ЗМІСТ

MODULE I. GENERAL SHIP ARRANGEMENT

UNIT1. VESSEL

1.1. Read and translate the words.

anchor	bulk carrier	circuit
speed	barge	auxiliary
cargo	dredger	tank
hull	tugboat	fit
screw	roll-on/roll-off ship	machinery
mast	ferry	engine
petrol	waterline	equipment
generator	keel	tanker
bulkhead	deck	motion
dinghy	submarine	watercraft

1.2. Read the text and answer the questions below.

TYPES OF SHIPS

A ship is an engineering construction which can move on water or under water and fulfil different tasks: transport, special, technical, scientific or fighting tasks. After the service ships may be divided into two principle groups: warships and merchant ships.

Warships may be either battleships or different auxiliary vessels and bases. Man-of-war is used for heavy artillery blows. Iron-clad battleships, are used for the coastal defence. Monitors are used for fighting against the coastal artillery.

Gunboats are used for bombarding the enemy coast and military units and for patrolling. Cruisers are used for aiding other ships. Submarines are used for torpedo attacks.

Auxiliary vessels are: school ships, floating bases, hospital ships, sanitary ships, messenger vessels, tugs, icebreakers, floating docks, cranes and other ships aiding the operations of fighting warships.

There are many types of merchant ships. They are developed to transport cargo and passengers. They may be divided into the following groups:

Passenger ships are to carry people who want to travel.

Cargo-passenger vessels are used for carrying cargo and passengers.

Transport vessels are used to transport goods.

Freighters can be: ore carriers, colliers, car carriers, lumber carriers. Tankers can carry fuel, oil gasoline, asphalt, molasses, chemicals, gas. There are special vessels: fishing, whalers, service, dredgers, tugs, ferries and others.

1) What is a ship?
2) What are her tasks?
3) What principle groups of a ship do you know?
4) What auxiliary vessels do you know?

1.3. Match the words with their definitions.

1) anchor	a) careful study that is done to find and report new knowledge about something
2) speed	b) the goods, merchandise, or whatever is conveyed in a vessel or boat
3) welding	c) a vertical spar for supporting sails
4) cargo	d) a fuel in internal-combustion engines
5) hull	e) distance travelled per unit time
6) screw	f) a mechanical device that prevents a vessel from moving

7) mast	g) engine that converts mechanical energy into electrical energy by electromagnetic induction.
8) petrol	h) the frame or body of ship
9) research	i) a propeller with several angled blades that rotates to push against water or air
10) generator	j) fastening two pieces of metal together by softening with heat and applying pressure

1.4. Fill in the gaps.

research	mast	welding	petrol	speed
generator	screw	anchor	cargo	hull

1) A ship had thrown its _____ down near desolate shores.

2) The car with a top _____ of 200 mph is for sale as the main asset of the firm.

3) The main body of any ship is a _____.

4) A fouled _____ can reduce a ship's speed by 5 % and increase fuel consumption by 40 %.

5) They tend to be solid objects made of plastics, metals and ceramics held together by _____.

6) She gestured all the _____ and sails billowing overhead.

7) He filled the tank of a car with _____.

8) Mechanical energy was converted into electrical one by _____.

9) We support the human use of animals and genetic technology where necessary in medical _____.

10) Ferry can carry _____ and passengers.

1.5. Read the text and answer the question: Is ferry a passenger or a cargo ship?

Most modern merchant ships can be placed in one of a few categories, such as:

Bulk carriers are cargo ships used to transport bulk cargo items such as ore or food staples (rice, grain, etc.) and similar cargo. A bulk carrier can be recognized by the large box-like hatches on its deck, designed to slide outboard for loading. Bulk cargo can be either dry or wet.

Container ships are cargo ships that carry their entire load in truck-size containers, in a technique called containerization. They form a common means of commercial intermodal freight transport. Informally known as «box boats,» they carry the majority of the world's dry cargo. Most container ships are propelled by diesel engines, and have crews of between 20 and 40 people. They generally have a large accommodation block at the stern, directly above the engine room.

Tankers are cargo ships for the transport of fluids, such as crude oil, petroleum products, liquefied petroleum gas, liquefied natural gas and chemicals, also vegetable oils, wine and other food. The tanker sector comprises one third of the world tonnage.

Reefer ships are cargo ships typically used to transport perishable commodities which require temperature-controlled fruits, meat, fish, vegetables, dairy products and other foodstuffs.

Roll-on/roll-off ships are cargo ships designed to carry wheeled cargo such as automobiles, trailers or railway carriages. RORO (or ro/ro) vessels have built-in ramps which allow the cargo to be efficiently «rolled on» and «rolled off» the vessel when in port. While smaller ferries that operate across rivers and other short distances still often have built-in ramps, the term RORO is generally reserved for larger ocean-going vessels.

Ferries are a form of transport, carrying (or *ferrying*) passengers and sometimes their vehicles. Ferries are also used to transport freight (in lorries or freight containers) and even railroad

cars. Most ferries operate on regular, frequent, return services. A foot-passenger ferry with many stops, such as in Venice, is sometimes called a water bus or water taxi. Ferries form a part of the public transport systems of many waterside cities and islands, allowing direct transit between points at much lower cost than bridges or tunnels. Many of the ferries operating in Northern European waters are ro/ro ships.

Cruise ships are passenger ships used for pleasure voyages, where the voyage itself and the ship's amenities are considered an essential part of the experience. Cruising has become a major part of the tourism industry, with millions of passengers each year.

Cable layer is a deep-sea vessel designed and used to lay underwater cables for telecommunications, electricity and such.

A tugboat is a boat used to maneuvre, primarily by towing or pushing other vessels in harbours, over the open sea or through rivers and canals. They are also used to tow barges, disabled ships, or other equipment like towboats.

A dredger (sometimes also called a dredge) is a ship used to excavate in shallow seas or fresh water areas with the purpose of gathering up bottom sediments.

A barge is a flat-bottomed boat, built mainly for river and canal transport of heavy goods. Most barges are not self-propelled and need to be moved by tugboats towing or towboats pushing them. Barges on canals (towed by draft animals on an adjacent towpath) contended with the railway in the early industrial revolution but were outcompeted in the carriage of high value items due to the higher speed, falling costs, and route flexibility of rail transport.

Coastal trading vessels, also known as coasters, are shallow-hulled ships used for trade between locations on the same island or continent. Their shallow hulls mean that they can get through reefs where sea-going ships usually cannot (sea-going ships have a very deep hull for supplies and trade etc.).

1.6. Match the type of the ship and its function.

1) bulk carriers	1. a ship used to excavate in shallow seas to gather up bottom sediments
2) barge	2. bulk cargo items such as ore or food staples (rice, grain, etc.)
3) dredger	3. passenger ships used for pleasure voyages
4) tugboat	4. carry passengers and sometimes their vehicles
5) cable layer	5. carry wheeled cargo such as automobiles, trailers or railway carriages
6) reefer ships	6. transport of fluids, such as crude oil, petroleum products, liquefied petroleum gas, also vegetable oils, wine and other food
7) cruise ships	7. a flat-bottomed boat, built mainly for river and canal transport of heavy goods
8) tankers	8. transport perishable commodities which require temperature-controlled fruits, meat, fish, vegetables, dairy products
9) roll-on/roll-off ships	9. a boat used to maneuvre, primarily by towing or pushing other vessels in harbours
10) ferries	10. carry their entire load in truck-size containers
11) container ships	11. is a deep-sea vessel designed and used to lay underwater cables for telecommunications, electricity

1.7. There are three types of ships: passenger ships, cargo ships and auxiliary vessels. Fill in the table.

Passenger ship	Cargo ships	Auxiliary vessels

1.8. Speak about types of ships.

UNIT 2. HULL

2.1. Read the text and answer the questions below.

THE HULL

The main body of a vessel is called the hull. The hull is divided by vertical steel walls, called transverse bulkheads, into a number of watertight compartments.

The shell plating forms the ship's watertight covering which allows her to float. Bulkheads give the ship contour, shape rigidity and strength.

The forward end of the hull is termed the bow and the after end, the stern.

The lowermost part of the hull is termed the bottom whereas the walls on either hand are referred to as the sides and that topping the hull, the deck. Consequently the respective portions of the hull's shell are defined as the bottom, side and deck plating.

The girderwork stiffening the shell is called the framing made up of intersecting strength members running either fore and aft or thwartships, the framing is secured to the bottom, side and deck plating.

The upright watertight partitions subdividing the hull's space into a number of sections, or compartments, are called bulkheads. They fall into two main groups: longitudinal bulkheads and transverse bulkheads. The former are erected in the fore-and-aft direction parallel to the centre line or the side plating and thus divide the ship into longitudinal compartments and the latter run thwartships to enclose a number of transverse compartments from side to side.

Bulkheads commonly extend from the ship's bottom to the upper deck. The transverse bulkhead nearest to the bow is called the forepeak bulkhead and the space it encloses from side to side is referred to as the forepeak (forward compartment) similarly, the aftermost partition is termed the afterpeak bulkhead. It forms the forward side of the afterpeak.

In addition to upright bulkheads, the shell is stiffened by a number of horizontal partitions defined as intermediate decks and platforms.

The space between any continuous decks is called a tweendeck. In a ship it is commonly of constant height. The intermediate deck and platforms consist of plates reinforced by girders.

The nomenclature of intermediate decks and platforms depends on their location in respect to the upper deck. Consequently, they are called the second or main deck, the third or lower deck the first platform, the second platform, etc.

The bottom, side and deck plating consists of steel plates. The short sides of each plate are called the ends, and the long sides, the edges. Plates are joined end to end to form a panel of plating which runs forward and aft and is known as a strake. The joint between the ends of any two plates in a strake is known as a butt, and that between two strakes, a seam.

The flat plate keel is a line of plates forming the central strake in the ship's bottom. The strakes next to it are garboard strakes, and those at the turn of the bilge, linking the bottom plating to the side plating, are termed the bilge strakes or closing strokes. The uppermost rows of side plating are called the sheer strakes. They are attached to the edges of the upper deck's outer plates, referred to as the deck stringers.

Since the hull tapers towards the ends, the plating of both sides meets at the bow and stern, being secured there rigid structures are called the stem and sternpost, respectively. These give the shape to the fore and aft ends of the ship.

1) What is the main body of a vessel?

2) What do we call the steel walls which divide the hull into a number of watertight compartments?

3) What are their functions?

4) What does the shell plating form?

5) What is the bow (the stern, the bottom)?

2.2. Fill in the gaps.

opposite	midships	sides	shipbuildingship
divides	vessel	stern	

1) A ship is any large _____ in which freight or passengers are carried.

2) The foundation of a _____ is called the keel.

3) Bow indicates the extreme point of the ship, looking forward, stern is the corresponding term for the _____ end of the ship.

4) That side of the ship which is on the left as one looks toward the bow is known as port. The right-hand side, looking forward is known as star board. Thus port on the left and star board on the right make up the _____ of the ship.

5) The line which separates the port from the starboard side is known as the centre line and extends from bow to _____.

6) There is another imaginary line which _____ the ship in two crosswise. This line is known as midships.

7) That part of the ship which is to the front of midships is termed «fore»; that which is to the rear of _____ is termed «aft».

8) The terms «front» and «rear» are never used in _____.

2.3. Put the words into the order.

1) hull / the / called / main / is / body / of / a / vessel / the

2) strength / contour / and / bulkheads / the / ship / give / rigidity / shape

3) groups: / they / fall / bulkheads / longitudinal / into / bulkheads / two / transverse / main / and

4) tweendeck / a / the / called / between / any / continuous / space / is / decks

5) side / deck / steel / the / plates / of / bottom / plating / consists / and

6) strakes / rows / the / uppermost / called / of / are / side / plating / sheer /the

7) ends / these / the / fore / give / aft / the / ship / shape / and the / to / of

2.4. Read the text and answer the question: What materials are used to build a hull?

The hull is the watertight body of a ship or boat. Above the hull is the superstructure and/or deckhouse, where present. The line where the hull meets the water surface is called the waterline.

The structure of the hull varies depending on the vessel type. In a typical modern steel ship, the structure consists of watertight and non-tight decks, major transverse and watertight (and also sometimes non-tight or longitudinal) members called bulkheads, intermediate members such as girders, stringers and webs, and minor members called ordinary transverse frames, frames, or longitudinals, depending on the structural arrangement. The uppermost continuous deck may be called the «upper deck», «weather deck», «spar deck», «main deck», or simply «deck». The particular name given depends on the context – the type of ship or boat, the arrangement, or even where it sails. Not all hulls are decked (for instance a dinghy).

In a typical wooden sailboat, the hull is constructed of wooden planking, supported by transverse frames (often referred to as ribs) and bulkheads, which are further tied together by longitudinal stringers or ceiling. Often but not always there is a centerline longitudinal member called a keel. In fiberglass or composite hulls, the structure may resemble wooden or steel vessels to some extent, or be of a monocoque arrangement. In many cases, composite hulls are built by sandwiching thin fiber-reinforced skins over a lightweight but reasonably rigid core of foam, balsa wood, impregnated paper honeycomb or other material.

2.5. Match the words with their definitions.

1. hull	a) wall which divides the structure of a ship into separate parts
2. waterline	b) a large iron or steel beam used for building bridges
3. kKeel	c) a small open sailing boat for racing
4. girder	d) a tropical American tree or the wood from the tree which is very light
5. stringer	e) a line where the hull meets the water surface
6. deck	f) a light material made from a glass threads for making small boats
7. dinghy	g) a centerline longitudinal member
8. bulkhead	h) a watertight body of a ship
9. fibreglass	i) a longitudinal structural piece in a framework, especially that of a ship
10. balsa	j) the outside top level of a ship that you can walk on

2.6. True or False.

1) Deckhouse meets the water surface.
2) Bulkheads are the intermediate members of the structure.
3) Spar deck is the uppermost continuous deck.
4) Ribs are centerline longitudinal members.
5) Hulls are built only by sandwiching thin fiber-reinforced skins.

2.7. Match the halves of the sentences.

1) The hull is	a) "upper deck"
2) The line where the hull meets the water surface is called	b) a keel
3) The uppermost continuous deck is	c) the waterline
4) The hull is	d) constructed of wooden planking
5) A centerline longitudinal member is	e) the watertight body of a ship or boat

2.8. Speak about a hull.