GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
1	What might be the effect of one or more diesel engine fuel pumps not returning to the zero position on their fuel racks when the fuel control is at the stop position?	Difficulty in restarting the engine.	The engine being unable to stop.	The engine being unable to deliver full fuel.	Uneven running at slow speeds.
2	During main engine shut-down in port, the starting air valves should be closed and all starting air lines vented. Why is this done?	To protect the engine cylinders from corrosion.	To prevent oil and water build-up in the starting air pilot cylinders.	To conserve compressed air.	To prevent accidental starting of the engine.
3	If the emergency fire pump is situated on an upper deck, what must be part of the pump's equipment?	A clutch to disengage the engine from the pump.	A pressure relief valve to prevent overpressure of the system.	A priming pump to obtain suction at the pump.	A remote start from the bridge or control room.
4	Which of the following will prevent a main engine from starting, on a modern, bridge control vessel?	Engine must be switched to engine control.	The propulsion control must be at zero.	The turning gear must be disengaged.	Any of these conditions will prevent starting.
5	What would happen if a positive displacement pump were to be started with the discharge valve closed?	Damage would be incurred by the pumping element.	The pressure relief would open and circulate fluid to the suction side.	It would not take any load until the valve was opened.	The motor would trip on overload.
6	What is the first action you would take when manually flashing up a boiler?	Start up the water feed pump.	Purge furnace with air.	Clean the burner nozzle.	Lower the oil pressure.
7	When heavy oil is used as an engine's fuel, why must it be heated in the tanks?	To prevent the lighter oils from separating.	To maintain the correct viscosity for atomizing.	To enable the oil to be easily pumped.	To prevent tar products from blocking the lines.

GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
8	During manual start-up of an air compressor which of the following would be the correct procedure?	Close drains, start compressor and load-up after a few seconds.	Open drains, start compressor, load-up compressor and close drains.	Open drains, start compressor, close drains and load-up compressor.	Start compressor with drains closed and load-up immediately.
9	If a main engine turns but fails to start when the start air is applied, what would you check first?	The fuel supply pressure.	The start air pressure.	The air start distributor valve.	The governor settings.
10	Before starting a direct drive main engine what checks would you request the duty deck officer to carry out?	To check the mooring ropes.	To check there are no men working on the funnel.	To make sure the propeller is clear.	All of these checks.
11	Which of the following is NOT acceptable as a "dead ship" first start arrangement.	Diesel engine driven air compressor.	Battery start emergency generator.	Manual start emergency generator.	Manual start arrangements for one of the generators.
12	What might be the possible effects of leaving a lead-acid battery in a discharged condition for a long period?	When recharged will be unaffected.	Lead sulphate deposits on the plates may limit capacity.	The battery will not recharge.	The battery will recharge but will not retain its charge.
13	On starting the compressor of a large refrigeration system the discharge pressure increases quickly and is too high. What could account for this?	The expansion valve is not correctly set.	The bursting disc has ruptured.	The liquid stop valve is closed.	There is inadequate condenser cooling.
14	When starting a fuel oil, centrifugal purifier pronounced vibration is noticed. What action would you take?	Allow the purifier to attain normal speed and check for vibration.	Stop the purifier and check that the bowl has been correctly assembled.	Stop the purifier and check that the bowl steady bearing is correctly located.	This indicates a problem with the drive bearings and requires a complete overhaul.

GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
15	Adding chemical treatment to a diesel engine's jacket cooling water is primarily designed to....	assist the cooling capacity of the system.	maintain the coolant's stability and prevent freezing.	prevent small leakages at sealing rings.	assist in prevention of corrosion and scale formation.
16	When replacing the motor on a gear pump, what is the greatest danger on first starting?	Misalignment damaging the bearings.	Running the pump dry causing damage to the gears.	Leaving the discharge valve shut and lifting the pressure relief valve.	Incorrect direction of rotation making the pressure relief valve inoperative.
17	During which of the following operations is a boiler furnace explosion most likely to occur?	When shutting down the boiler.	When reducing boiler load.	During initial flashing up.	At the maximum steaming rate on high flame.
18	What action would be taken to prevent overload on first starting a gear pump when pumping cold oil?	Start/stop the pump frequently.	Start the pump with valves closed and gradually open.	Ease off the spring loaded pressure relief valve.	Throttle the suction valve until pressures are normal.
19	You have installed a new bottom end bearing in the main engine. What is the necessary action to take during the running in period ?	Stop every ten minutes and check the bearing temperatures by hand.	Allow for one hour running with appropriate temperature monitoring of the bearing.	Allow for a running in period with reduced load and careful temperature monitoring.	Stop after 30 minutes running and hand feel the bearing.
20	What time is allowed for an emergency diesel generator in the "auto-start" mode to start and carry its full rated load?	As quickly as possible but not more than 15 seconds.	As quickly as possible but not more than 45 seconds.	As quickly as possible but not more than 2 minutes.	As quickly as possible but not more than 3 minutes.

GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
21	If, after cleaning fuel oil filters, an auxiliary diesel engine starts but will not run, the first check would be...	on the engine governor.	of the engine fuel linkages.	for the presence of air in the fuel system.	the fuel oil boost pump.
22	When starting a fuel oil, centrifugal purifier, it takes a longer than usual time to attain normal running speed. What is the most likely problem?	Bowl locking pins not retracted correctly.	Bowl discs not correctly assembled.	The motor clutch pads worn or contaminated with oil.	The oil being processed is too cold.
23	When an electric winch control handle is in the off position but the brake fails to come on, the problem could be...	failure of the solenoid coil to energise.	the return spring pressure is too great.	an open circuit in the coil winding.	the spring pressure failing to set the brake.
24	When would both steering gear motors be run together?	When manoeuvring in confined areas.	When at anchor in a confined anchorage.	When on passage to minimise wear.	In the tropics to overcome the lowering of the oil viscosity.
25	If the boiler burner fails each time it is started, with the fault indicated as "flame failure", what might be the most likely reason?	There is inadequate air supply.	The fuel oil temperature is too high.	The photo cell protective glass is dirty.	The ignition electrodes are shorted with carbon deposits.
26	When starting a centrifugal pump, what would be the best setting of the valves to reduce the motor starting load?	The suction valve closed.	The discharge valve closed.	The suction valve closed and discharge valve open.	Suction and discharge valves closed.
27	When starting an air compressor, why is it necessary for the unloader to be activated before the drain valves are closed?	So the pumping action can blow the drains through.	To avoid the safety valves blowing.	To avoid air blowing in the bilges.	To prevent the compressor from tripping.

GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
28	When starting a fresh water generator, what are the most common faults resulting in failure to raise adequate vacuum?	Insufficient flow to eductors (pump pressure or eductor back pressure), leaking fresh water pump shaft seal, leak on casing or cover.	Dirty condenser, fresh water pump impeller wear rings worn, vacuum breaker valve worn.	Dirty evaporator, feed reducing valve blocked, by-pass valve of the fresh water to evaporator leaking, vacuum breaker faulty.	Reflector plate corroded, feedwater supply pipe blocked, blocked or dirty tubes in evaporator or in the condenser.
29	What is the first check you would carry out if difficulty is encountered when pumping bilges with the suction gauge showing a high vacuum?	Check the oily/water separator filters are not blocked.	Check that there is water in the bilge well.	Check that there are no other bilge well valves open.	Check suction strainers are clear and suction valves open.
30	What should be carried out before starting a diesel main engine that has been stopped for a lengthy period?	Check the reversing mechanism.	Turn over on air with indicator cocks open.	Check the governor operation.	Bar over by hand for several revolutions
31	When shutting down the main engine for a port stay which procedure would you follow?	Shut down water and lube oil pumps and close all start air and fuel valves.	Leave water and lube oil pumps running for the duration of stay.	Stop sea water and lube pumps and leave jacket water circulating, all valves left open.	Run jacket water and lube oil pumps for a short period then stop, close start air and fuel valves.

GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
32	What special arrangements are provided to deal with severe flooding of the engine room?	All pump sea suctions can be isolated by one common, main sea suction valve.	All engine room water pumps are provided with direct bilge suctions.	The main fire pump can be connected to the bilge suction.	The main engine sea water circulating pump is provided with a direct bilge suction.
33	What can happen with lubrication oil cooled pistons if you stop the lubricating oil pump immediately after you stop the engine?	Stopping the pump immediately will not cause any problems.	Overheating of the piston and oil coke deposits in the cooling chambers.	The piston rings may seize in their grooves.	You preserve the oil sealings in the piston.
34	If the emergency generator is put on load after a long idle period and hunts as the load is increased, what would you check first?	The engine governor.	The fuel oil filters.	The fuel injectors.	The fuel injection pumps.
35	What instructions would you issue to the watchkeeping engineer in the case of a main engine malfunction?	Ease the load on the engine and inform the Chief Engineer.	Stop the engine and inform the Chief Engineer.	Inform the bridge watch keeper and then stop the engine.	Stop the engine immediately and investigate the cause.
36	If an oil-fired boiler has a very white, smoky exhaust, what does this usually indicate?	Too much air supplied to boiler.	Fuel oil pressure too high.	Burner tip size too large.	Fuel oil temperature too low.
37	If you experience a heavy scavenging air fire on a two-stroke main engine, which of these parts is likely to suffer the most serious damage?	The crosshead bearing.	The piston and rings.	The exhaust valve.	The stuffing box.

GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
38	All of the engine systems are operating correctly but the engine will not start. What would you check first?	Governor fuel linkage is free.	All engine safety interlocks are clear.	Main fuel filters are clean.	Jacket water temperature is correct.
39	Which systems are heated when preparing a slow speed diesel engine for starting?	Jacket water and lubricating oil.	Jacket water, piston cooling, and lubricating oil.	Jacket water only.	Jacket water and piston cooling.
40	When an engine is being maneouvered from the vessel's bridge, the engine control room...	can only assume control when the bridge switches to engine control.	can assume control from the control room at any time.	can only assume control by transferring a key from the bridge control position.	cannot assume control until the porpulsion is disengaged.
41	On a direct air start, medium speed diesel engine, the engine turns but will not start. What is the most likely problem?	Low cylinder compression.	Governor malfunctioning.	Air pressure too low.	Air start valves sticking.
42	If after a prolonged port stay, you start the main engine and white smoke issues from the exhaust, what would you do?	Stop the engine and check the fuel system.	Run the engine until at the correct operating temperature and check the exhaust again.	Stop the engine and check the exhaust drains for water.	Disregard the smoke and hand over control to the bridge.
43	When test running a side thruster while alongside, which of the following precautions must be observed?	Bridge must check area is clear and moorings tight.	The port authorities must be informed.	The thrust should be directed towards the quayside.	The main engine must be running.

GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
44	If a crankcase explosion takes place, what should you do after the engine has been stopped?	Use a fire hose to cool down the outside of the engine.	Open all crankcase doors and increase the engine room ventilation.	Allow the engine to cool down before any inspection is carried out.	Open an inspection door and inject carbon dioxide from a portable fire extinguisher.
45	After a total electrical failure, what is the correct sequence for restarting the essential pumps once the power is restored?	Main sea water pump, jacket CW pump, piston CW pump, lub oil pump, injector CW pump.	Jacket CW pump, piston CW pump, injector CW pump, lub oil pump, main sea water pump.	Main lub oil pump, jacket CW pump, piston CW pump, injector CW pump, main sea water pump.	Injector CW pump, main sea water pump, jacket and piston CW pump.
46	What precaution would you take before starting a main deck machinery hydraulic pump?	That there was sufficient electrical capacity available.	That the duty deck officer was informed.	That all of the deck machinery was secured.	Check that the deck machinery was required.
47	If an oil-fired boiler has a dirty, smoky flame, what would happen to the boiler?	The furnace would carbon up with the risk of an air space fire.	The steam pressure would fall due to the inefficient combustion.	The boiler would be shut down by the action of the photo cell.	The burner would eventually become blocked and the boiler shut down.
48	On starting the compressor of a large refrigeration system both suction and discharge pressures remain the same. What could account for this?	The bursting disc has ruptured.	The expansion valve is not correctly set.	There is inadequate condenser cooling.	The low pressure trip requires resetting.

GUÍA DE ESTUDIO - JEFE DE MAQUINAS					
Q. Number	**Question**	**A**	**B**	**C**	**D**
START UP & SHUT DOWN MACHINERY & SYSTEMS					
49	You have just joined a vessel and when on passage you notice that the charge air pressure is lower than previously recorded. What would you first suspect as the cause?	Choked blower inlet filters.	Dirty scavenge duct.	Fouled exhaust ports or turbo inlet spaces.	Damage to the turbine blades of the turbo.
50	Which of the following is an acceptable arrangement as a "dead ship" first start system.	Battery start emergency generator.	Compressed air start emergency generator.	Independent stand-by battery start for a main generator.	Manual hydraulic start emergency generator.

GUÍA DE ESTUDIO JEFE DE MAQUINAS	
START UP & SHUT DOWN MACHINERY & SYSTEMS	
ANSWERS	
1	B
2	D
3	C
4	C
5	B
6	B
7	C
8	B
9	A
10	D
11	B
12	B
13	D
14	B
15	D
16	D
17	C
18	C
19	C
20	B
21	C
22	C
23	D
24	A
25	C
26	B
27	A
28	A
29	D
30	B

GUÍA DE ESTUDIO JEFE DE MAQUINAS	
START UP & SHUT DOWN MACHINERY & SYSTEMS	
ANSWERS	
31	D
32	D
33	B
34	B
35	A
36	A
37	D
38	B
39	B
40	B
41	C
42	B
43	A
44	C
45	A
46	A
47	C
48	A
49	A
50	D