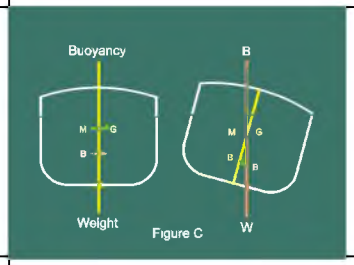
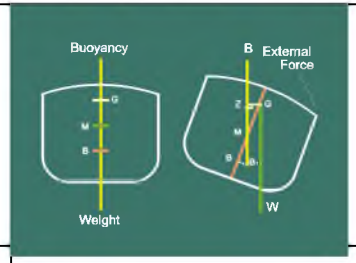
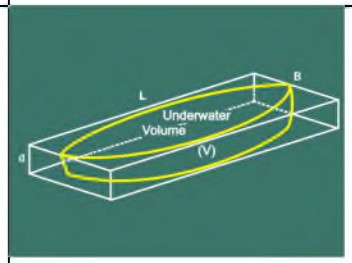
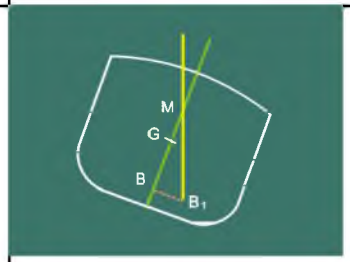
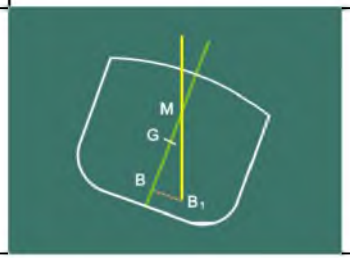
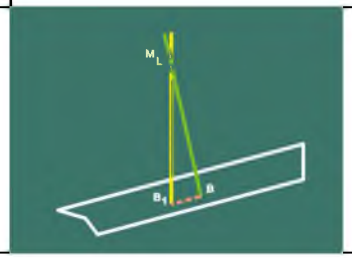
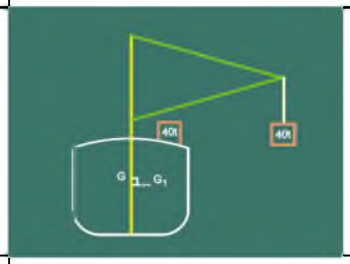
GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
1	What is "relative or specific gravity?"		The mathematical factor needed to calculate the vessel's displacement.	The density of a substance, compared to the density of fresh water.	It is the density of fresh water.	It is the density of sea or salt water.
2	What is the principle of Archimedes?		That every body that floats displaces at least twice its own weight in water.	That a floating body becomes unstable, if the density of the water it is floating in exceeds the specific gravity of salt water.	That every floating body displaces it's own weight of the liquid in which it floats.	That a floating body must be completely watertight, in order for it to float.
3	What is "reserve buoyancy" in relation to a vessel?		The watertight volume of a vessel, which is below the waterline.	The total volume of a fully laden ship.	The watertight volume of the engine room and store rooms.	The watertight volume above the waterline.
4	What do you call the effect of the movement of liquid in a slack tank?		Sideways movement.	Fore and aft movement.	Free surface effect.	The open surface effect.
5	What is the equilibrium state of the vessel in this diagram?		The vessel is in a state of neutral equilibrium.	The vessel is in a state of stable equilibrium.	The ship is in a state of unstable equilibrium.	The vessel is in a state of semi - equilibrium.
6	With a forward draught of 8.00m and an aft draught of 9.00m, the amidships draught reads 8.30m. What state is the vessel in?		The vessel is sagged.	The vessel is in a normal state.	The vessel is hogged.	The vessel is on even keel.
7	What effect does "Hogging," have on a vessel's draught?		It makes the amidships draft appear less than it should be.	It causes a vessel to be trimmed by the head.	It makes the amidships draught greater than it should be.	It has no effect on the draught.

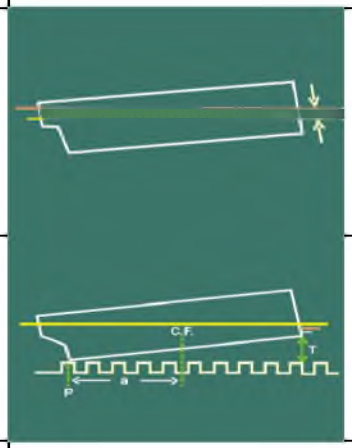
GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
8	What is the equilibrium state of the vessel in this diagram?		It is in a state of stable equilibrium.	It is in a state of unstable equilibrium.	It is in a state of semi - stable equilibrium.	It is in a state of neutral equilibrium.
9	What does fresh water allowance or "FWA " mean?		The maximum amount of fresh water a fully laden vessel is allowed to carry.	The amount of fresh water that may be consumed by each crew member daily, during rationing.	The amount the laden fresh water draft must be reduced by, to equal the maximum allowed laden salt water draft.	The amount the vessel may submerge it's maximum salt water draft by, when loading in fresh water.
10	What happens to cause a vessel to be in a state of "Unstable Equilibrium?"		When the metacentre and the centre of gravity, are at the same height above the keel.	When a vessel has a very large GM.	When a vessel is rolling very heavily.	When the centre of gravity rises above the metacentre.
11	What does the term "Trim" mean?		The difference between the mean draught, and the forward draught.	The state of a vessel on even keel.	The difference between the draught at the forward perpendicular and the draught at the after perpendicular.	The difference between the mean draught and the after draught.
12	What causes a "Free Surface Effect?"		The movement of liquid in slack tanks due to a ship's motion.	A vessel being top heavy.	A vessel having a very large GM.	Pressing up double bottom tanks.
13	What are the "effects" of free surface?		It causes an increase in GM, thereby making the ship roll very heavily.	It causes the ship to "go by the head", thus increasing the risk due to heavy pitching.	It cause a loss of GM, thereby creating a possibly dangerous situation.	It results in a loss of bouyancy.

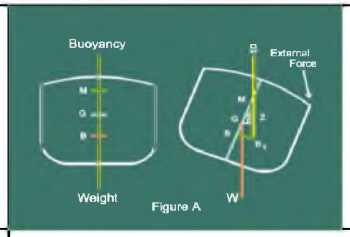
GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
14	What causes "Sagging" in a loaded vessel?		Improper loading, caused by placing too much weight at either end of the ship.	Leaving the fore and after peaks full, when the ship is fully loaded.	This condition is caused by aged bottom plates.	Leaving peak tanks empty, and then loading tanks/holds near to amidships.
15	What is the "Centre of Buoyancy of a ship?"		The point through which the force of buoyancy, is considered to act downwards.	The geometrical centre of underwater volume & the point through which the force of buoyancy may be considered to act upwards.	It is the centre point of each cargo hold, in a fully laden vessel.	It is the middle point of the watertight volume, above the waterline.
16	What does the diagram show, and what does it mean?		A mould of a ship inside in a block, which is used for modeling purposes in a shipyard.	The block coefficient of fineness, which is the ratio between the underwater volume, and volume of circumscribing block.	A stability model, which is used when calculating GM and other pertinent information.	The waterplane coefficient, which is the ratio between the waterplane area and the area of the circumscribing rectangle.
17	What is a "Moment", in terms of stability?		It is the product of force and distance.	The time taken to perform an Inclining Experiment.	It refers to the weight loaded daily.	The consequence of overloading.
18	What causes ships to experience "Stresses?"		As long as a ship is properly built and handled , it will never experience stresses.	When the upward force due to weight at a point, and the downward thrust due to buoyancy, at the same point are unequal.	Stresses to a ship are mainly caused when it is subjected to forces from wind, waves and loads.	When the downward force due to weight at a point, and the upward thrust due to buoyancy, at the same point, are not equal.

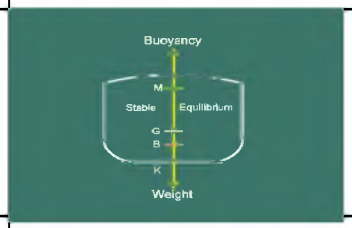
GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
19	What are the "Stresses" that effect a ship?		Mainly tensile, compressive and bending stresses.	Heavy cargoes such as iron ore, steel billets and other ores with low stowage factors.	The ageing process of a vessel in heavy weather.	Rust and general wear & tear, when accompanied by poor maintenance.
20	What is a "Shear Force" in a ship?		A violent sideways motion in heavy weather, which can cause a vessel to shear violently.	A very powerful wind force, such as that experienced in a tropical revolving storm.	A vertical force at the point at which a load is being carried, with the force being the difference between upward and downward thrust.	It is the total weight applied at a recognised "weaker" part of a ship , such as where the Main Deck meets the superstructure.
21	What is a "Bending Moment" in a ship?		The process of lifting a heavy object, by squatting first, before applying an upward lifting motion with one's arms & legs.	The method of applying a superior force to a metal object, to bend or shape said object to the way you want it.	A beam bends by placing weights on either side of it. The "Moment" is calculated by multiplying the weight applied by the respective distance.	This is another name for hogging, and it occurs when there is too much weight at either end.
22	What is a "Metacentre?"		It is the position between the centre of gravity and the centre of buoyancy.	It is the intersecting point between the vertical lines through the centre of buoyancy in the initial and slightly listed positions.	When a vessel heels over so that the low side touches the sea, that point is the metacentre.	When a vessel is in a vertical position, the metacentre is the point below the centre of buoyancy.
23	Which letters signify the metacentric height on the diagram?		The metacentric height is represented by the letters " BM ".	The metacentric height is not shown on this diagram.	The metacentric height is represented by the letters "GM ".	The metacentric height is represented by the letter " M ".

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
24	What is "the moment of a couple?"		It is the perpendicular distance between the forces forming the couple.	It is the product of one of the forces forming the couple, and the lever of the couple.	It is the combined strength of the two forces forming the couple.	It is the righting lever that gives a rolling vessel the ability to return to her initial position, after having been forcibly heeled.
25	What is the "formula " for calculating the righting moment of a ship?		There is no specific formula for this purpose.	It is the product of the ship's displacement multiplied by the BM.	It is the GM multiplied by the displacement in tonnes.	It is the GZ multiplied by the displacement in tonnes.
26	What is an "Angle of Loll?"		It is simply the angle of each variable roll of a heeled vessel.	It is the angle or list a vessel settles at, after a shift of cargo.	It is the period in which a vessel momentarily rests after heeling one way or the other, before returning to the upright position.	It is the list angle at which a vessel with negative stability comes to rest.
27	Which vessels are considered most prone to poor stability?		Timber-carrying vessels, and Fishing vessels in Arctic waters.	Liquefied Natural Gas carriers.	Ships loaded with grain cargoes, that are liable to shift in bad weather.	Ships loaded with tobacco hogsheads /liner board or paper/ or steel coils that require chocking & lashing, and can break free in bad weather.
28	What do the letters ML in the attached diagram mean & what is it used for ?		It is the metacentric height.	It is a figure showing how an Inclining Experiment is done.	It is the longitudinal metacentre and is used when calculations involving trim are considered.	It is the transverse metacentre and is used with inclinations of heel & list .

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
		MAINTAIN SEAWORTHINESS - STABILITY				
29	What happens when a weight is loaded off the ship's centre line?		The vessel lists momentarily to the opposite side to which the weight has been loaded.	When loading or discharging a weight off the centreline, the shift of G must be resolved into both vertical & horizontal components.	There is a dramatic shift in G, causing the vessel to become momentarily unstable.	There is no change whatsoever in the stability of the vessel. Everything remains as it is.
30	What is the "Principle of Suspended Weights?"		When a weight is suspended from a ship's derrick, its centre of gravity is considered as being at the derrick head.	When a weight is suspended from a derrick, its centre of gravity is considered as being at the heel of the derrick.	When a weight is suspended from a derrick ever increasing pressure is exerted on the cargo runner and thus it may part.	When a weight is suspended from a derrick, personnel working in the vicinity should be warned "not to stand under it".
31	What is a "Ship's Rolling Period?"		It is the time in seconds taken by a vessel to complete a roll i.e port to starboard and back to port.	It is the time taken in seconds for a vessel to complete a roll, either to starboard or to port.	It is the time in seconds between a vessel pitching downwards and returning to the upright.	It is the time in seconds of the downward or upward pitch.
32	What is the "Change of Trim?"		It is the term used to describe leveling and bagging grain in a slack hold.	It is the difference between the original trim and the final trim.	It is another term used to describe the change of draft.	It is the moment required to change the trim by one centimetre.
33	What is the "Centre of Flotation or Tipping Centre" of a vessel?		It is the exact mid point of the ship, around which the vessel trims as weights are added or taken away.	It is a fixed known point on the longitudinal metacentre.	It is the point on which the vessel initially rests, when being drydocked.	It is the geometrical centre of the waterplane and also the point about which the vessel trims.
34	What do the letters "MCTC" stand for?		Movement to Change Tonnage by one tonne.	The Moment to Change Trim one Centimetre.	The Mid Container Terminal Centre.	The Main Change of Trim.

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
35	If the forward draught of a vessel is greater than the aft draught, what state of trim is the vessel in?		The vessel is said to be finely balanced.	The vessel is said to be on even keel.	The vessel is trimmed by the head.	The vessel is trimmed by the stern.
36	About which point on a waterline does a vessel change trim?		Around it's mid point.	Anywhere along the fore and aft line.	The Longitudinal Centre of Flotation.	Around the point at which a weight is added or taken away.
37	What is the "True Mean Draught?"		The draught at the Centre of Flotation is considered as the True Mean Draught or the draught the vessel would lie in even keel conditions.	It is the mean of the forward and aft draughts or the amidships draught.	It is the draught between the forward and midships draughts.	It is the mean between the amidship and after draughts.
38	What happens when a vessel passes between water of different densities?		If a ship goes from salt water to fresh water, there will be a bodily sinkage plus a small change of trim.	The densities of all waters through which a ship passes are essentially the same, so nothing happens.	If passing from water of less density to water of greater density, the draught will be increased.	The forward draught decreases, whilst the aft draught increases, but the mean draught remains the same.
39	What does the letter " T " stand for in the diagram?		The Gross Tonnage of the vessel.	The Trim of the vessel.	The Tonnage Mark of the vessel.	The Terminus or most forward point.
40	What is "Pressure" in the context of stability?		The maximum force that can be used in filling a tank.	The downward pressure resulting from the weight of individual cargo loads.	The force applied at either end of the vessel, due to improper loading.	Pressure is force per unit area.

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
41	What is the equilibrium state of the vessel in this diagram?		It is in a state of "Neutral Equilibrium".	It is in a state of "Unstable Equilibrium".	It is in a state of "Stable Equilibrium".	It is a vessel in a "Tender State".
42	What is the "Centre of Gravity", of an object?		It is the point at which the whole weight of the object may be regarded as acting.	It is always the mid - point of the object.	It is the end point of an object.	It is the point where an object will snap, if it is bent.
43	What is the "Ship's Displacement in Tonnes?"		The weight of the ship's cargo.	The weight of all the enclosed spaces.	The actual entire weight of the ship.	The weight of the hull, the machinery and the stores.
44	What is the "Volume of Displacement?"		The volume of water needed to fill the moulded hole, if the ship was lifted from the water.	Half the volume of water displaced, as a vessel moves through the water at full speed.	The volume of the cargo loaded or discharged.	The volume of fuel or bunkers loaded for a long ocean passage, together with the stores.
45	How many tonnes are there in 1 cubic metre of salt water?		1.015	1.008	0.925	1.025
46	How many tonnes are there in 1 cubic metre of fresh water?		1	0.895	1.012	1.024
47	What is "Deadweight"?		The weight of the provisions, stores and bunkers.	The difference between the vessel's loaded and light displacements. It is the weight that a ship carries.	The weight of the vessel's cargo only.	The amount of cargo a vessel is allowed to carry, depending on the Load Line Zone she in.
48	What do the letters "LBP", stand for in relation to a ship?		Lloyds Buoyancy Particulars.	Loadline Beam Position.	Length Between Perpendiculars.	Largest Beam Possible.
49	What do the letters "LOA", stand for in relation to a ship?		Latest Official Act.	Length Over All.	Longest Objective Attainable.	Largest Outside Article.

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
50	What does "Breadth Moulded" mean in relation to a ship?		The maximum breadth measured from outside the plating.	The maximum breadth measured across the hatches.	The maximum breadth measured from inside the shell plating P to S.	The maximum breadth measured from the waterline.
51	What is the "Breadth Extreme?"		The maximum breadth measured from outside the shell plating P to S.	The mean of the breadth at # 1 hatch and the breadth at the aftermost hatch.	The maximum breadth measured from inside the plating.	The maximum breadth measured from the inside plating at the bottom of the centremost hatch.
52	What is the "Depth Moulded" in relation to a ship?		The vertical distance from the top of keel to the uppermost continuous deck at side.	The vertical distance from the keel to the main deck.	The vertical distance from the keel, to the top of the centremost hatch coaming.	The vertical distance from the waterline, to the uppermost deck.
53	From the diagram, give the formula for the "KG" value.		KG = KM plus GM.	KG = KM minus KB.	KG = KM minus GM.	KG = KG plus BM.
54	What do the letters "LCF" mean in relation to stability?		Left Centre of Flotation.	Light Container Freight.	Longitudinal Centre of Flotation.	Longitudinal Common Factor.
55	What do the letters "GRT" mean?		Gross Registered Tonnage.	Grave Reverse Trim.	Ground Rules of Trim.	Grain Regulatory Tests.
56	Define "Amidships".		The mid-point of LOA.	The mid-point between the after perpendicular and the forward perpendicular.	Mid-point of maximum beam.	Geometric centre of the waterplane.
57	If the angle of heel is less than 10 degrees, what is the equation for finding GZ?		GM times BM / 3.	GM times Sin(x).	GM times cos(x).	BM times sin(x).
58	What does the term "LCB" mean?		Longitudinal Centre of Ballast.	Lowest Centre of Buoyancy.	Lowest Cantilever Beam.	Longitudinal Centre of Buoyancy.
59	What is a hydrometer used for?		For testing viscosity.	For testing acidity.	For testing for sulphur content.	For determining the density of a liquid.

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
60	What is the "Range of Stability" on a statical stability curve?		Zero to 30 degrees.	Zero to one radian (57.3 degrees).	Angles of heel where all GZ levers are positive.	Zero to angle of deck immersion.
61	Define the "Lightweight" of a ship.		Accommodation weight only.	Stores for the crew and passengers.	The net tonnage.	Displacement minus the deadweight. It is the weight of the ship itself.
62	At what angle of heel on a statical stability curve is the GM plotted?		60 degrees.	45 degrees.	30 degrees.	57.3 degrees.
63	What is an "Angle of List?"		The angle of heel where the GM is zero.	A fixed angle of heel caused by a transverse imbalance of internal forces within the ship.	The same as the Angle of Loll.	The angle of heel where the deck edge is immersed.
64	What minimum distance does 'far from shore' mean for ships entering North American Great Lakes Ports or visiting ports further up the Hudson River than the George Washington Bridge?		100 miles	200 miles	300 miles	150 miles
65	Part four of the Ballast Water Reporting form is a detailed history of the ballast water. Which of the items of information listed would not be required?		The date	The types of organism in the water	The port	The water temperature at the time of the uptake
66	Which of the actions listed does not form part of the duties of the designated ballast water management officer?		If required, assisting port state control or quarantine officers with sampling.	Preparing the ballast water declaration form prior to entering port.	Maintaining the ballast water log.	Deciding whether sea conditions allow exchange to be undertaken safely.

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
67	In order to replace approximately 95% of ballast water in a tank using the flow-through method of exchange, the amount of water pumped through the tank must be:		1.5 x the tank's volume.	2 x the tank's volume.	3 x the tank's volume.	4 x the tank's volume.
68	In the Black Sea, the Comb Jelly became a major contributor to the rapid decline in the catch of which particular fish?		Salmon	Anchovy	Sturgeon	Sardine
69	Which of the items listed is not included in the section of the IMO Guidelines dealing with ships' operational procedures?		Precautionary practices, such as timely removal of ballast sediment	Port State considerations	Training and education	Ballast water management options
70	The IMO guidelines contain a specimen format for a ballast water reporting form. Which of the items of information listed does this form contain?		Vessel information	Voyage information	Ballast water management information (numbers of tanks discharged)	All the above
71	The current, recommended method of ballast water management is:		isolation.	treatment.	exchange.	pump it out in the ocean

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
72	Which of the factors listed is not relevant for port State authorities when implementing their ballast water management programmes and assessing risks?		Highly disparate conditions between uptake and discharge ports.	Ballast water age.	The type of vessel concerned.	Knowledge of the presence of target organisms.
73	A stiff vessel will have a GM which is....		large	small	zero	negative
74	The centre of pressure, on a bulkhead flooded on one side to a depth, h, measured from the bottom, is....		0.1h	0.25h	0.33h	0.5h
75	What is a GZ curve used to determine?		Displacement	Deadweight	Stability	Buoyancy
76	When a vessel is in neutral equilibrium, the GM will be...		large	small	zero	negative

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
77	What is the intact volume of a vessel above the waterline called?		Buoyancy	Negative Buoyancy	Reserve Buoyancy	Lost Buoyancy
78	What is a GZ curve used to determine?		Displacement	Deadweight	Stability	Buoyancy
79	What is the intact volume of a vessel above the waterline called?		Buoyancy	Negative Buoyancy	Reserve Buoyancy	Lost Buoyancy
80	The Dock Water Allowance is calculated as a proportion of the...		fresh water allowance.	freeboard.	summer draught.	winter draught.
81	What is the horizontal distance between the forces of Buoyancy and Gravity, acting on a vessel when heeled by wind or waves, called?		Metacentric Height	KG	KM	Righting Lever

GUÍA DE ESTUDIO- MAQUINISTA NAVAL						
Q. Number	**Question**	***IMAGEN***	**A**	**B**	**C**	**D**
MAINTAIN SEAWORTHINESS - STABILITY						
82	Freeboard is the vertical distance measured from the...		waterline to the keel.	main deck to the waterline.	main deck to the keel.	top of the bulwarks to the waterline.

GUÍA DE ESTUDIO MAQUINISTA NAVAL	
MAINTAIN SEAWORTHINESS - STABILITY	
ANSWERS	
1	B
2	C
3	D
4	C
5	A
6	C
7	A
8	B
9	D
10	D
11	C
12	A
13	C
14	D
15	B
16	B
17	A
18	C
19	A
20	C
21	C
22	B
23	C
24	B
25	D
26	D
27	A
28	C
29	B
30	A
31	A

GUÍA DE ESTUDIO MAQUINISTA NAVAL	
MAINTAIN SEAWORTHINESS - STABILITY	
ANSWERS	
32	B
33	D
34	B
35	C
36	C
37	A
38	A
39	B
40	D
41	C
42	A
43	C
44	A
45	D
46	A
47	B
48	C
49	B
50	C
51	A
52	A
53	C
54	C
55	A
56	B
57	B
58	D
59	D
60	C
61	D
62	D

GUÍA DE ESTUDIO MAQUINISTA NAVAL	
MAINTAIN SEAWORTHINESS - STABILITY	
ANSWERS	
63	**B**
64	**B**
65	**B**
66	**D**
67	**C**
68	**B**
69	**C**
70	**D**
71	**C**
72	**C**
73	**A**
74	**C**
75	**C**
76	**C**
77	**C**
78	**C**
79	**C**
80	**A**
81	**D**
82	**B**

GUÍA DE ESTUDIO MAQUINISTA NAVAL
MAINTAIN SEAWORTHINESS - STABILITY
ANSWERS