



NATIONAL SENIOR CERTIFICATE EXAMINATION  
NOVEMBER 2016

**MARITIME ECONOMICS**

Time: 3 hours

300 marks

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**PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY**

1. This question paper consists of 12 pages. Please check that your question paper is complete.
  2. Answer all the questions.
  3. Read the questions carefully before answering.
  4. It is in your own interest to write legibly and to present your work neatly.
  5. Where calculations are involved, all working must be shown.
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**SECTION A            MULTIPLE-CHOICE QUESTIONS****QUESTION 1**

Answer these questions on the Answer Sheet, provided on the inside front cover of your Answer Book, by placing a cross in the block next to the letter that represents the most suitable answer.

- 1.1 One of the organisations that will declare a ship seaworthy after an accident is the ...
- A Ship's Agent.
  - B Classification Society.
  - C Charterer.
  - D P&I Club.
- 1.2 The agreement between the charterer and the ship owner in respect of the chartering of a ship is called the ...
- A Charter Register.
  - B Charter Party.
  - C Charter Agreement.
  - D Charter Contract.
- 1.3 A ship is due to load coal at Richards Bay between 3 and 8 December. This period of time is called the ...
- A Laytime.
  - B Laycan.
  - C Demurrage.
  - D Dispatch.
- 1.4 The maritime convergence zone between the Mediterranean Sea and the North Atlantic Ocean is called the ...
- A Turkish Straits.
  - B Straits of Malacca.
  - C Straits of Gibraltar.
  - D Straits of Magellan.
- 1.5 The agreement between the owner of a ship in distress and the owner of a salvage tug regarding the salvage of a ship is called the ...
- A Lloyd's Register.
  - B Lloyd's Open Form.
  - C Lloyd's Open List.
  - D Lloyd's Charter.
- 1.6 A charter whereby the ship has been chartered to move coal from Richards Bay to China for six months is called a ...
- A Voyage Charter.
  - B Demise Charter.
  - C Bareboat Charter.
  - D Time Charter

- 1.7 The Incoterm that indicates that the consignee pays all charges from the time the cargo is stowed aboard the ship until its delivery at his premises is ...
- A FOB.
  - B FAS.
  - C FIO.
  - D CIF.
- 1.8 The Incoterm that indicates that the consignor (shipper) pays all charges until the time the cargo arrives at the premises of the consignee.
- A FOB.
  - B FAS.
  - C FIO.
  - D CIF.
- 1.9 The type of marine insurance that covers the costs of a ship diverting from her course to land an injured crew member is ...
- A FFO.
  - B Hull & Machinery.
  - C TT Club.
  - D P&I Club.
- 1.10 A weather phenomenon that brings very strong winds and rough seas to the central part of the Indian Ocean in the late summer is called a ...
- A Depression.
  - B Mid-latitude cyclone.
  - C Tropical cyclone.
  - D High pressure cell.
- 1.11 The basis of the marine food chain is the ...
- A Zooplankton.
  - B Bioplankton.
  - C Phytoplankton.
  - D Phyloplankton.
- 1.12 The figure that provides an indication of how many tons of cargo, fuel, fresh water, ballast water and stores a ship can carry is its ...
- A GRT.
  - B MRT.
  - C NRT.
  - D DWT.
- 1.13 The IMO convention that covers the legal aspects of Bills of Lading is called the ...
- A Bill of Lading Convention.
  - B Bill of Lading Code.
  - C Carriage of Goods by Sea Convention.
  - D Sea Transport Convention.

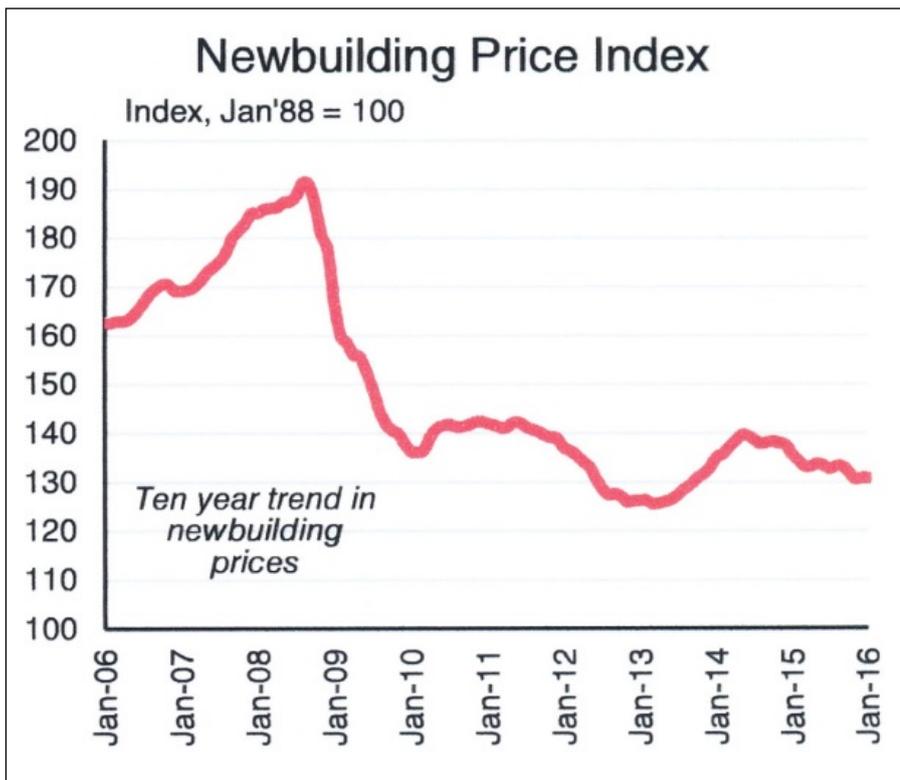
- 1.14 The IMO convention that covers the number of lifeboats and/or life rafts a ship should carry is called the ...
- A ISPS.
  - B ISM.
  - C SOLAS.
  - D SAMSA.
- 1.15 Which of the following is a **South African-owned island** in the Southern Ocean?
- A Marion Island.
  - B Tristan da Cunha.
  - C Gough Island.
  - D Bouvet Island.
- 1.16 Which of the following will **not** result in a chartered vessel being off hire?
- A The chartered ship diverting to render assistance to another ship that is on fire.
  - B The chartered ship suffering engine trouble.
  - C The chartered ship not being able to maintain the required speed for two days during the charter because of an engine problem.
  - D The chartered ship's crew going on strike.
- 1.17 Which of the following is a cost that can be placed in the **operations** budget for a ship?
- A Repayment of a bank loan on the ship.
  - B Dry-docking.
  - C Depreciation.
  - D Ship's stores.
- 1.18 The South African government agency responsible for clearing imported cargo is the ...
- A South African Import Agency.
  - B South African Receiver of Imports Agency.
  - C South African Revenue Service.
  - D South African Revenue Agency.
- 1.19 The term for seawater used to trim a ship is ...
- A Black water.
  - B Ballast water.
  - C Billage Water.
  - D Brown Water.
- 1.20 Which **is** the weather-sensitive cargo in the list below?
- A Aluminium Ingots.
  - B Newsprint.
  - C Iron ore.
  - D Drilling pipes.

**SECTION B**

**ALL THE FOLLOWING QUESTIONS MUST BE ANSWERED IN YOUR ANSWER BOOK.**

**QUESTION 2 THE MARITIME WORLD**

- 2.1 What were the disadvantages of ships using coal for their fuel? (8)
- 2.2 How are naval architects and shipowners currently dealing with each of the following issues in ship design?
  - 2.2.1 Air pollution (4)
  - 2.2.2 Trying to make ships more fuel efficient. (6)
- 2.3 Study the graph below. It shows the "index" of the costs of building ships for the period January 2006 to January 2016. The values shown in the graph give an idea of increases or decreases in the cost of building ships. Now answer the questions set.



- 2.3.1 What is the highest index value on the graph? (2)
- 2.3.2 When did the index value begin to drop by more than 20 points? (2)
- 2.3.3 What was the cause of the rapid drop in the index value? (2)
- 2.3.4 Will shipowners be happy with the trend shown in the graph? Answer YES or NO. (2)
- 2.3.5 Explain your answer to Question 2.3.4. (4)

- 2.4 The major sources of the world's seafarers have changed over the last 30 years, and most seafarers now come from Asian or Eastern European countries, rather than from Western European countries such as Britain, Netherlands, Germany and Norway.
- 2.4.1 Name two countries that currently supply large numbers of seafarers to ships. (4)
- 2.4.2 Give three reasons for the decline in previously major seafaring nations as suppliers of seafarers. (6)
- 2.4.3 South Africa has a large number of young people and some believe that the shipping industry can be developed into a major employer of South African seafarers. What can be done to stimulate the development of local merchant shipping so that it can become a major employer of young people? (12)
- 2.5 Study the table below and answer the questions set.

SHIPPING STATISTICS – PORT EXE								
SHIPS CALLING								
2010 – 2015								
2016 & 2017 estimated								
YEAR >>>	2010	2011	2012	2013	2014	2015	2016	2017
SHIP TYPE								
Container Ships	2100	2006	2114	2101	2356	2764	3118	3109
Bulk Carriers	204	232	241	221	1248	1809	2115	2332

A steel mill has been built at Port Exe. Iron ore (the raw material from which steel is made) and other minerals have to be imported. Some steel products are exported in containers and other steel products are exported in bulk.

- 2.5.1 Based on the information provided in the table, during which year did this steel mill begin to affect shipping at Port Exe? (2)
- 2.5.2 Explain why the number of container ships calling at Port Exe has been affected by the construction of the steel mill. (4)
- 2.5.3 What is the average number of container ships that have actually called at Port Exe per year? (2)

**[60]**

**QUESTION 3      SHIPPING OPERATIONS**

- 3.1 Because of the drought in South Africa, about 4,5 million tons of grain will need to be imported.
  - 3.1.1 Assuming an average cargo capacity of 30 000 tons, how many shiploads will be necessary to bring the grain to South Africa? (4)
  - 3.1.2 What type of ship will be used to bring the grain to South Africa? (2)
  - 3.1.3 Grain SA has planned to land 1,8 million tons in Cape Town and the rest will be landed in other South African ports. If the grain is to arrive in Cape Town in three ships per week, how many weeks will it take to complete the import of the grain that has been allocated to Cape Town? (Round off to the next week.) (6)

3.2 Study the details of *Orca Sun* and answer the questions set:

Owner	Orca Shipping, Bergen, Norway
Charterer	Western Grain Importers, Cape Town
Port of registry	Majuro, Marshall Islands
Year of commissioning	2015
Charter rate	\$6420 per day.
Charter length	Six, loaded voyages La Plata–Cape Town NB: The ship is on charter from 00:01 on 4 December when she arrives in La Plata for the first time and ends at 23:59 on the day she finishes cleaning her holds after the sixth, loaded voyage to Cape Town.
Cargo	35 000 tons of grain on each voyage (estimated)
Shipper	Compagnia Cornos, La Plata, Argentina
Consignee	Cape Grains, Malmesbury (70 km north of Cape Town by railway)
Commencement of charter	00:01 on 4 December when <i>Orca Sun</i> arrives at La Plata.
Time in La Plata	3 days
Time at sea	11 days (La Plata–Cape Town)
Time in Cape Town	7 days plus one day cleaning holds
Expected time at anchor	8 days at La Plata per round voyage

A round voyage is calculated from the time of arrival at La Plata, and includes loading time in La Plata, the voyage to Cape Town, discharge time in Cape Town, hold cleaning time, return voyage from Cape Town to La Plata, and expected time at anchor per round voyage.

- 3.2.1 Calculate the number of days the ship will take to complete one round voyage. (6)
- 3.2.2 Calculate the number of days she will be on charter. **Read the notes above very carefully.** (6)
- 3.2.3 Calculate the revenue she will earn during this charter. (6)

- 3.2.4 On one voyage, rain delays the discharge of cargo in Cape Town by two days.
- (a) Will the owner be able to claim demurrage for this delay? Answer YES or NO. (2)
- (b) Explain your answer to Question 3.2.4 (a). (4)
- 3.2.5 Give a feasible **laycan** for the ship for her first arrival in La Plata. (4)

3.3 While *Orca Sun* is at anchor awaiting her berth in Cape Town, a very strong north-westerly wind and swell arise. Her anchor chain parts and, despite the ship dropping the other anchor, she drifts onto the beach. The local salvage tug *Silver Hawk* arrives and, with a heavy swell running, she manages to refloat the ship on the next high tide. The South African Maritime Safety Authority (SAMSA) orders the tug to tow her to the lee of Robben Island where divers inspect the hull and find that some of the bottom plates have been damaged. Her rudder has also been damaged and two propeller blades have been bent. Soundings in number two and three holds indicate that water has entered these holds, and on inspection, it is found that the grain cargo in these holds has been ruined. (Number 2 Hold 7800 tons; Number 3 Hold 7945 tons.)

No oil pollution occurred and no one was injured during the incident.

The Cape Town harbour master allows her to enter the port where her undamaged cargo is landed and taken by rail to the storage facility at Malmesbury. The damaged cargo is also landed but taken to an authorised dump site as it cannot be used by humans or animals.

*Orca Sun* enters dry dock for repairs to her hull, rudder and propeller. Two months later, as she prepares to sail for La Plata, she is arrested in response to an urgent court action brought before the Cape Town High Court by Macdor Engineering who claims that the company has not been paid in full for the repairs.

- 3.3.1 Explain why the tug owner can make a salvage claim for this operation. (6)
- 3.3.2 What term is given to the process used to settle any dispute regarding the tug owner's salvage claim? (2)
- 3.3.3 The undamaged cargo totals 20 400 tons. Each railway truck can carry 40 tons of grain and trains of no more than 30 grain trucks will be used to move the grain to Malmesbury.
- (a) How many railway trucks will be needed to move the undamaged cargo to Malmesbury? (4)
- (b) How many trains will move the cargo to Malmesbury? (4)
- 3.3.4 Why is SAMSA involved in this incident? (4)
- 3.3.5 Who will release the ship once Macdor Engineering has been paid in full? (2)
- 3.3.6 List four items (relating to THIS incident) that will be covered by the ship's P&I Club. (8)

3.4 Look at the details for *Orca Sun*.

3.4.1 Which country has the most ships on its register? (2)

3.4.2 Why is *Orca Sun* considered to be flying a "flag of convenience"? (4)

3.4.3 Explain why some owners prefer to flag their ships in a country other than their own. (8)

3.4.4 Explain why some people think negatively of a ship flying a flag of convenience. (8)

3.5 *Orca Sun* was built in 2015.

3.5.1 Will a ship built in 1995 have to have more or less money budgeted for maintenance when compared to *Orca Sun*? (2)

3.5.2 Explain your answer to Question 3.5.1. (6)

**[100]**

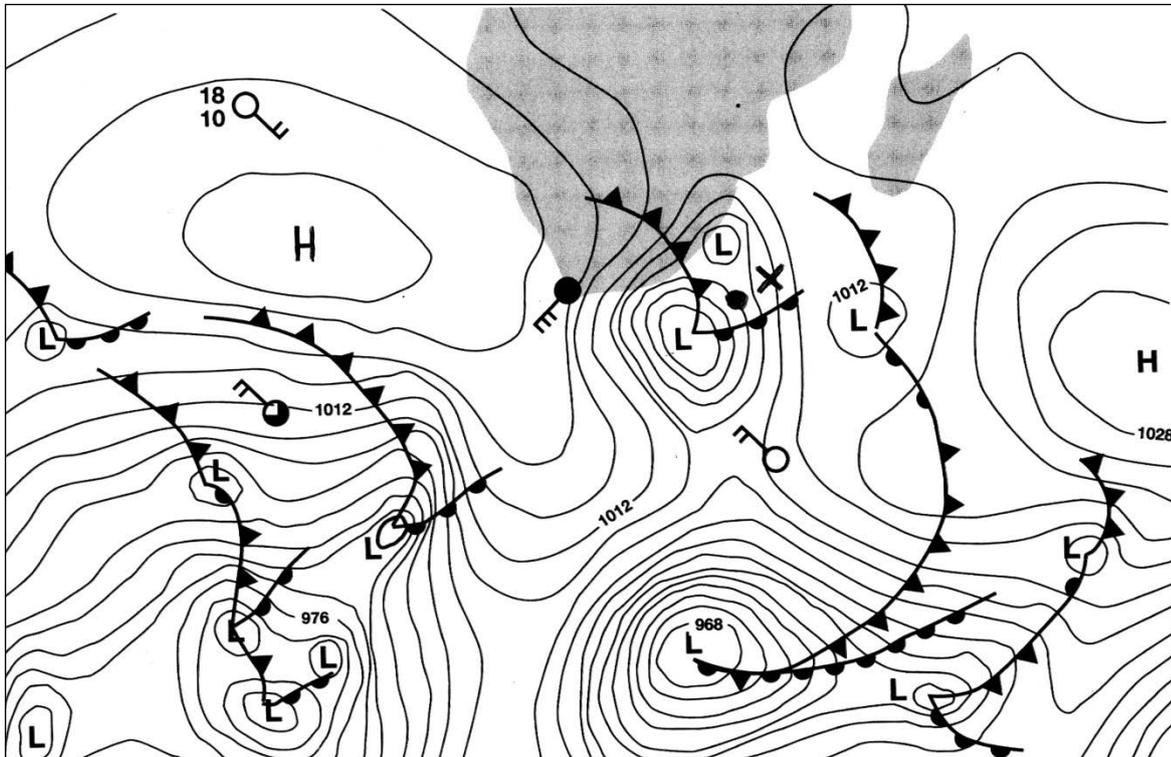
**QUESTION 4      INTERNATIONAL TRADE**

- 4.1 The government of Country A wants to stimulate the cotton textile industry because it is labour intensive (i.e. it provides jobs for lots of people). A cotton textile factory was established in Port X 20 years ago, but it is struggling to compete with artificial and cheaper textiles and even with cheaply finished clothing that is being imported from Asia.
- 4.1.1 Explain what Country A should do to ensure that the cotton textile industry can grow in size and in profitability. (8)
- 4.1.2 What type of ship will be used to bring bales of cotton from Egypt to Port X? (2)
- 4.1.3 Describe the procedures involved from the time that the ship has berthed and the cargo of cotton bales is discharged until the cotton bales arrive at the textile factory. (8)
- 4.2 The Straits of Hormuz lies between the Arabian (Persian) Gulf and the Arabian Sea. Explain the importance of this strait in modern shipping and mention some of the political issues that expose the straits to possible military threats. (12)
- 4.3 The British port state control organisation (MCA) finds that a ship is overloaded before she sails from London (UK).
- 4.3.1 How would they know that the ship is overloaded? (4)
- 4.3.2 What would MCA do about this problem? (6)
- 4.4 The Capesize bulker *Pluto* is scheduled to sail from Port Hedland (Australia) to Rotterdam (Netherlands). Her owner has the option of sending her via the Suez Canal where the transit toll is \$332 106 and anti-piracy guards will cost \$80 000 or via the Cape route (a voyage of three extra days).
- The ship's charter rate is \$22 000 per day and her fuel consumption is:  
HFO 65 tons per day (\$310 per ton)  
MDO: 03 tons per day (\$435 per ton)
- 4.4.1 Calculate how much it will cost for those three extra days' steaming via the Cape. (6)
- 4.4.2 Calculate whether it will be more expensive or cheaper for the ship to steam via the Cape. **NB:** you must show how much cheaper or more expensive the voyage via the Cape will be. (6)
- 4.4.3 Explain the practice of **ballast water exchange** in the context of the voyage of *Pluto* from Australia to Rotterdam. (6)
- 4.4.4 To which mark on the load line will she be loaded should she make the voyage via the Cape? (2)
- 4.4.5 Which convention governs the regulations relating to ships' load lines? (2)

- 4.4.6 Through which two convergence zones will *Pluto* pass if she steams from Australia to Rotterdam via the Cape? (4)
- 4.4.7 Give two other important iron ore trade routes. (4)
- 4.5 The practice of **slow steaming** is used by some shipping companies these days. Explain how it will benefit the shipowner if his ships are doing **slow steaming**. (6)
- 4.6 Which organisation ...
- 4.6.1 Would act against a ship that is deliberately causing oil pollution off the South African coast?
- 4.6.2 Is responsible for the registration of South African ships? (4)
- [80]**

**QUESTION 5 MARITIME ENVIRONMENTAL CHALLENGES**

Study the synoptic chart below and answer the questions that follow.



- 5.1 Note the position of Ship X off the east coast of South Africa. She is on passage from Durban to Cape Town.
    - 5.1.1 Describe the weather that the ship will experience in the next 18 hours. (6)
    - 5.1.2 Why will she find the sea conditions different to a ship steaming in the opposite direction? (4)
  - 5.2 Note the conditions at Cape Town where the wind is blowing in excess of 30 knots. How will this affect harbour operations in Cape Town? (6)
  - 5.3 Give two reasons for all responsible shipowners wishing to avoid oil spills. (4)
- [20]**

**260 marks**

**Total: 300 marks**