devices when in the examination room.**
- vi) **Return all the question paper(s), the used and unused answer sheets before leaving the examination room.**
- vii) **Do not disturb other candidate(s) in the examination room.**
- viii) **Do not attempt to take any photos or recordings of any question papers and/or answer sheets.**
- ix) The progress of the examination is being recorded by close-circuit television (CCTV) and voice recorders in the examination room.

**If the above rules from item v) to viii) are infringed, candidates will be regarded as having failed the examination as a whole and will not be accepted for re-examination for such period as may be decided by the Director.**

**考生注意事項：-**

- i) 在答題紙首頁右上角寫上姓名。
- ii) 在每頁答題紙的左上角標明回答的問題題號。
- iii) 每一條問題另開新頁作答。
- iv) 不需要抄寫問題到答題紙上。
- v) 進入試場後，把手機及所有通信設備關閉。
- vi) 離開試場前，交回所有試卷、所有用過和未用過的答題紙及草稿紙。
- vii) 試場內不可干擾其他考生。
- viii) 切勿嘗試拍攝或錄取任何試卷或答案。
- ix) 考試期間試場內會有閉路電視(CCTV)和錄音系統進行記錄。

如果違反上述 v) 至 viii) 規則，即當作所有考試不及格，以及在處長決定的期間內不得重考。

**Answer questions 1, 2 and 3 plus any four (4) from the remainder**

1. (a) M.V. Examiner-1 is trimmed 0.35 m by stern at a mean draught of 4.25 m. Calculate the new trim if 60.0 tonnes of containers are loaded on hatch No. 1.
- (b) M.V. Examiner-1 is upright at a draught of 5.00m and KG of 6.55 m in sea water of SG (specific gravity) 1.025. The No. 2 outer port double bottom tank, which is empty with centre of gravity 6.0m from the centreline, is filled up (say 95%) with oil of SG 0.92. Calculate the resultant angle of list.

(Remarks:

KG: vertical distance (along the ship's centerline) between the keel and the center of gravity)

**(20 marks)**

2. (a) A vessel with draught amidships 9.34 m port and 9.52 m starboard is on even keel in water of relative density 1.015. Given the following information calculate how much more cargoes she could load to sail in a tropical zone in sea water of relative density 1.025.

Summer displacement : 20,400 tonnes

Summer load draught : 9.72 m

Water plane area at 9.6 m draught : 2,800 m<sup>2</sup>

- (b) Define in the following terms:-

Fresh water allowance;

Damage stability; and

Reserve buoyancy

**(20 marks)**

3. (a) Draw a section through any steel weathertight hatchcover with which you are familiar.
- (b) Explain the reason why ship was detained by PSC inspector if hatch cover was found in poor watertight condition.
- (c) Describe briefly how the ultrasonic test can be carried out on board to check cargo hold watertightness.

**(20 marks)**

**Answer any FOUR questions from the following:**

4. Your vessel, a 40,000 tonnes deadweight bulk carrier, has just completed discharge of a sulphur cargo.
- (a) List out the areas in which the vessel should be inspected for grab damage and explain in brief how any damage found should be dealt with.
  - (b) Your vessel is next scheduled to load a cargo of nickel ore. Describe briefly the necessary cargo hold preparations.
  - (c) State the dangers associated with the carriage of nickel ore cargo and list the precautions which should be taken with a nickel ore cargo on a loaded voyage.

**(10 marks)**

5. Your vessel, a general cargo vessel, has to load 4 steel boxes containing dangerous goods on deck. State
- (a) how you would determine if the goods were suitable for shipment on board your vessel.
  - (b) what extra precautions you would take while the dangerous goods were on board.
  - (c) how you would check the strength of deck for supporting the weight of boxes.

**(10 marks)**

6. A ship has a displacement of 45,000 tonnes, KG 8.8 m, KM 9.8 m and is listed  $5^\circ$  to starboard. Cargo is worked as follows:

Load 100 tonnes at KG 7.5 m, 5.5 m to port of centreline;

Load 300 tonnes at KG 7.0 m on the centreline;

Load 100 tonnes at KG 9.0 m, 4.0 m to starboard of centreline.

Calculate the final angle of list. (Assume KM remains constant)

(Remarks:

KG: vertical distance (along the ship's centerline) between the keel and the center of gravity

KM: the distance from the keel to the metacentre)

**(10 marks)**

7. (a) Explain the meaning of grain capacity and bale capacity.
- (b) State what precautions you would take for loading heavy lifts by ship crane.

**(10 marks)**

8. M.V. EXAMINER-1 is floating at a mean draught of 4.8m and trimmed 0.50m by the stern. 4 X 20-foot containers, each weighing 20 tonnes, are to be loaded on deck. State where these containers should be loaded in order to minimise the trim by the stern and calculate the final trim of the vessel.

**(10 marks)**

9. (a) Explain the reason that light ship should be ballasted properly for an ocean transit voyage.
- (b) What precautions should be alerted for taking in ballast water during cargo discharge.

**(10 marks )**

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