

**INDIAN MARITIME UNIVERSITY**  
(A Central University, Govt. of India)  
**May/June 2018 End Semester Examinations**  
**DNS (Diploma in Nautical Science)**

**Semester I**

**CARGO HANDLING, STOWAGE & SEAMANSHIP I (UD11T2106)**

**Date: 09.06.2018**  
**Time: 2 Hrs**

**Max.Marks: 70**  
**Pass Marks: 28**

**Attempt any five questions out of seven. All questions carry equal marks.**  
**Use of non programmable type Scientific Calculator is allowed.**

**Section A: CARGO HANDLING AND STOWAGE**

(Q. No. 1 is compulsory and any 3 other Questions from this Section)

1. A Cargo hold 22m x 15m x 12m of bale capacity 3900 m<sup>3</sup> and load density 5 t/m<sup>2</sup>, is to be filled so as to maximize the freight earning. The cargo available is **(10 Marks)**

Cargo	SF	Freight
STEEL BILLETS	0.70 m <sup>3</sup> /t	\$ 70/- per tonne
COTTON BALLS	2.80m <sup>3</sup> /t	\$ 50/- per tonne

How much of each cargo you will load and what is the freight earned?

2. **Write Short Notes on following (2 x 5 = 10 Marks)**

- (a) LPG and LNG Ships and cargoes they carry
- (b) Palletisation and Advantages
- (c) Measurement cargoes
- (d) Broken Stowage with suitable sketch
- (e) Ullage with suitable sketch

3. (a) Explain the principle of stowing cargo **(5 marks)**

- (b) Define Dock Labour act and what powers are given to the Dock Safety Inspector **(5 marks)**

4. (a) How will you prepare the hold for loading cargo **(5 marks)**

- (b) Explain in brief different types of Cargo handling gears used on dry cargo ships. **(5 marks)**

5. (a) Define Ship Sweat and explain how you will prevent formation of sweat. **(5 marks)**

- (b) Explain what precautions you will take to prevent fire in cargo hold  
**(5 marks)**

**Section B: SEAMANSHIP THEORY & SAFE WORKING PRACTICES**

(Answer any 3 Questions from this Section)

6. A 5 tonne load is to be lifted by means of a gun tackle used to disadvantage. Find the approximate stress on the hauling part of the tackle, and the minimum size of wire rope (6 x 24) you would use in the tackle  
(BS of a wire rope is  $20D^2/500$ ) **(10 marks)**
7. (a) Explain care and maintenance of Wire ropes **(5 marks)**  
(b) Draw the mooring arrangement of a ship and explain use of Rat Guard. **(5 marks)**
8. (a) Explain the major components of Paints **(5 marks)**  
(b) Explain safety precautions to be taken while operating power tools **(5 marks)**
9. (a) Explain with Electro-chemical corrosion and explain Sacrificial-Anode. **(5 marks)**  
(b) Explain use of following PPE:  
Helmet, Safety Shoes and Boiler suit **(5 marks)**

\*\*\*\*\*