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B.Sc. (NAUTICAL SCIENCE)**Term-End Examination****December, 2011****BNA-024 : SHIP OPERATIONS***Time : 2 hours**Maximum Marks : 70*

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- Note :** (i) Questions 1 and 2 are **Compulsory**.
(ii) Attempt **any five** of the remaining seven questions.
(iii) Use of non programmable **scientific** calculator is allowed.
(iv) Use of M.V. Hindship table is allowed.
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1. A upright vessel of 10,000t displacement, KG8.3m **10**
carries out the following cargo operations :

Quantity (T)	Loaderd Discharged	or KG (m)	Dist.off centre line
200	Discharged	10.0	5m port
800	Discharged	2.3	4 m stbd.
500	Discharged	5.2	3m port.
250	Loaded	8.0	NIL
250	Loaded	12.0	NIL

If the final KM is 9.6 m, find the resultant list.

2. M.V. Hindship floating in condition No.7, discharges the entire cargo in No. 2 TDK and fills in the Bulbous bow with 186.6 tonnes of water ballast, KG 3.52 m. Assuming theoretically that the deck cargo of locomotives was shifted to No.2 TDK and also No. 4 (P and S) DB tanks were slackened, increasing the FSC by 0.035 m, calculate the final GM (fluid) of the ship. 10
3. Draw a profile view of a Ro-Ro vessel showing midship ramp arrangement, DB arrangements and car decks. 10
4. With the help of diagrams define the following : 10
- (a) Bell Mouth
 - (b) Air pipe of DB Tank
 - (c) Tank dome
 - (d) Off set bulb plate
 - (e) Duct Keel
5. (a) Draw side elevation of cargo hold bilge and explain its use. 10
- (b) Sketch a typical arrangement of a fire main system and clearly identify the various pumps used.

6. Write down ten entries required to be made in respect of cargo or ballast operation in oil Record Book on an oil tanker. **10**
7. (a) List ten equipments required as per SOPEP manual. **10**
(b) State the purpose of International Convention on Load Line.
8. Write short notes on the following : **10**
(a) NAVTEX Receiver
(b) International Aeronautical and Maritime search and Rescue Manual (IAMSAR).
9. Describe the functions of following :
(a) Centrifugal pump **3**
(b) Refrigeration plant **3**
(c) Boiler **4**
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