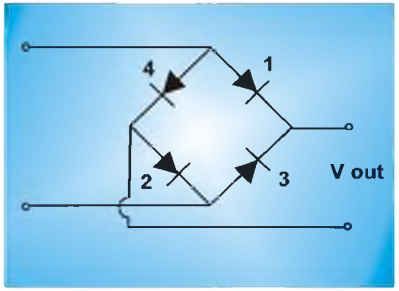
GUÍA DE ESTUDIO - JEFE DE MAQUINAS						
Q. Number	**Question**	**IMAGEN**	**A**	**B**	**C**	**D**
		MAINTAIN ELECTRICAL & ELECTRONIC EQUIPMENT				
1	What is the purpose of a thermistor or an RTD which is embedded in an alternator winding?		To equalize the three phase voltages.	To detect an overload condition on the windings.	To monitor internal temperature.	To monitor insulation resistance.
2	What is the advantage of a delta-star wound transformer?		Can transform higher loads.	Allows cycle changing.	Allows an earthed secondary winding.	Allows an earthed primary winding.
3	How is a zener diode different from an ordinary rectifier diode?		The zener diode has a much higher forward voltage drop.	The zener diode can carry greater forward currents than a rectifier diode.	The zener diode can operate at higher temperatures than a rectifier diode.	The zener diode usually operates with a reverse voltage.
4	If an electrical solenoid fails to activate when the coil is energised, this could be due to...		low spring pressure.	low voltage to the coil.	the residual magnetism of the contact faces.	dirty contact faces.
5	The minimum acceptable resistance between the stator winding and earth of a large 3-phase induction motor would be...		1,000 Ohms	100,000 Ohms	1,000,000 Ohms	100,000,000 Ohms
6	When troubleshooting electronic equipment, the FIRST step to be taken before testing the circuit voltage is to...		set the meter to the lowest range.	check the voltage supply from the power source.	remove the suspected component.	check the current flow through the circuit.
7	What does the abbreviation "DPDT" stand for on an electrical circuit diagram?		Double-pole double-throw.	Duplex-pole double-terminal.	Direct-power differential-transformer.	Double-pole duplex-terminal.
8	What factor or factors determines whether a transformer is a step-up or step-down type?		Voltage across the primary.	Current in the secondary.	Turns ratio.	All of these factors.
9	This diagram is a schematic drawing for a full-wave bridge rectifier circuit. Which one of the diodes is drawn incorrectly in reverse position?		Diode 1.	Diode 2.	Diode 3.	Diode 4.
10	A Wheatstone Bridge is used to measure an unknown resistance in relation to what?		A voltage drop.	A current imbalance.	The current in the circuit.	A known resistance.
11	Why is the "peak inverse voltage" rating of a P-N junction diode an important value?		It is directly related to the maximum current the diode is designed to carry.	It determines the maximum ambient temperature in which the diode may be operated.	It determines the maximum inverse ripple voltage which the diode will provide.	It determines the maximum voltage value which the diode is guaranteed to block.

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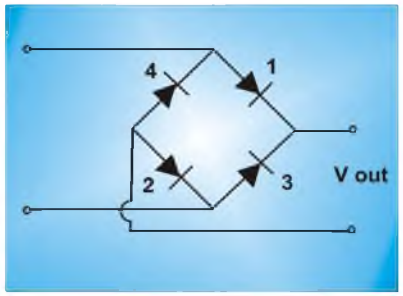
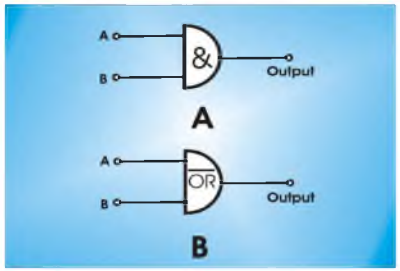
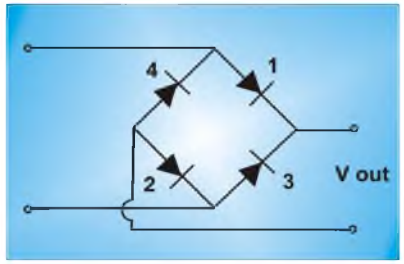
12	What is the result if one of the two rectifier diodes, shown here, becomes open circuited?		The output will become an AC voltage.	The transformer secondary will overheat.	The peak output voltage will be half the normal value.	The circuit will operate as a half-wave rectifier.
13	How will the terminal voltage of a lead-acid cell in good condition change between no-load and light-load conditions?		It should fall 15-25 percent.	It should rise 10-25 percent.	It should fall initially then stabilise at about 10% lower.	It should remain about constant.
14	Given A=0 and B=0 for the 2-input digital logic gate shown. What happens to the output if both inputs are negated (changed to the opposite value)?		The output goes from 0 to 1.	The output goes from 1 to 0.	The output remains the same.	The output retains a value of 0.
15	One type of phase sequence indicator which may be provided in a vessel's shore power junction box is basically a...		miniature three-phase induction motor.	miniature three-phase reverse voltage relay.	miniature three-phase rectifier circuit.	miniature single-phase sequence-lagged induction motor.
16	What is a likely result if one of the two rectifier diodes, shown here, becomes short circuited?		The second rectifier diode will fail due to over-current.	The output will be a full-wave rectified AC voltage.	The circuit will operate as a half-wave rectifier.	The peak output voltage will be half the normal value.

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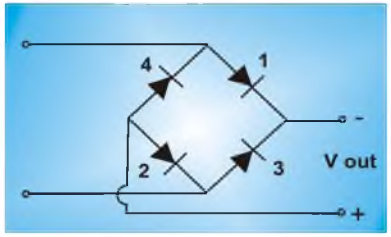
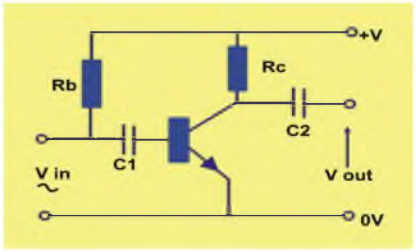
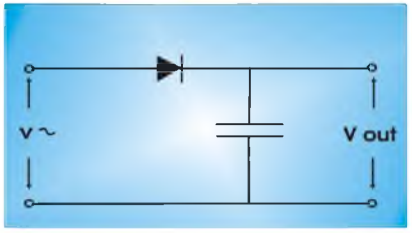
17	What is wrong with the schematic of the three-phase rectifier circuit shown?		Output polarity is incorrect.	Diodes 1 and 2 are reversed.	Diodes 3 and 4 are reversed.	Diodes 5 and 6 are reversed.
18	When testing the stator windings of an AC electric motor to earth, a low resistance reading on an individual winding indicates...		poor insulation on the coil.	an open circuit coil.	good continuity of the coil.	accumulation of dirt on the coil insulation.
19	What are some of the primary factors in determining the size and type of electrical power cable used for an installation?		Capacitance to ground, series inductance, and resistance.	Surge impedance, ambient temperature, and insulation colour.	Amperage capacity, ambient temperature, and voltage drop.	Amperage capacity, withstand capacity, and breakdown voltage.
20	Before using a multi meter to measure an unknown resistance you should...		short the test leads and calibrate the meter.	adjust the meter's pointer to mid-scale.	change the meter's batteries.	centre the meter's pointer at infinity.
21	What is the basic moving-coil instrument designed to measure?		AC current.	AC voltage.	DC current.	DC voltage.
22	Which of the following is used to increase or decrease DC voltage?		Simple wound transformer.	Rectifier.	Rotary convertor.	Transducer.
23	If an AC alternator is supplying power at an unacceptably low power factor, what protection device would operate?		The low voltage trip.	The reverse power trip.	The overspeed trip.	The overcurrent trip.
24	The circuit shown here is an example of a...		Common-emitter AC amplifier.	Common-base DC amplifier.	Simple astable multivibrator.	RC load oscillator.
25	The main purpose of the capacitor shown in the half-wave rectifier circuit shown here is to...		limit output current to a safe value.	limit output voltage to a safe value.	limit voltage fluctuations from the output terminals.	limit current fluctuations from the output terminals.

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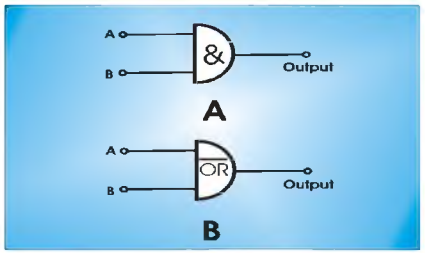
26	What is the purpose of a two-winding iron-core transformer?		To raise or lower DC voltages.	To raise or lower AC voltages.	To change AC voltage to DC voltage.	To raise, lower, or isolate AC voltages.
27	A 440 V AC shipboard system power cable carries a rating of 0.6kV/1.0kV. What does this dual voltage rating mean?		Maximum voltage to ground is 600 V and the maximum voltage between conductors is 1000 V.	Maximum voltage with no current is 1000 V and the maximum voltage at full current is 600 V.	Maximum voltage at 0 deg C is 1000 V and the maximum voltage at 45 deg C is 600 V.	Maximum voltage at 50 Hz is 1000 V and the maximum voltage at 60 Hz is 600 V.
28	The operation of an electric motor under continuous small overload conditions would usually result in...		the fuse blowing.	the breaker tripping.	the thermal overload protection tripping the motor.	damage to the insulation of the motor windings.
29	When connecting to shore power, what would be the most reasonable value to set on the vessel's "shore power" circuit breaker?		The maximum setting allowed for the circuit breaker's frame size.	A setting equal to 100% of the rating of the shore supply fuses.	A setting equal to about 110% of the rating of the shore supply fuses.	A setting equal to about 90% of the rating of the shore supply fuses.
30	An earth fault occurring outside the machinery spaces, on the secondary voltage supply...		cannot be detected by the engine room earth detection system.	is not important and will not affect other electrical equipment.	will be indicated at the branch circuit breaker panel.	will be indicated by the appropriate earth detecting lamps on the main switchboard.
31	If the governor of the diesel engine driving an alternator malfunctions, which safety device will trip the main breaker?		The overload trip.	The reverse current trip.	The under voltage trip.	The high/low frequency trip.
32	What does the "Interrupt Capacity" rating (measured in amps) for a fuse or circuit breaker indicate?		The maximum current the fuse or breaker can safely interrupt during a short circuit without rupturing or blowing apart.	The average current the fuse can handle without causing an arc which would ignite a flammable mixture.	The maximum current which the circuit breaker or fuse can withstand and continue to operate.	The maximum current the fuse or circuit breaker can block in the open condition.
33	Given A=0 and B=1 for the 2-input digital logic gate shown. What happens to the output if both inputs are negated (changed to the opposite value)?		The output goes from 0 to 1.	The output goes from 1 to 0.	The output remains the same.	The output retains a value of 0.
34	The purpose of a heatsink when it is used in conjunction with a diode is to...		stabilise the diode output.	prevent excessive heat loss from the diode.	prevent excessive heat from entering the diode.	prevent the diode from overheating.

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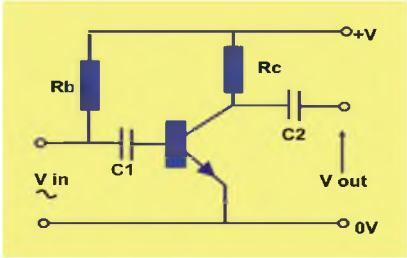
35	If a small cargo vessel is not equipped with an emergency generator it is an acceptable situation only...		if one of the generators can be started by independent batteries.	if it is possible to start one of the generators by hand.	when all of the main generators are started by independent batteries.	if the main propulsion and steering can be maintained from the emergency battery supply.
36	What happens when resistance is added in series with the field coil of a DC shunt-wound motor?		Motor speed increases.	Motor speed decreases.	Field current increases.	Armature current decreases.
37	If you suspected that the preferential trips were not operating correctly, how would you test them?		By loading up the alternator.	By raising the alternator frequency.	By raising the alternator voltage.	By lowering the alternator voltage.
38	Why is PVC (polyvinylchloride) electrical insulation not used for marine applications?		PVC tends to crack at the lower temperatures which may be encountered during the normal trade of a vessel.	PVC melts at 150 deg C, and emits toxic fumes when burned.	PVC distorts under mechanical pressure and will lose it's water-tightness in a pressure-type cable gland.	All of the other answers are reasons for not using PVC insulation in marine applications.
39	When testing the stator windings of an AC electric motor with a megger, a low resistance reading on an individual winding indicates...		an open circuit coil.	poor insulation on the coil.	good continuity of the coil.	accumulation of dirt on the coil insulation.
40	Which statement is true about the AC linear amplifier stage shown?		The value of Rc must be much higher than the value of Rb for linear operation.	Vin must be greater than the +V supply voltage for proper linear operation.	The output voltage amplification depends only on the ratio of the value of C2 to C1.	C1 and C2 prevent DC currents from entering or leaving the amplifier stage.

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MAINTAIN ELECTRICAL & ELECTRONIC EQUIPMENT	
ANSWERS	
1	C
2	C
3	D
4	B
5	C
6	B
7	A
8	C
9	D
10	D
11	D
12	D
13	D
14	B
15	A
16	A
17	A
18	A
19	C
20	A

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MAINTAIN ELECTRICAL & ELECTRONIC EQUIPMENT	
ANSWERS	
21	C
22	C
23	D
24	A
25	C
26	D
27	A
28	C
29	D
30	D
31	D
32	A
33	C
34	D
35	B
36	A
37	A
38	D
39	C
40	D