UNIT SEVEN

FUNDAMENTALS OF FIRE

Fire is the rapid oxidation of any combustible material. It is a chemical reaction involving fuel, heat, and oxygen. These three components commonly referred to as the fire triangle, in the right proportions, will always produce a fire. Remove any one side of the triangle and the fire will be extinguished. Scholars have also introduced a 4th component in the equation, known as the uninhibited chain reaction, thereby giving the fire chemical reaction an additional side. This is referred to as the tetrahedron.

The followings are the typical fire triangle and the fire tetrahedron which illustrates the relationship between components:

There are two important factors to remember in preventing and extinguishing a fire:

i) If any of these components are missing, then a fire cannot start.

ii) If any of these components are removed, then the fire will go out.

It is important to have a clear understanding of these components and their inter−reactions in a fire.

Fuel

Fuel is necessary to feed a fire, and without fuel, the combustion process will terminate. The fuel molecules involved in a fire must be in the vapor (gas) state. However, the initial fuel source may be in a solid (paper, wood, etc.), liquid (fuel oil, lubricating oil, etc.) or gaseous state (any kind of combustible gas), and it is the first side of fire triangle. Many examples of each type of these fuels can be found onboard a vessel.

Oxygen

Because the combustion process involves the oxidation of the fuel molecules, the availability of oxygen is vital for the process to exist. Accordingly, the second side of the fire triangle refers to the oxygen content in the surrounding air. Air normally contains about 21% oxygen, 78% nitrogen and 1% other gases, principally argon, and therefore, sufficient oxygen is typically available unless some type of controlled atmosphere (i.e., inerted, etc.) is involved.

Heat

For fuel molecules to undergo the oxidation process and result in a self−supporting fire, the molecules must be at elevated temperatures (i.e., ignition temperature). Without this elevated temperature, there will be no rapid oxidation or combustion of the fuel molecules. Further, the generation of additional fuel vapors is largely dependent upon feedback radiant heating of the fuel, except for gaseous fuels.

Therefore, heat is the third side of the fire triangle. The production of energy from the initial reaction tends to raise the temperature of other molecules to the necessary elevated temperatures and tends to create the self−supporting nature of fire.

Chain Reaction:

Research has added a fourth side to the fire triangle concept resulting in the development of a new model called the 'Fire Tetrahedron'. The fourth element involved in the combustion process is referred to as the 'chemical chain reaction'. Specific chemical chain reactions between fuel and oxygen molecules are essential to sustain a fire once it has begun.

Classes of Fire:

The classification of fire depends mainly upon the fuel involved. There are four classes of fire.

CLASS "A" – These fires are fueled by ordinary combustible materials, such as wood, cloth, paper, and many plastics. This type of fire burns with an ember, leaves an ash, and is best extinguished by removing the heat side of the triangle.

CLASS "B" – These fires are fueled by flammable liquids, combustible liquids, petroleum greases, tars, oils, oil–based paints, solvents, lacquers, alcohols and flammable gases. This type of fire burns on the surface of the fuels, and is best extinguished by a blanketing or smothering action. A fire of this type is fast–spreading and capable of engulfing a large area in a very short time.

CLASS "C" – These fires occur in energized electrical equipment, where the electrical non– conductivity of the extinguishing media is of importance. Blanketing or smothering this type of fire with a non–conducting extinguishing agent is of prime importance. Water, or solutions containing water, is never to be used on a Class "C" fire.

NOTE: If possible, shut off the source of electricity as soon as possible.

Generally the extinguishing agent is referred to as DRY CHEMICAL.

CLASS "D"– These fires involve combustible metals, such as magnesium, titanium, zirconium, sodium, lithium and potassium. Generally the extinguishing agent is referred to as DRY POWDER

Exercise 1

Match the words on the left with definitions on the right.

1.Fuel	a) The Second side of the fire triangle
2.Combustion process	b) The third side of the fire triangle
3. Radiant heat	c)The first side of fire triangle
4. Oxygen	d) The rapid oxidation of millions of fuel molecules in the vapor form
5.Heat	e) The heat that radiates back to the fuel
6.Radiation feedback	f) The heat released by the oxidation of the fuel molecules

Exercise 2

Complete the following sentences with the appropriate word or phrase.

Example: The combustion process, or burning, is in fact the rapid … oxidation… of millions of fuel molecules in the vapor form.

1– Fuel is necessary to feed a fire, and without fuel, the …… process will terminate.

2– The fuel molecules involved in a fire must be in the ……or….. state.

3– The burning vapor produces ……, which releases and ignites more vapor.

4– When there is less fuel vapor available to oxidize, less heat is produced and the process begins to die out.

5–Air normally contains about 21٪ ……, 78٪ …… and 1٪ other gases.

Exercise 3

Choose the best answer.

1.The three elements of fire are ……, ……, and ……

a. fuel – oxygen – chain reaction

b. oxygen – fuel – fire

c. oxygen – heat – fuel

2…… is the fourth element of fire.

a. Tetrahedron

b. Triangle

c. Combustion

3. Fuel can be found in the form of …….

a. solid, liquid or gas

b. paper. Wood or plastic

c. oil, petrol or gas

4. If one of the elements of fire is removed, then the fire will…….

a. start

b. go out

c. go on

5…… is necessary for starting a fire because the combustion process involves oxidation of fuel molecules.

a. Oxygen

b. Nitrogen

c. Ignition

6. Elevated temperature is also referred to as …… ……

a. radiant heating

b. ignition temperature

c. energy production

7. If clothes and shoes are on fire, the fire that is formed is class…..

a. A

b. B

c. C

8. To extinguish class D fires, one has to use ……

a. non–conducting agents

b. dry material

c. dry powder

9. In class……fire, extinguishing agents must not be conductive.

a. A

b. C

c. D

10. Class B fire is fueled by flammable liquids and leaves no……

a. flame

b. ash

c. smoke

STRUCTURES:

Conditionals

First, Second, and Third types of Conditional

Conditional clause	Main clause
1. If + Present Tense ,	will + infinitive / present tense / imperative
a. If you face toward the bow (if + pres), you will find starboard on the right. (will + infinitive) b. If the sum of the digits of a number is divisible by three, the number is divisible by three (Pres. tense) c. If you want to find the cabins, go below the ladders. (Imperative).	
2. If + Past Tense ,	would + infinitive
If wishes were horses,	beggars would ride.
3. If + Past Perfect Tense ,	Would/could/might have + past participle
If you had been more careful,	you could have saved many lives.
We do not normally use will or would in the conditional clause, they are used only in the main clause.	

NOTES:

- When the main clause comes at the beginning of the sentence, no comma is used between the two clauses.

Example:

You will find starboard on the right if you face toward the bow.

• In conditional type two, we normally use were instead of was.

Example:

I wouldn't enter into the officer's room without permission if I were you.

Exercise 1

Put in the correct forms of the verbs.

a) If there is enough heat, oxygen and fuel molecules, burning …… (continue)

b) The process of burning will terminate if there ……(be) no oxygen.

c) If the firemen had not extinguished the fire in time, it ……(expand) to the whole ship.

d) we wouldn't have been able to fight the fire if we ……(take) the fire course.

Exercise 2

Fill in the blanks with the proper forms of the verbs used in conditional type three.

a) I …… you if you …… me. (help/ ask)

b) If you …… more careful, the compartments ……on fire. (be/ not be)

c) You …… the captain if you …… two minutes earlier. (see/ arrive)

d) If they …… the fire extinguisher earlier, they …… …… put out fire. (find/ be able to)

Exercise 3

Match the sentences with the ones in the box.

a) If my brother had studied harder, he

b) We wouldn't have been able to survive that heavy storm if we

c) If he had known how to use a life raft, he

d) You would have answered this question correctly if you

1. wouldn't have been drowned.
2. had known the difference between a ship and a boat
3. would have been a chief engineer
4. hadn't had such a competent captain.

Exercise 4

Find and correct the mistakes in the sentences below.

a) If I had known that he was the chief officer, I wouldn't talked to him like that.

b) I wouldn't have fallen down if the ladders weren't wet.

c) He would be able to sail properly if it hadn't been stormy.

d) If the container had been strong enough, the cargoes wouldn't be broken.

Exercise 5

Complete the following sentences.

a) The fire started because you did not notice the safety signs.

If you……, the fire…… .

b) The officer punished the seaman because he did not wake up in time.

The officer…… the seaman if he……in time.

c) The ship sank because it crashed against the iceberg.

If the ship …… , it ……

d) He wasn't injured in the crash because he was wearing a seat belt.

……

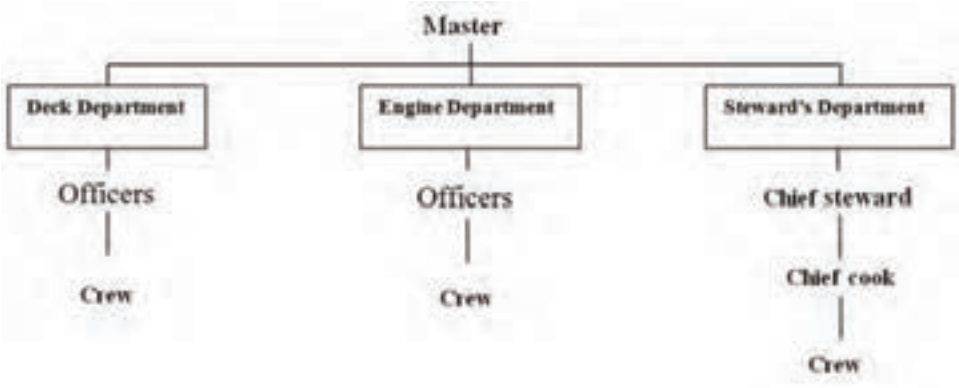
Oceans Oil Pollution

Shortly after the turn of the century, as oil began to replace sail and steam as the principal energy source for the ship propulsion, and because of the increased demand for transportation of oil, raw materials and goods to support the industrialization process, the potential for the pollution of the oceans was recognized. Every year, approximately 3,5 million tonnes of oil are released into the world's oceans, representing one metric tonne of oil soiled for every thousand tonnes of oil extracted. Oil gets into the sea in natural and man-induced ways. Oil releases can be divided about equally between land-based sources and sea-based sources. Land based sources could be managed by coastal states via regulatory actions. Sea-based pollution, on the other hand, is linked mainly to maritime transportation and requires international action.

UNIT EIGHT

GENERAL ORGANIZATION OF A SHIP

Here is a diagram of a ship's organization:



As you can see, there is a master in charge of the ship and three departments working under his responsibility. Let's examine them one by one:

Captain/Master

The captain or master is the ship's highest responsible officer. The captain is legally responsible for the day-to-day affairs of the ship as he is in command. It is his responsibility to ensure that all the departments under him perform legally to the requirements of the ship's owner.

Deck Department

Chief Officer/Chief Mate: The chief officer/first mate is the head of the deck

department on a merchant vessel, second-in-command after the ship's master. The chief mate's primary responsibilities are the vessel's cargo operations, its stability, and supervising the deck crew. The chief mate is responsible for the safety and security of the ship, as well as the welfare of the crew on board. Additional duties include maintenance of the ship's hull, cargo gears, accommodations, the life saving appliances and the firefighting appliances.

Second Officer/Second Mate: The second officer (or second mate) of a merchant vessel is usually in charge of navigation and is the next licensed position above third officer and below chief officer as third-in-command, after the captain and first/chief mate. The second mate is typically the navigation officer aboard in a ship.

Third Officer/Third Mate: The third officer (or third mate) of a merchant vessel is primarily charged with the safety of the ship and crew. The third mate also generally serves as the ship's Chief Safety Officer.

Deck Cadet: A Deck Cadet is an officer under training in much the same way as in a military context. His or her role as a trainee is to observe and learn.

Boatswain: A boatswain is spelled and pronounced bosun, is the most senior among the deck ratings.

Able Seaman: An Able Seaman (AB) is a member of the deck department and must possess a merchant mariner's document.

Ordinary Seaman: An Ordinary Seaman (OS) is an entry-level position in a ship's deck department.

Engineering Department

Chief Engineer: The chief engineer on a merchant vessel is the official title of someone qualified to oversee the engine department. The Chief Engineer commonly referred to as "The Chief", or just "Chief", is responsible for all operations and maintenance that have to do with all engineering equipment throughout the ship.

Second Engineer/First Assistant Engineer: The second engineer or first

assistant engineer is the officer responsible for supervising the daily maintenance and operation of the engine department.

Third Engineer/Second Assistant Engineer: The third engineer or second assistant engineer is junior to the Second Engineer/First Assistant Engineer in the engine department.

Fourth Engineer/Third Assistant Engineer: The fourth engineer or third assistant engineer is junior to the second assistant engineer/third engineer in the engine department.

Engineering Cadet: A trainee engineer officer normally reports to the second engineer. His role as trainee is to observe and learn.

Steward's Department

Chief Steward: The chief steward directs, instructs, and assigns personnel performing such functions as preparing and serving meals; cleaning and maintaining officers' quarters and steward department areas; and receiving, issuing, and inventorying stores.

Chief Cook: The chief cook directs and participates in the preparation and serving of meals; inspects galley and equipment for cleanliness and proper storage and preparation of food.

It should be noted that in addition to the three departments mentioned above, there used to be a fourth one responsible for radio communication that nowadays does not exist. The function of the radio department is performed by the ship's master.

Exercise 1

Match the words on the left with definitions on the right.

1. Engineering Cadet	a) is the most senior among the deck ratings.
2. Ordinary Seaman	b) A trainee engineer officer normally reports to the second engineer

3.Chief Officer/Chief Mate	c) is the ship's highest responsible officer
4.Boatswain	d) is typically the navigation officer aboard in a ship.
5.Second engineer	e) is an entry–level position in a ship's deck department.
6.Captain /Master	f) is the head of the deck department on a merchant vessel, second–in–command after the ship's master.
7.Second mate	g) is the officer responsible for supervising the daily maintenance and operation of the engine department.

Exercise 2

Complete the following sentences with the appropriate word or phrase.

Example: The captain or… master… is the ship's highest responsible officer.

1– The captain is legally …… for the day–to–day affairs of the ship as he is in command.

2– An Able Seaman is a member of the …… and must possess a merchant mariner's document.

3– A …… is an officer under training in much the same way as in a military context.

4– The chief engineer on a merchant vessel is the official title of someone qualified to oversee the ……department.

5– The chief mate's primary responsibilities are the vessel's cargo operations, its stability, and …… the deck crew.

Exercise 3

Choose the best answer.

1– Who is able to make sure that all the departments legally meet the ship owner's needs?

a) Chief mate

b) Second mate

c) Master

2– The chief officer is the head of ……

a) Engineering Department

b) The deck Department

c) Steward's department

3– The …… is commonly responsible for navigation.

a) second officer

b) third officer

c) boatswain

4– What is the third officer mainly in charge with?

a) The safety of the ship.

b) Training a deck cadet.

c) Possession of a merchant mariner's document.

5– A/An …… has the lowest position in a ship's deck department?

a) deck cadet

b) Able Seaman (AB)

c) Ordinary Seaman (OS)

6– It is the responsibility of …… to check and see if every operation and equipment in the engine department is properly working.

a) the ordinary seaman

b) the chief engineer

c) the deck officer

7– Second engineer is responsible for the daily ……

a) maintenance of the engine department.

b) affairs of the ship

c) observing and learning in the engine department

8– Engineering cadets are under the supervision of……

a) first assistant engineer

b) the chief engineer

c) second engineer

9– Giving instruction on serving meals is the responsibility of……

a) the chief cook

b) the chief steward

c) the trainee officer

10– The kitchen is inspected by ……

a) the chief steward

b) the meals man

c) the chief cook

STRUCTURES:

Modal Verbs

Modals are verbs that combine with other verbs to show obligation or necessity, probability or possibility, ability, permission, etc.

Modal verbs must be followed by an infinitive without "to".

They have no tense and no person, so they never change.

The most important modals are:

Can, Could, Must, May, Might, Shall, Should

Here are some frequently used modals and the way we use them:

MOOD	MODAL	EXAMPLES
Possibility	Can	This exercise can't be right. All the choices are wrong.
	Could	The situation is bad. But it could be worse.
	Must	It is snowing, so it must be very cold outside.
	May	It may rain tomorrow.
	Might	I might take a tour to Makran beaches next month.
Permission	Can	Can we swim in the lake?
	Could	Could I leave early today?
	May	May I go to the port to do some shopping?

Ability	Can Could	He can speak six languages. I couldn't sleep last night because the sea was stormy.
Obligation (Necessity)	Must Shall(a legal term)	Students must do their homework. You shall abide by the law.
Advice	Should	You should ask the captain's permission.
Invitation/ Offer	Can Could	Can I help you? You could join us for dinner tonight.
Request	Could	Could you tell me the way to the head please?
Offers and suggestions with "I" and "we"	Shall	What shall I do next? Shall we begin the meeting now?

Notes

To offer or invite, we use "would you like….?"

- Would you like a cup of coffee?

"I would like…." is a polite way of saying what you want.

- I'd like to try on this life jacket, please.

"Can't help + verb + ing" means "Not able to avoid a situation, or stop something from happening".

I can't help biting my nails when I am nervous.

I can't help remembering the things you did.

I can't help working all the time.

Exercise 1

Choose the correct answer.

1…… here? "sure."

a) Will I sit

b) Do I sit

c) May I sit

d) Can I to sit

2. …… in deck department but I'm not sure.

a) He will be

b) He won't be

c) He shall be

d) He can be

3. You worked 14 hours today. You …… exhausted.

a) must be

b) would be

c) will be

d) shall be

4. …… some coffee or tea? "Tea please."

a) Will you like

b) Do you like

c) Would you like

d) Shall you like

5. It's a great book about navigation. You …… buy it. It's worth reading.

a) might

b) should

c) would

d) may

6. It's a nice day. …… go for a walk at the port?

a) Will we

b) Can we

c) Shall we

d) Must we

7. We're having a meeting next week, but some officers ……

a) couldn't come

b) can't come

c) wouldn't come

d) shall not come

8. Before those Indian sailors came to Iran, they …… Persian.

a) wouldn't speak

b) couldn't speak

c) might not speak

d) shouldn't speak

9. …… you excuse me for a minute?

a) Would

b) Should

c) Must

d) Shall

10. …… I have your call sign please?

a) Will

b) Can

c) Should

d) Might

11. Since our bags are identical, you …… have taken mine by mistake.

a) can

b) will

c) shall

d) could

12. I don't believe it. It …… be true.

a) can't

b) won't

c) shouldn't

d) shan't

Exercise 2

Choose the right modal verb.

a) He had been working for more than 11 hours. He …… (would/ must) be tired after such hard work. He …… (may/ can) prefer to get some rest.

b) I …… (should/ could) speak Chinese fluently when we lived in China. But after we moved back to Iran, I was very little exposed to the language and forgot almost everything I knew. Now, I …… (can/ could) only say a few things in Chinese.

c) …… (Shall/ May) we use the radio to announce approaching the port?

d) Take an umbrella. It …… (would/ might) rain later.

e) …… (May/ will) I ask a question? Yes, of course.

f) If you want to be a great seaman, you …… (must/ can) work pretty hard.

g) …… (Will/ Can) you swim professionally?

h) …… (Can/ May) you please give me some more information about radio department?

i) Let's go shopping at the port, …… (can/ shall) we?

j) Before he passed the test, he had proved that he …… (could/ must) work at his both current and higher rate perfectly. So he …… (should/ might) get a promotion.

k) They …… (may/ must) work harder if they are to succeed.

Exercise 3

Use the proper form of the verbs in the box to complete the sentences below.

Think/ go running/ leave/ take a rest/ ask

a) He can't help ..... this book after reading two chapters.

b) I can't help ..... in the park every morning.

c) I can't help ..... too many questions about the organization of different ships when I meet my superior.

d) We can't help ..... about tomorrow's final exam.

e) He can't help ..... after such hard work.

Coastal Pollution

Many beaches are littered with garbage and wastes that are brought in by the tide. Many townships must regularly clean their beaches during the tourist season. These, in large part, are the result of an unsustainable view that the ocean is a convenient receptacle, a garbage bin, for our industrial effluents. Also, some people believe that the ocean's capacity for accepting human refuse and for self–cleansing is limitless. It is not. The coastal ocean has a finite, natural capacity that in many cases has been exceeded.

UNIT NINE

MAIN ENGINES

There are four principal types of marine engine: the diesel engine, the steam turbine, the gas turbine and the marine nuclear plant. Each type of engine has its own particular application, and their individual characteristics change with technological advances and improvements and economic factors such as the change in oil prices.

The diesel engine is a form of internal combustion engine similar to that used in a bus. Its power is expressed as brake horsepower (bhp). This is put out by the engine. Effective horsepower is the power developed by the piston in the cylinder, but some of this is lost by friction within the engine. The power output of a modern marine diesel engine which is expressed by brake horsepower, is about 100,000 brake horsepower. This is now expressed in kilowatts. By comparison the engine of a small family car has an output of about 80 bhp. Large diesel engines turn at relatively slow speed of about 108 rpm. These are known as slow-speed diesel engines. They can be connected directly to the propeller without gearing.

Although higher power could be produced by higher revolutions, this would reduce the efficiency of the propeller, because a propeller is more efficient the larger it is and the slower it turns. These large slow running engines are used in the larger merchant ships, particularly in tankers and bulk carriers. Some of the large merchant vessels are being powered by medium-speed diesel engines. These operate between 150 and 450 rpm, therefore they are connected to the propeller by gearing.

In steam turbines high pressure steam is directed into a series of blades or vanes attached to a shaft, causing it to rotate. This rotary motion is transferred to the propeller shaft by gears. Steam is produced by boiling water in a boiler,

which is fired by oil. Recent development in steam turbines which have reduced fuel consumption and raised power output have made them more attractive as an alternative to diesel power in ships. They are 50 percent lighter and on very large tankers some of the steam can be used to drive the large cargo oil pumps. Turbines are often used in container ships, which travel at high speeds.

Gas turbines differ from steam turbines in that gas rather than steam is used to turn a shaft. These have also become more suitable for use in ships. Many naval vessels are powered by gas turbines and several container ships are fitted with them. A gas turbine engine is very light and easily removed for maintenance. It is also suitable for complete automation.

Nuclear power in ships has mainly been confined to naval vessels, particularly submarines and aircraft carriers. A nuclear-powered ship differs from a convenient turbine ship in that it uses the energy released by the decay of radioactive fuel to generate steam. The steam is used to turn a shaft via a turbine in the conventional way.

Marine Engine

Exercise 1

Match the words on the left with definitions on the right.

1. Effective horsepower	a) is a form of internal combustion engine similar to that used in a bus.
2. Gas turbine	b) In this type of engine high pressure steam is directed in to a series of blades or vanes attached to a shaft, causing it to rotate
3. Nuclear–powered ship	c)Is the power developed by the piston in the cylinder, but some of this is lost by friction within the engine
4. Steam turbines	d)These engines can be connected directly to the propeller without gearing
5. Diesel engine	e) This ship differs from a convenient turbine ship in that it uses the energy released by the decay of radioactive fuel to generate steam.
6. Slow –speed diesel engines	f) This type of engine is very light and easily removed for maintenance.

Exercise 2

Complete the following sentences with the appropriate word or phrase.

Example: The power output of a modern …marine diesel… engine is about 40,000 brake horsepower.

1– …… in ships has mainly been confined to naval vessels.

2– In steam turbines …… …… steam is directed into a series of blades or vanes attached to a shaft, causing it to rotate.

3– Steam is produced by …… in a boiler, which is fired by oil.

4– Gas turbine is suitable for complete ……

5– Turbines are often used in …… ships, which travel at high speeds.

Exercise 3

Choose the best answer.

1. Engine characteristics are affected by technological ……
   a. spare parts
   b. changes
   c. background
2. …… is the unit of effective power that an engine puts out.
   a. Effective horsepower
   b. Expressed horsepower
   c. Brake horsepower
3. The ……engine is an internal combustion engine.
   a. diesel
   b. turbine
   c. nuclear
4. The efficiency of a propeller is higher if it is ……and …… it turns.
   a. larger / faster
   b. smaller / slower
   c. larger / slower
5. Some of the large tankers and bulk carriers use ……engines.
   a. medium speed diesel
   b. high speed diesel
   c. medium speed turbine
6. …… is a container for hot (boiling) water and produces steam.
   a. An engine
   b. A boiler
   c. A turbine
7. In turbine engines, the blades on a shaft turn by the power of ……
   a. oil or steam
   b. steam or gas
   c. fuel or gas

8. Gas turbine engines are mainly used in ……

a. diesel powered ships

b. steam powered ships

c. naval vessels and container ships

9. Using nuclear power is not very common in ……

a. naval ships

b. merchant ships

c. aircraft carriers

10. Medium–speed diesel engines are connected to the propeller by gearing because they turn …… than the propeller.

a. faster

b. with less power

c. with more power

Structure:

PASSIVE FORMS

We use the passive when we are interested in the object or when we do not know who caused the action.

Example: Appointments are required in such cases.

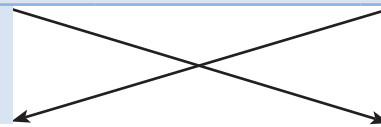
We can form a passive sentence from an active sentence when there is an object in the active sentence.

Form

to be + past participle

In order to form a passive sentence:

- Object of the "active" sentence becomes subject in the "passive" sentence.
- Verb "to be" is used in the same tense.
- Past participle of the verb is used after "to be".
- Subject of the "active" sentence becomes "object" in the "passive" sentence placed after by (or is left out).

Active:	Naval architects	design	ships.
			
Passive:	Ships	are designed	by naval architects.

Examples

Active	Naval architects	are designing	ships.	Present Progressive
Passive:	ships	are being designed	by Naval architects.	

Active:	Naval architects	were designing	ships.	Past Progressive
Passive:	ships	were being designed	by Naval architects.	

Active:	Naval architects	have designed	ships.	Present Perfect
Passive:	ships	have been designed	by Naval architects.	

Active:	Naval architects	can design	ships.	Modals
Passive:	ships	can be designed	by Naval architects.	

Exercise 1

Rewrite the sentences in the passive.

a) A computer controls the amount of heat.

……

b) The ship builder built the tanker in a year.

……

c) The Engineers and technician will fit out and complete the ship.

……

d) You can find your cabin right down this passageway.

……

e) The classification society has approved the drawings.

……

f) The second engineer is repairing the generator tonight.

……

g) My alarm clock didn´t wake me up this morning.

……

h) The officers were discussing the problems in the meeting.

……

Exercise 2

Complete the following sentences with proper form of the verbs.

a) This door …… (not lock) this week.

b) The ship …… (launch) yesterday.

c) All the instructions …… (write) in English.

d) Most children …… (educate) in public schools then.

e) The personnel working in the engine room last week …… (not give permission) to sleep for about 3 days.

f) Don´t worry, when you wake up tomorrow morning, the port …… (see) from your porthole.

g) Your lunch……(may serve) in the restaurant or in your bunk.

h) With the growth of mechanical and electronic equipment in near future, the role of human skills ……(be) limited.

Exercise 3

Put the words in the right order to make complete sentences.

a) have / fruit / in / reefer / been / and / carried / meat / ship / this.

……

b) to / cargo / cargo / general / ships / designed / of / general / carry / types / are / all / dry.

……

c) is /carriers / dry / bulk / carried / cargo / bulk / in

……

d) year / this / bridge / until / will / river / a / over / next / be / new / built.

……

Coral Reefs

Coral reefs are found in relatively warm and shallow waters in the tropics or nearby regions. A coral reef consists of calcium carbonate or limestone produced by various species of algae and by colonies of organisms. Coral reefs are the aquatic equivalent of the tropical rain forest. They are home to a dazzling variety of organisms, many of which are colorful beyond imagination.