

Q & A INTERVIEW THIRD ENGINEER

SECTION 1 – PERSONAL INTRODUCTION & CAREER BACKGROUND

1. Tell me about yourself.

Answer (English):

My name is _____. I am a qualified Marine Engineer holding a Certificate of Competency as a Third Engineer. I have experience working on merchant vessels where I was responsible for auxiliary engines, generators, boilers, fuel oil systems, air compressors, and other engine room machinery. I always prioritize safety, preventive maintenance, teamwork, and compliance with company procedures. I am eager to continue improving my technical skills while contributing to safe and efficient vessel operations.

Jawaban (Indonesia):

Nama saya _____. Saya adalah Marine Engineer yang memiliki Certificate of Competency sebagai Third Engineer. Saya memiliki pengalaman bekerja di kapal niaga dengan tanggung jawab terhadap auxiliary engine, generator, boiler, sistem bahan bakar, air compressor, serta berbagai permesinan di kamar mesin. Saya selalu mengutamakan keselamatan, preventive maintenance, kerja sama tim, dan kepatuhan terhadap prosedur perusahaan. Saya ingin terus mengembangkan kemampuan teknis sekaligus berkontribusi dalam pengoperasian kapal yang aman dan efisien.

2. Why did you choose a career as a Marine Engineer?

Answer (English):

I chose this profession because I enjoy working with machinery, solving technical problems, and learning new technologies. Being a Marine Engineer allows me to combine technical knowledge with practical experience while working in an international environment. It is a challenging career that offers continuous learning and professional growth.

Jawaban (Indonesia):

Saya memilih profesi ini karena saya menyukai dunia permesinan, senang memecahkan masalah teknis, dan terus belajar teknologi baru. Menjadi Marine Engineer memungkinkan saya menggabungkan pengetahuan teknik dengan pengalaman praktik di lingkungan kerja internasional. Profesi ini penuh tantangan dan memberikan kesempatan untuk terus berkembang.

3. Why do you want to join our company?

Answer (English):

I would like to join your company because it has an excellent reputation for safety, professionalism, and crew development. I believe working here will allow me to improve my

Q & A INTERVIEW THIRD ENGINEER

skills, gain valuable experience, and contribute positively to the company while building a long-term career.

Jawaban (Indonesia):

Saya ingin bergabung dengan perusahaan ini karena memiliki reputasi yang baik dalam hal keselamatan, profesionalisme, dan pengembangan awak kapal. Saya yakin bekerja di perusahaan ini akan membantu saya meningkatkan kemampuan, memperoleh pengalaman berharga, serta memberikan kontribusi positif sambil membangun karier jangka panjang.

4. What experience do you have as a Third Engineer?

Answer (English):

As a Third Engineer, I have been responsible for operating and maintaining auxiliary engines, diesel generators, boilers, air compressors, fuel oil purifiers, pumps, and cooling systems. I have also carried out planned maintenance, machinery inspections, troubleshooting, and watchkeeping while ensuring compliance with company procedures and safety regulations.

Jawaban (Indonesia):

Sebagai Third Engineer, saya bertanggung jawab mengoperasikan dan merawat auxiliary engine, diesel generator, boiler, air compressor, fuel oil purifier, pompa, serta sistem pendingin. Saya juga melaksanakan planned maintenance, inspeksi permesinan, troubleshooting, dan jaga mesin dengan tetap mematuhi prosedur perusahaan serta peraturan keselamatan.

5. What types of vessels have you worked on?

Answer (English):

I have worked on _____ vessels, including tanker, bulk carrier, container vessel, offshore vessel, or general cargo ships. Each vessel has different operational requirements, which has helped me improve my technical knowledge and adaptability.

Jawaban (Indonesia):

Saya pernah bekerja di kapal _____, seperti tanker, bulk carrier, container vessel, offshore vessel, atau general cargo. Setiap jenis kapal memiliki kebutuhan operasional yang berbeda sehingga membantu saya meningkatkan pengetahuan teknis dan kemampuan beradaptasi.

6. What engine brands have you operated?

Answer (English):

Q & A INTERVIEW THIRD ENGINEER

I have experience operating engines such as MAN B&W, Wärtsilä, Yanmar, Caterpillar, Daihatsu, Bergen, and MAK, depending on the vessel. Although each engine has different specifications, the maintenance principles remain similar by following the manufacturer's manual and PMS schedule.

Jawaban (Indonesia):

Saya memiliki pengalaman mengoperasikan mesin seperti MAN B&W, Wärtsilä, Yanmar, Caterpillar, Daihatsu, Bergen, dan MAK, tergantung jenis kapal. Meskipun setiap mesin memiliki spesifikasi berbeda, prinsip perawatannya tetap sama dengan mengikuti manual pabrikan dan jadwal PMS.

7. What are your strengths as a Third Engineer?

Answer (English):

My strengths are responsibility, discipline, and strong technical troubleshooting skills. I work well under pressure, communicate effectively with the engine team, and always prioritize safety while completing maintenance tasks efficiently.

Jawaban (Indonesia):

Kelebihan saya adalah bertanggung jawab, disiplin, dan memiliki kemampuan troubleshooting yang baik. Saya mampu bekerja di bawah tekanan, berkomunikasi dengan baik bersama tim mesin, serta selalu mengutamakan keselamatan saat melaksanakan pekerjaan perawatan.

8. What are your weaknesses?

Answer (English):

One of my weaknesses is that I sometimes spend extra time checking my work because I want to ensure everything is done correctly. However, I have learned to balance accuracy with efficiency by following proper planning and time management.

Jawaban (Indonesia):

Salah satu kelemahan saya adalah terkadang saya menghabiskan waktu lebih lama untuk memeriksa pekerjaan karena ingin memastikan semuanya benar. Namun, saya telah belajar menyeimbangkan ketelitian dengan efisiensi melalui perencanaan kerja dan manajemen waktu yang baik.

9. How do you handle pressure onboard?

Answer (English):

Q & A INTERVIEW THIRD ENGINEER

I remain calm, assess the situation carefully, prioritize the most critical tasks, and communicate effectively with my team. I believe that following procedures and working together helps solve problems safely and efficiently.

Jawaban (Indonesia):

Saya tetap tenang, menganalisis situasi dengan baik, memprioritaskan pekerjaan yang paling penting, dan berkomunikasi secara efektif dengan tim. Saya percaya bahwa mengikuti prosedur dan bekerja sama akan membantu menyelesaikan masalah dengan aman dan efisien.

10. Why should we hire you?

Answer (English):

You should hire me because I am a responsible and safety-conscious Marine Engineer with solid technical knowledge and practical experience in engine room operations. I am eager to learn, work well in a multicultural team, and contribute to the safe and efficient operation of your vessel.

Jawaban (Indonesia):

Perusahaan sebaiknya memilih saya karena saya adalah Marine Engineer yang bertanggung jawab, mengutamakan keselamatan, memiliki pengetahuan teknis yang baik, serta pengalaman praktik di kamar mesin. Saya selalu ingin belajar, mampu bekerja dalam tim multinasional, dan siap berkontribusi terhadap operasi kapal yang aman dan efisien.

SECTION 2 – AUXILIARY ENGINE & GENERATOR (11–25)

11. What are the duties of a Third Engineer?

Answer (English):

The main duties of a Third Engineer are to operate, monitor, maintain, and troubleshoot auxiliary engines, diesel generators, boilers, air compressors, fuel oil purifiers, pumps, and other assigned machinery. I also carry out Planned Maintenance System (PMS) tasks, engine room watchkeeping, machinery inspections, and ensure all equipment operates safely and efficiently while complying with company procedures and international regulations.

Jawaban (Indonesia):

Tugas utama Third Engineer adalah mengoperasikan, memantau, merawat, dan melakukan troubleshooting pada auxiliary engine, diesel generator, boiler, air compressor, fuel oil purifier, pompa, serta permesinan lain yang menjadi tanggung jawabnya. Saya juga melaksanakan Planned Maintenance System (PMS), jaga mesin, inspeksi peralatan, serta memastikan seluruh permesinan beroperasi dengan aman dan efisien sesuai prosedur perusahaan dan peraturan internasional.

Q & A INTERVIEW THIRD ENGINEER

12. What are your responsibilities for auxiliary engines?

Answer (English):

I am responsible for daily operation, routine inspection, planned maintenance, performance monitoring, troubleshooting, lubrication, cooling system checks, fuel system maintenance, and keeping accurate maintenance records. I also monitor abnormal vibration, unusual noise, exhaust temperatures, lubricating oil pressure, and cooling water temperatures.

Jawaban (Indonesia):

Saya bertanggung jawab terhadap pengoperasian harian, inspeksi rutin, planned maintenance, pemantauan performa mesin, troubleshooting, pelumasan, pemeriksaan sistem pendingin, sistem bahan bakar, serta pencatatan perawatan. Saya juga memonitor getaran abnormal, suara tidak normal, temperatur gas buang, tekanan oli pelumas, dan temperatur air pendingin.

13. How do you prepare a generator before starting?

Answer (English):

Before starting a generator, I check the lubricating oil level, cooling water level, fuel oil supply, starting air pressure if applicable, battery condition, crankcase, filters, belts, alarms, and ensure there are no oil or water leaks. I also make sure the turning gear is disengaged, all safety devices are operational, and the generator is ready for safe operation.

Jawaban (Indonesia):

Sebelum menjalankan generator saya memeriksa level oli pelumas, air pendingin, suplai bahan bakar, tekanan udara start bila ada, kondisi baterai, crankcase, filter, belt, alarm, serta memastikan tidak ada kebocoran oli maupun air. Saya juga memastikan turning gear sudah dilepas, seluruh perangkat keselamatan berfungsi, dan generator siap dioperasikan dengan aman.

14. How do you synchronize generators?

Answer (English):

To synchronize generators, I first ensure that the incoming generator has the same voltage, frequency, and phase sequence as the running generator. I adjust the governor to match the frequency and the AVR to match the voltage. Once the synchroscope approaches the twelve o'clock position with slow rotation, I close the breaker and confirm proper load sharing.

Jawaban (Indonesia):

Untuk sinkronisasi generator, saya memastikan generator yang akan masuk memiliki tegangan, frekuensi, dan urutan fasa yang sama dengan generator yang sedang online. Saya mengatur governor agar frekuensi sesuai dan AVR agar tegangannya sama. Saat synchroscope mendekati

Q & A INTERVIEW THIRD ENGINEER

posisi jam 12 dengan putaran lambat, saya menutup circuit breaker dan memastikan pembagian beban berjalan normal.

15. What causes a generator blackout?

Answer (English):

A blackout may occur due to generator overload, reverse power, low lubricating oil pressure, high cooling water temperature, overspeed, electrical faults, circuit breaker malfunction, fuel supply failure, or operator error. Immediate action is required to restore electrical power safely.

Jawaban (Indonesia):

Blackout dapat disebabkan oleh beban berlebih, reverse power, tekanan oli pelumas rendah, temperatur air pendingin tinggi, overspeed, gangguan kelistrikan, kerusakan circuit breaker, kegagalan suplai bahan bakar, atau kesalahan operator. Tindakan cepat diperlukan untuk memulihkan tenaga listrik secara aman.

16. What should you do after a generator trips?

Answer (English):

First, I secure the electrical system and ensure the standby generator starts automatically or manually if necessary. Then I identify the trip alarm, investigate the root cause, check the generator condition, rectify the fault, and only restart the generator after confirming that it is safe to do so. I report the incident to the Chief Engineer and record it in the engine logbook.

Jawaban (Indonesia):

Pertama saya mengamankan sistem kelistrikan dan memastikan standby generator otomatis atau manual masuk bila diperlukan. Setelah itu saya mengidentifikasi alarm penyebab trip, mencari akar masalah, memeriksa kondisi generator, memperbaiki gangguan, dan hanya menjalankan kembali generator setelah dipastikan aman. Seluruh kejadian dilaporkan kepada Chief Engineer dan dicatat di engine logbook.

17. What are the common generator alarms?

Answer (English):

Common generator alarms include low lubricating oil pressure, high cooling water temperature, high exhaust gas temperature, overspeed, overcurrent, reverse power, low fuel pressure, earth fault, high crankcase pressure, low insulation resistance, and abnormal vibration.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Alarm yang sering muncul antara lain tekanan oli pelumas rendah, temperatur air pendingin tinggi, temperatur gas buang tinggi, overspeed, arus berlebih, reverse power, tekanan bahan bakar rendah, earth fault, tekanan crankcase tinggi, tahanan isolasi rendah, serta getaran abnormal.

18. How do you maintain an auxiliary engine?

Answer (English):

Maintenance includes changing lubricating oil and filters, cleaning fuel filters, inspecting injectors, checking valve clearances, monitoring turbocharger condition, cleaning air coolers, testing safety devices, inspecting cooling systems, measuring bearing temperatures, and following the Planned Maintenance System according to the manufacturer's recommendations.

Jawaban (Indonesia):

Perawatan meliputi penggantian oli dan filter, pembersihan fuel filter, pemeriksaan injector, penyetelan valve clearance, pengecekan turbocharger, pembersihan air cooler, pengujian perangkat keselamatan, pemeriksaan sistem pendingin, pengukuran temperatur bearing, serta mengikuti jadwal Planned Maintenance System sesuai rekomendasi pabrikan.

19. What causes high exhaust temperature on a generator?

Answer (English):

High exhaust temperature may be caused by overloaded operation, faulty fuel injectors, poor fuel atomization, clogged air filters, turbocharger fouling, insufficient air supply, incorrect valve timing, low compression pressure, or cooling system problems.

Jawaban (Indonesia):

Temperatur gas buang yang tinggi dapat disebabkan oleh beban berlebih, injector rusak, atomisasi bahan bakar yang buruk, filter udara kotor, turbocharger kotor, suplai udara kurang, valve timing tidak tepat, tekanan kompresi rendah, atau gangguan pada sistem pendingin.

20. What is load sharing?

Answer (English):

Load sharing is the process of distributing electrical load evenly between two or more generators operating in parallel. Proper load sharing prevents overloading, improves fuel efficiency, and ensures stable electrical power onboard.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Load sharing adalah proses pembagian beban listrik secara merata di antara dua atau lebih generator yang bekerja paralel. Pembagian beban yang baik mencegah overload, meningkatkan efisiensi bahan bakar, dan menjaga kestabilan sistem kelistrikan kapal.

21. What is reverse power?

Answer (English):

Reverse power occurs when a generator begins consuming electrical power instead of producing it. This usually happens due to fuel failure or engine malfunction. The reverse power relay protects the generator by tripping it before mechanical damage occurs.

Jawaban (Indonesia):

Reverse power terjadi ketika generator justru menyerap tenaga listrik dari sistem, bukan menghasilkan listrik. Hal ini biasanya disebabkan oleh kegagalan suplai bahan bakar atau kerusakan mesin. Reverse power relay akan memutus generator untuk mencegah kerusakan mekanis.

22. What is overspeed protection?

Answer (English):

Overspeed protection is a safety system that automatically shuts down the engine if its speed exceeds the safe operating limit. This prevents severe mechanical damage and possible engine failure.

Jawaban (Indonesia):

Overspeed protection adalah sistem pengaman yang secara otomatis menghentikan mesin apabila putarannya melebihi batas aman. Sistem ini mencegah kerusakan mekanis serius dan kemungkinan kegagalan mesin.

23. What checks do you perform before stopping a generator?

Answer (English):

Before stopping a generator, I ensure another generator is available if required, gradually reduce the load, monitor voltage and frequency, check temperatures and pressures, inspect for abnormal conditions, allow the engine to cool down at no load for a few minutes, and then stop it according to the manufacturer's procedure.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Sebelum menghentikan generator saya memastikan generator lain siap jika diperlukan, menurunkan beban secara bertahap, memonitor tegangan dan frekuensi, memeriksa temperatur dan tekanan, memastikan tidak ada kondisi abnormal, membiarkan mesin idle beberapa menit agar dingin, kemudian mematikan sesuai prosedur pabrikan.

\

24. What is the purpose of the governor?

Answer (English):

The governor automatically controls engine speed by regulating the fuel supply according to load demand. It maintains a stable engine speed and frequency, ensuring reliable electrical power generation.

Jawaban (Indonesia):

Governor berfungsi mengatur putaran mesin secara otomatis dengan mengontrol jumlah bahan bakar sesuai perubahan beban. Governor menjaga putaran mesin dan frekuensi tetap stabil sehingga pembangkit listrik bekerja dengan andal.

\

25. How do you troubleshoot generator vibration?

Answer (English):

I first determine whether the vibration is mechanical or electrical. I inspect the coupling alignment, foundation bolts, bearings, rotor balance, flexible mounts, cooling fan, and rotating parts. I also check the electrical load balance and measure vibration levels using monitoring equipment. After identifying the root cause, I perform corrective maintenance and verify that the vibration returns to acceptable limits.

Jawaban (Indonesia):

Saya terlebih dahulu menentukan apakah getaran berasal dari masalah mekanis atau kelistrikan. Saya memeriksa alignment kopling, baut pondasi, bearing, keseimbangan rotor, flexible mounting, kipas pendingin, dan komponen yang berputar. Saya juga memeriksa keseimbangan beban listrik serta mengukur tingkat getaran menggunakan alat ukur. Setelah penyebab ditemukan, saya melakukan perbaikan dan memastikan getaran kembali dalam batas normal.

Q & A INTERVIEW THIRD ENGINEER

SECTION 3 – BOILER & STEAM SYSTEM (26–35)

26. What are the duties of a boiler?

Answer (English):

The main duty of a boiler is to produce steam for various shipboard operations. Steam is used for fuel oil heating, lubricating oil heating, domestic hot water, cargo heating on tankers, accommodation heating, tank cleaning, and other auxiliary systems. A boiler ensures that sufficient steam is available for the safe and efficient operation of the vessel.

Jawaban (Indonesia):

Tugas utama boiler adalah menghasilkan uap (steam) untuk berbagai kebutuhan operasional kapal. Steam digunakan untuk memanaskan bahan bakar, oli pelumas, air panas domestik, pemanasan muatan pada kapal tanker, pemanas akomodasi, tank cleaning, serta sistem bantu lainnya. Boiler memastikan kebutuhan steam selalu tersedia agar operasional kapal berjalan aman dan efisien.

27. What is the purpose of a composite boiler?

Answer (English):

A composite boiler combines an oil-fired boiler and an exhaust gas boiler into one unit. At sea, it recovers waste heat from the main engine exhaust gases to produce steam, reducing fuel consumption. In port, when the main engine is stopped, the oil-fired burner supplies the required steam. This improves energy efficiency and reduces operating costs.

Jawaban (Indonesia):

Composite boiler menggabungkan oil-fired boiler dan exhaust gas boiler dalam satu unit. Saat kapal berlayar, panas dari gas buang main engine dimanfaatkan untuk menghasilkan steam sehingga menghemat bahan bakar. Saat kapal di pelabuhan dan main engine berhenti, burner berbahan bakar minyak menghasilkan steam yang dibutuhkan. Sistem ini meningkatkan efisiensi energi dan mengurangi biaya operasional.

28. How do you start a boiler?

Answer (English):

Before starting a boiler, I check the water level, fuel oil supply, burner condition, feed water pump, safety valves, pressure gauges, water treatment condition, and control system. After confirming all checks are satisfactory, I start the feed water pump, purge the furnace to remove any combustible gases, ignite the burner, monitor flame stability, and gradually raise the steam pressure while observing all operating parameters.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Sebelum menjalankan boiler saya memeriksa level air, suplai bahan bakar, kondisi burner, feed water pump, safety valve, pressure gauge, kualitas air boiler, serta sistem kontrol. Setelah semua dipastikan normal, saya menjalankan feed water pump, melakukan furnace purging untuk membuang gas yang mudah terbakar, menyalakan burner, memantau kestabilan api, dan menaikkan tekanan steam secara bertahap sambil memonitor seluruh parameter operasi.

29. What safety devices are fitted on a boiler?

Answer (English):

A boiler is equipped with several safety devices, including safety valves, low water level alarm and trip, high steam pressure alarm, flame failure detector, pressure gauge, water level gauge, fusible plug on some boiler types, feed water control system, burner management system, and emergency shutdown devices. These protections prevent boiler explosions and ensure safe operation.

Jawaban (Indonesia):

Boiler dilengkapi berbagai perangkat keselamatan seperti safety valve, alarm dan trip level air rendah, alarm tekanan steam tinggi, flame failure detector, pressure gauge, water level gauge, fusible plug pada tipe tertentu, feed water control system, burner management system, dan emergency shutdown. Semua perangkat tersebut berfungsi mencegah ledakan boiler dan menjaga pengoperasian tetap aman.

30. What causes low water level in a boiler?

Answer (English):

Low water level may be caused by feed water pump failure, feed water control valve malfunction, excessive steam demand, leakage in the system, faulty water level controller, or operator error. If the water level becomes dangerously low, the boiler must be shut down immediately to prevent overheating and serious damage.

Jawaban (Indonesia):

Level air yang rendah dapat disebabkan oleh kerusakan feed water pump, kerusakan feed water control valve, kebutuhan steam yang terlalu tinggi, kebocoran sistem, gangguan water level controller, atau kesalahan operator. Jika level air turun hingga batas berbahaya, boiler harus segera dihentikan untuk mencegah overheating dan kerusakan serius.

Q & A INTERVIEW THIRD ENGINEER

31. What is boiler blowdown?

Answer (English):

Boiler blowdown is the process of removing water containing dissolved solids, sludge, and impurities from the boiler. Blowdown helps maintain proper water quality, prevents scale formation, reduces corrosion, and improves boiler efficiency. It is carried out according to the water treatment program and operating manual.

Jawaban (Indonesia):

Boiler blowdown adalah proses membuang sebagian air boiler yang mengandung padatan terlarut, lumpur, dan kotoran. Blowdown bertujuan menjaga kualitas air boiler, mencegah terbentuknya kerak, mengurangi korosi, dan meningkatkan efisiensi boiler. Proses ini dilakukan sesuai program water treatment dan petunjuk pabrikan.

32. Why is boiler water treatment important?

Answer (English):

Boiler water treatment prevents corrosion, scaling, foaming, and carryover. Proper chemical treatment extends boiler life, improves heat transfer efficiency, reduces maintenance costs, and ensures reliable steam production. Water quality should be tested regularly, and chemicals should be dosed according to the manufacturer's recommendations.

Jawaban (Indonesia):

Water treatment sangat penting untuk mencegah korosi, pembentukan kerak, foaming, dan carryover. Perlakuan kimia yang tepat memperpanjang umur boiler, meningkatkan efisiensi perpindahan panas, mengurangi biaya perawatan, serta menjaga produksi steam tetap andal. Kualitas air harus diuji secara berkala dan bahan kimia ditambahkan sesuai rekomendasi pabrikan.

33. What causes boiler flame failure?

Answer (English):

Flame failure may occur due to insufficient fuel supply, blocked fuel nozzles, low fuel pressure, ignition failure, faulty flame sensor, insufficient combustion air, incorrect air-fuel ratio, burner malfunction, or electrical control system failure. The burner management system will automatically shut down the burner for safety.

Jawaban (Indonesia):

Flame failure dapat disebabkan oleh kurangnya suplai bahan bakar, nozzle tersumbat, tekanan bahan bakar rendah, kegagalan ignition, flame sensor rusak, udara pembakaran tidak cukup, rasio

Q & A INTERVIEW THIRD ENGINEER

udara-bahan bakar tidak tepat, kerusakan burner, atau gangguan sistem kontrol listrik. Burner management system akan menghentikan burner secara otomatis demi keselamatan.

34. How do you respond to a boiler trip?

Answer (English):

When a boiler trips, I first identify the alarm or trip signal on the control panel. I secure the boiler, investigate the cause, check the water level, fuel supply, burner condition, feed water system, electrical control, and safety devices. After correcting the fault and confirming safe operating conditions, I restart the boiler following the approved startup procedure and report the incident to the Chief Engineer.

Jawaban (Indonesia):

Ketika boiler mengalami trip, saya terlebih dahulu mengidentifikasi alarm atau penyebab trip pada panel kontrol. Saya mengamankan boiler, memeriksa level air, suplai bahan bakar, burner, feed water system, sistem kontrol listrik, serta perangkat keselamatan. Setelah gangguan diperbaiki dan kondisi dipastikan aman, boiler dijalankan kembali sesuai prosedur startup dan kejadian dilaporkan kepada Chief Engineer.

35. How do you maintain a boiler?

Answer (English):

Boiler maintenance includes checking burner performance, cleaning fuel nozzles, inspecting safety valves, testing alarms and trips, monitoring water treatment, performing regular blowdown, cleaning fireside and waterside surfaces, inspecting refractory materials, checking feed water pumps, calibrating instruments, and carrying out Planned Maintenance System tasks according to the manufacturer's manual.

Regular inspections help improve boiler reliability, increase efficiency, reduce fuel consumption, and prevent unexpected failures during vessel operations.

Jawaban (Indonesia):

Perawatan boiler meliputi pemeriksaan kinerja burner, pembersihan fuel nozzle, inspeksi safety valve, pengujian alarm dan sistem trip, pemantauan water treatment, pelaksanaan blowdown secara berkala, pembersihan sisi api dan sisi air boiler, pemeriksaan refractory, pengecekan feed water pump, kalibrasi instrumen, serta pelaksanaan Planned Maintenance System sesuai manual pabrikan.

Inspeksi rutin akan meningkatkan keandalan boiler, menjaga efisiensi, mengurangi konsumsi bahan bakar, serta mencegah kerusakan mendadak selama operasional kapal.

Q & A INTERVIEW THIRD ENGINEER

SECTION 4 – FUEL OIL & PURIFIER SYSTEM (36–50)

36. Explain the fuel oil system.

Answer (English):

The fuel oil system is designed to store, transfer, treat, heat, and supply clean fuel to the engine at the correct pressure, temperature, and viscosity. The system typically consists of storage tanks, settling tanks, transfer pumps, purifiers, service tanks, booster pumps, heaters, viscosity controllers, fine filters, and fuel injectors. Proper operation of the fuel oil system is essential for efficient combustion and reliable engine performance.

Jawaban (Indonesia):

Sistem bahan bakar berfungsi untuk menyimpan, memindahkan, membersihkan, memanaskan, dan menyalurkan bahan bakar ke mesin dengan tekanan, temperatur, dan viskositas yang sesuai. Sistem ini terdiri dari storage tank, settling tank, transfer pump, purifier, service tank, booster pump, heater, viscosity controller, fine filter, hingga fuel injector. Pengoperasian yang baik sangat penting untuk pembakaran yang efisien dan performa mesin yang andal.

37. What is the purpose of a purifier?

Answer (English):

The purpose of a fuel oil purifier is to remove water, sludge, and solid contaminants from the fuel before it enters the engine. Clean fuel reduces engine wear, protects fuel injection equipment, improves combustion efficiency, and minimizes maintenance costs.

Jawaban (Indonesia):

Purifier berfungsi untuk memisahkan air, sludge, dan partikel padat dari bahan bakar sebelum masuk ke mesin. Bahan bakar yang bersih mengurangi keausan mesin, melindungi fuel injection system, meningkatkan efisiensi pembakaran, dan menekan biaya perawatan.

38. How does a centrifugal purifier work?

Answer (English):

A centrifugal purifier works by rotating the bowl at very high speed, creating centrifugal force that separates substances according to their density. Water and heavy impurities move toward the outer edge of the bowl, while clean fuel remains closer to the center and flows to the service tank. Sludge collects inside the bowl and is discharged periodically through the automatic desludging system.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Purifier bekerja dengan memutar bowl pada kecepatan sangat tinggi sehingga menghasilkan gaya sentrifugal. Air dan kotoran yang lebih berat terdorong ke bagian luar bowl, sedangkan bahan bakar bersih berada di bagian dalam dan mengalir menuju service tank. Lumpur (sludge) terkumpul di dalam bowl dan dibuang secara berkala melalui sistem automatic desludging.

39. Why is fuel heating necessary?

Answer (English):

Fuel heating reduces the viscosity of heavy fuel oil, allowing it to flow properly through the piping system and produce good atomization at the fuel injectors. Proper fuel temperature improves combustion efficiency, reduces smoke emissions, and prevents excessive wear of fuel pumps and injectors.

Jawaban (Indonesia):

Pemanasan bahan bakar diperlukan untuk menurunkan viskositas heavy fuel oil sehingga mudah mengalir dalam pipa dan menghasilkan atomisasi yang baik di fuel injector. Temperatur yang sesuai meningkatkan efisiensi pembakaran, mengurangi asap, dan mencegah keausan pada fuel pump maupun injector.

40. What is sludge?

Answer (English):

Sludge is a mixture of water, dirt, rust, catalytic fines, carbon particles, and other contaminants separated from fuel or lubricating oil during purification. Sludge is collected in the sludge tank and disposed of according to MARPOL regulations.

Jawaban (Indonesia):

Sludge adalah campuran air, kotoran, karat, catalytic fines, partikel karbon, dan kontaminan lain yang dipisahkan dari bahan bakar atau oli pelumas selama proses purifikasi. Sludge dikumpulkan di sludge tank dan dibuang sesuai ketentuan MARPOL.

41. What causes purifier vibration?

Answer (English):

Purifier vibration may be caused by bowl imbalance, sludge accumulation, worn bearings, improper assembly after maintenance, damaged spindle, incorrect operating speed, poor

Q & A INTERVIEW THIRD ENGINEER

foundation, or foreign objects inside the bowl. Immediate inspection is necessary to prevent serious mechanical damage.

Jawaban (Indonesia):

Getaran pada purifier dapat disebabkan oleh bowl tidak seimbang, penumpukan sludge, bearing aus, kesalahan pemasangan setelah overhaul, spindle rusak, putaran tidak normal, pondasi longgar, atau adanya benda asing di dalam bowl. Pemeriksaan harus segera dilakukan agar tidak terjadi kerusakan yang lebih serius.

42. How do you start a purifier?

Answer (English):

Before starting, I check the lubricating oil level, operating water pressure, feed temperature, bowl assembly, sealing water, discharge line, and ensure the bowl is clean. After starting the motor, I allow the purifier to reach full operating speed before supplying sealing water and then introducing fuel gradually while monitoring vibration, temperature, and discharge condition.

Jawaban (Indonesia):

Sebelum menjalankan purifier saya memeriksa level oli, tekanan operating water, temperatur bahan bakar, pemasangan bowl, sealing water, saluran pembuangan, serta memastikan bowl dalam kondisi bersih. Setelah motor dijalankan, saya menunggu hingga putaran kerja tercapai, kemudian memberikan sealing water dan memasukkan bahan bakar secara bertahap sambil memonitor getaran, temperatur, dan kondisi pembuangan.

43. What checks are required before operating a purifier?

Answer (English):

I check the bowl assembly, operating water pressure, sealing water supply, lubricating oil level, heating temperature, motor condition, vibration level, sludge discharge system, drain lines, alarms, and ensure all valves are in the correct position.

Jawaban (Indonesia):

Saya memeriksa pemasangan bowl, tekanan operating water, suplai sealing water, level oli pelumas, temperatur pemanasan bahan bakar, kondisi motor, tingkat getaran, sistem pembuangan sludge, saluran drain, alarm, serta memastikan seluruh valve berada pada posisi yang benar.

Q & A INTERVIEW THIRD ENGINEER

44. What is the difference between a purifier and a clarifier?

Answer (English):

A purifier removes both water and solid impurities from the fuel by using a gravity disc. A clarifier removes only solid contaminants because it operates without a gravity disc and is not designed to separate water. Therefore, a purifier provides more complete fuel cleaning when water contamination is present.

Jawaban (Indonesia):

Purifier memisahkan air dan kotoran padat dari bahan bakar menggunakan gravity disc. Clarifier hanya memisahkan partikel padat karena tidak menggunakan gravity disc sehingga tidak dirancang untuk memisahkan air. Oleh karena itu purifier lebih efektif apabila bahan bakar mengandung air.

45. What happens if water enters the fuel system?

Answer (English):

Water contamination can cause poor combustion, corrosion, injector damage, fuel pump wear, unstable engine operation, loss of power, increased exhaust temperature, and possible engine shutdown. The contaminated fuel should be purified immediately before being supplied to the engine.

Jawaban (Indonesia):

Masuknya air ke sistem bahan bakar dapat menyebabkan pembakaran tidak sempurna, korosi, kerusakan injector, keausan fuel pump, putaran mesin tidak stabil, tenaga mesin menurun, temperatur gas buang meningkat, bahkan mesin dapat berhenti. Bahan bakar harus segera dipurifikasi sebelum digunakan.

46. What is viscosity?

Answer (English):

Viscosity is the resistance of a liquid to flow. Heavy fuel oil must be heated to reduce its viscosity to the correct value specified by the engine manufacturer. Maintaining the proper viscosity ensures efficient atomization, complete combustion, and protects the fuel injection equipment.

Jawaban (Indonesia):

Viskositas adalah tingkat kekentalan suatu cairan. Heavy fuel oil harus dipanaskan agar viskositasnya sesuai dengan nilai yang direkomendasikan pabrikan mesin. Viskositas yang tepat menghasilkan atomisasi yang baik, pembakaran sempurna, dan melindungi sistem injeksi bahan bakar.

Q & A INTERVIEW THIRD ENGINEER

47. Why is fuel temperature controlled?

Answer (English):

Fuel temperature is controlled to maintain the correct viscosity. If the temperature is too low, the fuel becomes too thick, causing poor atomization and incomplete combustion. If the temperature is too high, the fuel may lose lubrication properties, increasing wear on fuel pumps and injectors.

Jawaban (Indonesia):

Temperatur bahan bakar dikontrol untuk menjaga viskositas tetap sesuai. Jika terlalu rendah, bahan bakar menjadi terlalu kental sehingga atomisasi buruk dan pembakaran tidak sempurna. Jika terlalu tinggi, sifat pelumasan bahan bakar berkurang sehingga mempercepat keausan fuel pump dan injector.

48. What is automatic desludging?

Answer (English):

Automatic desludging is a system that periodically opens the purifier bowl to discharge accumulated sludge automatically without stopping the machine. This process keeps the purifier operating efficiently and minimizes manual cleaning.

Jawaban (Indonesia):

Automatic desludging adalah sistem yang secara otomatis membuka bowl purifier pada interval tertentu untuk membuang sludge tanpa menghentikan operasi purifier. Sistem ini menjaga efisiensi pemisahan dan mengurangi kebutuhan pembersihan manual.

49. How do you maintain a purifier?

Answer (English):

Purifier maintenance includes cleaning the bowl and discs, replacing O-rings and seals, checking bearings, lubricating moving parts, inspecting the spindle, testing the operating water system, calibrating sensors, checking vibration levels, and performing regular overhauls according to the Planned Maintenance System and manufacturer's manual.

Jawaban (Indonesia):

Perawatan purifier meliputi pembersihan bowl dan disc, penggantian O-ring dan seal, pemeriksaan bearing, pelumasan komponen bergerak, inspeksi spindle, pengujian operating water system, kalibrasi sensor, pemeriksaan tingkat getaran, serta overhaul berkala sesuai Planned Maintenance System dan manual pabrikan.

Q & A INTERVIEW THIRD ENGINEER

50. How do you troubleshoot poor purification?

Answer (English):

If purification efficiency decreases, I first check the fuel temperature, operating water pressure, gravity disc size, bowl speed, sludge accumulation, sealing water, feed rate, and bowl assembly. I also inspect the discs for contamination and verify that automatic desludging is functioning correctly. After identifying the root cause, I clean, repair, or adjust the purifier as necessary before returning it to service.

Jawaban (Indonesia):

Jika hasil pemurnian menurun, saya terlebih dahulu memeriksa temperatur bahan bakar, tekanan operating water, ukuran gravity disc, putaran bowl, penumpukan sludge, sealing water, laju aliran bahan bakar, dan pemasangan bowl. Saya juga memeriksa disc dari kemungkinan kotoran serta memastikan automatic desludging bekerja normal. Setelah penyebab ditemukan, saya melakukan pembersihan, perbaikan, atau penyetelan sebelum purifier dioperasikan kembali.

SECTION 5 – AIR COMPRESSOR & STARTING AIR SYSTEM (51–60)

51. What is the purpose of the air compressor?

Answer (English):

The main purpose of an air compressor is to compress atmospheric air and supply high-pressure air for starting the main engine and auxiliary engines. It also provides compressed air for control systems, pneumatic tools, whistle operation, and other shipboard equipment. A reliable air compressor is essential for safe and efficient vessel operations.

Jawaban (Indonesia):

Fungsi utama air compressor adalah mengompresi udara atmosfer menjadi udara bertekanan tinggi yang digunakan untuk starting main engine dan auxiliary engine. Selain itu, udara bertekanan digunakan untuk sistem kontrol pneumatik, peralatan pneumatik, peluit kapal, dan berbagai kebutuhan operasional lainnya. Air compressor yang andal sangat penting untuk keselamatan dan kelancaran operasional kapal.

52. How does a starting air system work?

Answer (English):

The starting air system stores compressed air in air receivers at approximately 30 bar. When the start command is given, the starting air distributor opens the starting air valves in the correct firing order, allowing compressed air to enter the engine cylinders and rotate the crankshaft. Once the

Q & A INTERVIEW THIRD ENGINEER

engine reaches self-sustaining speed, fuel injection begins, and the starting air supply is automatically cut off.

Jawaban (Indonesia):

Starting air system menyimpan udara bertekanan sekitar 30 bar di dalam air receiver. Saat perintah start diberikan, starting air distributor membuka starting air valve sesuai firing order sehingga udara bertekanan masuk ke silinder dan memutar crankshaft. Setelah putaran mesin cukup untuk hidup sendiri, injeksi bahan bakar mulai bekerja dan suplai starting air otomatis dihentikan.

53. What causes high compressor discharge temperature?

Answer (English):

High discharge temperature may be caused by dirty intercoolers, insufficient cooling water, restricted air filters, leaking valves, worn piston rings, excessive compression ratio, poor lubrication, or prolonged continuous operation. High temperatures reduce compressor efficiency and may damage internal components.

Jawaban (Indonesia):

Temperatur udara keluar yang tinggi dapat disebabkan oleh intercooler kotor, pendinginan kurang, filter udara tersumbat, valve bocor, piston ring aus, rasio kompresi terlalu tinggi, pelumasan kurang, atau compressor bekerja terus-menerus. Temperatur tinggi dapat menurunkan efisiensi dan merusak komponen internal.

54. Why must air receivers be drained?

Answer (English):

Air receivers must be drained regularly to remove accumulated moisture and oil. If water is allowed to remain inside, it can cause internal corrosion, reduce storage capacity, damage pneumatic equipment, and create safety risks in the starting air system.

Jawaban (Indonesia):

Air receiver harus dikuras secara berkala untuk membuang air dan oli yang terkumpul akibat proses kompresi. Jika dibiarkan, air dapat menyebabkan korosi, mengurangi kapasitas penyimpanan udara, merusak peralatan pneumatik, dan menimbulkan risiko pada sistem starting air.

Q & A INTERVIEW THIRD ENGINEER

55. What safety devices are installed on an air compressor?

Answer (English):

An air compressor is equipped with several safety devices, including safety valves, pressure switches, high-temperature alarms, low lubricating oil pressure alarms, relief valves, non-return valves, overload protection, cooling water failure alarms, and automatic unloading devices. These safety features protect both the compressor and the starting air system.

Jawaban (Indonesia):

Air compressor dilengkapi berbagai perangkat keselamatan seperti safety valve, pressure switch, alarm temperatur tinggi, alarm tekanan oli rendah, relief valve, non-return valve, overload protection, alarm kegagalan pendinginan, dan automatic unloader. Semua perangkat ini melindungi compressor dan sistem udara start dari kerusakan.

56. What causes low starting air pressure?

Answer (English):

Low starting air pressure may be caused by air leaks, compressor malfunction, worn piston rings, leaking discharge valves, faulty pressure switches, excessive air consumption, defective non-return valves, or insufficient compressor running time.

Jawaban (Indonesia):

Tekanan udara start yang rendah dapat disebabkan oleh kebocoran udara, kerusakan compressor, piston ring aus, discharge valve bocor, pressure switch rusak, penggunaan udara berlebihan, non-return valve rusak, atau waktu operasi compressor yang tidak cukup.

57. How do you maintain an air compressor?

Answer (English):

Maintenance includes checking lubricating oil, replacing filters, cleaning suction valves, inspecting discharge valves, checking piston rings, cleaning intercoolers and aftercoolers, testing safety valves, draining condensate from air receivers, monitoring vibration, and performing periodic overhauls according to the Planned Maintenance System.

Jawaban (Indonesia):

Perawatan meliputi pemeriksaan oli pelumas, penggantian filter, pembersihan suction valve, pemeriksaan discharge valve, pengecekan piston ring, pembersihan intercooler dan aftercooler, pengujian safety valve, pengurusan air receiver, pemeriksaan getaran, serta overhaul berkala sesuai Planned Maintenance System.

Q & A INTERVIEW THIRD ENGINEER

58. What is an intercooler?

Answer (English):

An intercooler is a heat exchanger installed between the first and second compression stages of a multi-stage air compressor. It cools the compressed air before it enters the next stage, reducing air temperature, improving compressor efficiency, lowering power consumption, and protecting compressor components.

Jawaban (Indonesia):

Intercooler adalah heat exchanger yang dipasang di antara tahap kompresi pertama dan kedua pada multi-stage air compressor. Fungsinya mendinginkan udara hasil kompresi sebelum masuk ke tahap berikutnya sehingga meningkatkan efisiensi compressor, mengurangi konsumsi daya, dan melindungi komponen dari temperatur tinggi.

59. What causes compressor overheating?

Answer (English):

Compressor overheating can result from insufficient cooling water flow, dirty coolers, poor lubrication, clogged air filters, excessive operating pressure, leaking valves, worn piston rings, high ambient temperature, or continuous operation beyond the recommended limits.

Jawaban (Indonesia):

Overheating pada compressor dapat disebabkan oleh aliran air pendingin yang kurang, cooler kotor, pelumasan tidak baik, filter udara tersumbat, tekanan operasi terlalu tinggi, valve bocor, piston ring aus, temperatur lingkungan tinggi, atau compressor bekerja terus-menerus melebihi batas yang dianjurkan.

60. What checks are performed before starting an air compressor?

Answer (English):

Before starting, I check the lubricating oil level, cooling water supply, electrical power, air filters, suction and discharge valves, safety devices, pressure gauges, drain valves, compressor foundation, abnormal leaks, and ensure the compressor is free to rotate. After starting, I monitor oil pressure, discharge temperature, vibration, and pressure build-up to confirm normal operation.

Jawaban (Indonesia):

Sebelum menjalankan air compressor, saya memeriksa level oli pelumas, suplai air pendingin, sumber listrik, filter udara, suction dan discharge valve, perangkat keselamatan, pressure gauge, drain valve, pondasi compressor, memastikan tidak ada kebocoran, dan memastikan putaran mesin

Q & A INTERVIEW THIRD ENGINEER

bebas. Setelah compressor dijalankan, saya memonitor tekanan oli, temperatur udara keluar, getaran, serta kenaikan tekanan udara untuk memastikan operasi berjalan normal.

SECTION 6 – PUMPS, COOLING & LUBRICATION SYSTEMS (61–75)

61. Explain the central cooling system.

Answer (English):

The central cooling system is designed to cool various engine room machinery using a closed-loop freshwater circuit. The freshwater absorbs heat from the main engine, auxiliary engines, compressors, and other equipment before passing through a central cooler, where seawater removes the heat. This system reduces corrosion, minimizes scaling inside machinery, improves cooling efficiency, and simplifies maintenance.

Jawaban (Indonesia):

Central cooling system merupakan sistem pendingin yang menggunakan sirkulasi air tawar tertutup (closed-loop) untuk mendinginkan berbagai permesinan di kamar mesin. Air tawar menyerap panas dari main engine, auxiliary engine, compressor, dan peralatan lainnya, kemudian didinginkan kembali di central cooler menggunakan air laut. Sistem ini mengurangi korosi, mencegah kerak, meningkatkan efisiensi pendinginan, dan mempermudah perawatan.

62. What is the function of the freshwater cooler?

Answer (English):

The freshwater cooler transfers heat from the freshwater cooling circuit to seawater through a plate-type or shell-and-tube heat exchanger. It maintains the correct freshwater temperature to ensure efficient engine cooling and stable operating conditions.

Jawaban (Indonesia):

Freshwater cooler berfungsi memindahkan panas dari air tawar ke air laut melalui plate heat exchanger atau shell-and-tube heat exchanger. Alat ini menjaga temperatur air tawar tetap sesuai agar pendinginan mesin berjalan optimal dan kondisi operasi tetap stabil.

63. What causes low lube oil pressure?

Answer (English):

Low lubricating oil pressure may be caused by a low oil level, worn oil pump, clogged oil filter, leaking relief valve, excessive bearing clearance, low oil viscosity, oil cooler leakage, or faulty

Q & A INTERVIEW THIRD ENGINEER

pressure sensors. Immediate investigation is required because low oil pressure can lead to severe engine damage.

Jawaban (Indonesia):

Tekanan oli pelumas yang rendah dapat disebabkan oleh level oli rendah, oil pump aus, filter oli tersumbat, relief valve bocor, bearing aus, viskositas oli terlalu rendah, kebocoran oil cooler, atau pressure sensor rusak. Kondisi ini harus segera diperiksa karena dapat menyebabkan kerusakan serius pada mesin.

64. What causes high jacket water temperature?

Answer (English):

High jacket water temperature may result from insufficient cooling water flow, clogged coolers, faulty thermostatic valves, seawater pump failure, low freshwater level, air trapped in the cooling system, excessive engine load, or scale formation inside cooling passages.

Jawaban (Indonesia):

Temperatur jacket water yang tinggi dapat disebabkan oleh aliran air pendingin yang kurang, cooler kotor, thermostatic valve rusak, seawater pump bermasalah, level air tawar rendah, adanya udara di dalam sistem pendingin, beban mesin terlalu tinggi, atau terbentuknya kerak pada jalur pendingin.

65. What is the purpose of a sea chest?

Answer (English):

A sea chest is a seawater intake chamber located on the ship's hull. It supplies seawater to the cooling system, fire pumps, ballast system, and other equipment. Sea chests are fitted with gratings to prevent debris, marine growth, and large objects from entering the seawater piping system.

Jawaban (Indonesia):

Sea chest adalah ruang pengambilan air laut yang terletak pada lambung kapal. Fungsinya menyediakan air laut untuk sistem pendingin, fire pump, ballast system, dan berbagai peralatan lainnya. Sea chest dilengkapi saringan untuk mencegah sampah, biota laut, dan benda besar masuk ke sistem perpipaan.

Q & A INTERVIEW THIRD ENGINEER

66. What is cavitation?

Answer (English):

Cavitation is the formation and collapse of vapor bubbles inside a pump due to low suction pressure. When these bubbles collapse, they create shock waves that damage the impeller, reduce pump performance, increase vibration, and generate excessive noise.

Jawaban (Indonesia):

Cavitation adalah terbentuk dan pecahnya gelembung uap di dalam pompa akibat tekanan hisap yang terlalu rendah. Saat gelembung tersebut pecah, akan timbul gelombang kejut yang dapat merusak impeller, menurunkan kapasitas pompa, meningkatkan getaran, dan menimbulkan suara bising.

67. How do you prime a pump?

Answer (English):

Priming is the process of filling the pump casing and suction line with liquid before starting the pump. This removes trapped air and prevents dry running. To prime the pump, I open the suction valve, fill the casing with liquid, vent the trapped air, ensure the pump is completely filled, and then start the pump while monitoring pressure and flow.

Jawaban (Indonesia):

Priming adalah proses mengisi casing pompa dan pipa hisap dengan cairan sebelum pompa dijalankan. Tujuannya menghilangkan udara agar pompa tidak bekerja dalam kondisi kering. Caranya adalah membuka suction valve, mengisi casing dengan cairan, membuang udara melalui vent, memastikan pompa terisi penuh, kemudian menjalankan pompa sambil memonitor tekanan dan aliran.

68. What is an emergency fire pump?

Answer (English):

An emergency fire pump is an independent fire pump located outside the engine room. It provides seawater to the ship's fire main if the main fire pump becomes unavailable due to engine room flooding or fire. It is an SOLAS requirement and must be tested regularly.

Jawaban (Indonesia):

Emergency fire pump adalah pompa kebakaran darurat yang dipasang di luar kamar mesin. Pompa ini menyuplai air laut ke fire main apabila main fire pump tidak dapat digunakan akibat kebakaran atau banjir di engine room. Pompa ini merupakan persyaratan SOLAS dan harus diuji secara berkala.

Q & A INTERVIEW THIRD ENGINEER

69. How do you maintain centrifugal pumps?

Answer (English):

Maintenance includes checking bearings, lubricating moving parts, inspecting mechanical seals, checking shaft alignment, monitoring vibration, cleaning strainers, inspecting the impeller for erosion or corrosion, tightening foundation bolts, checking motor insulation, and performing periodic overhauls according to the Planned Maintenance System.

Jawaban (Indonesia):

Perawatan pompa sentrifugal meliputi pemeriksaan bearing, pelumasan komponen bergerak, inspeksi mechanical seal, pengecekan alignment poros, pemantauan getaran, pembersihan strainer, pemeriksaan impeller terhadap korosi atau erosi, pengencangan baut pondasi, pemeriksaan isolasi motor, serta overhaul sesuai Planned Maintenance System.

70. What is a mechanical seal?

Answer (English):

A mechanical seal is a sealing device installed around the pump shaft to prevent liquid leakage while allowing the shaft to rotate. It consists of rotating and stationary seal faces, springs, elastomer seals, and metal components. Mechanical seals provide better sealing performance and require less maintenance than conventional gland packing.

Jawaban (Indonesia):

Mechanical seal adalah alat penyekat yang dipasang pada poros pompa untuk mencegah kebocoran cairan sekaligus memungkinkan poros tetap berputar. Mechanical seal terdiri dari rotating face, stationary face, spring, elastomer seal, dan komponen logam. Dibandingkan gland packing, mechanical seal memberikan penyekatan yang lebih baik dan membutuhkan perawatan yang lebih sedikit.

71. Why is lube oil analysis important?

Answer (English):

Lube oil analysis helps monitor the condition of both the lubricating oil and the machinery. It detects contamination, water content, fuel dilution, metal wear particles, oxidation, and changes in viscosity. Early detection allows maintenance to be planned before major failures occur, improving machinery reliability and reducing operating costs.

Jawaban (Indonesia):

Analisis oli pelumas membantu memantau kondisi oli sekaligus kondisi mesin. Pemeriksaan ini dapat mendeteksi kontaminasi, kandungan air, pencampuran bahan bakar, partikel logam akibat

Q & A INTERVIEW THIRD ENGINEER

keausan, oksidasi, dan perubahan viskositas. Deteksi dini memungkinkan perawatan dilakukan sebelum terjadi kerusakan besar sehingga meningkatkan keandalan mesin dan menekan biaya operasional.

72. What causes pump vibration?

Answer (English):

Pump vibration can be caused by cavitation, shaft misalignment, worn bearings, damaged impeller, loose foundation bolts, unbalanced rotating parts, insufficient lubrication, air entering the suction line, or operating the pump outside its design conditions.

Jawaban (Indonesia):

Getaran pompa dapat disebabkan oleh cavitation, shaft tidak sejajar (misalignment), bearing aus, impeller rusak, baut pondasi longgar, rotor tidak seimbang, pelumasan kurang, masuknya udara ke pipa hisap, atau pompa dioperasikan di luar kondisi desainnya.

73. How do you troubleshoot a cooling pump?

Answer (English):

First, I check whether the pump is delivering the required flow and pressure. Then I inspect the suction strainer, suction valve, impeller, mechanical seal, bearings, motor current, alignment, and cooling water lines. If necessary, I isolate the pump, carry out repairs, test its performance, and return it to service only after confirming normal operation.

Jawaban (Indonesia):

Pertama saya memastikan apakah pompa masih menghasilkan debit dan tekanan sesuai kebutuhan. Kemudian saya memeriksa suction strainer, suction valve, impeller, mechanical seal, bearing, arus motor, alignment, dan jalur pendingin. Bila diperlukan, pompa diisolasi, diperbaiki, diuji kembali, dan hanya dioperasikan setelah dipastikan bekerja normal.

74. What checks do you perform during engine rounds?

Answer (English):

During engine rounds, I check lubricating oil pressure, cooling water temperature, fuel oil pressure, exhaust gas temperature, pump operation, machinery vibration, unusual noise, leaks, tank levels, purifier condition, compressor operation, boiler status, electrical panels, and housekeeping. Any abnormalities are reported immediately and recorded in the engine logbook.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Saat engine round, saya memeriksa tekanan oli pelumas, temperatur air pendingin, tekanan bahan bakar, temperatur gas buang, kondisi pompa, getaran mesin, suara tidak normal, kebocoran, level tangki, kondisi purifier, operasi compressor, boiler, panel listrik, serta kebersihan engine room. Setiap kelainan segera dilaporkan dan dicatat dalam engine logbook.

75. How do you prevent corrosion in the cooling system?

Answer (English):

Corrosion can be prevented by maintaining the correct water treatment chemicals, monitoring pH levels, controlling chloride concentration, using corrosion inhibitors, removing air from the system, preventing seawater contamination, cleaning heat exchangers regularly, and maintaining the proper operating temperature.

Jawaban (Indonesia):

Korosi pada sistem pendingin dapat dicegah dengan menjaga dosis bahan kimia water treatment, memonitor pH, mengontrol kadar klorida, menggunakan corrosion inhibitor, membuang udara dari sistem, mencegah kontaminasi air laut, membersihkan heat exchanger secara berkala, serta menjaga temperatur operasi tetap sesuai.

SECTION 7 – SAFETY, ISM CODE & MARPOL (76–90)

76. What is the ISM Code?

Answer (English):

The International Safety Management (ISM) Code is an international standard developed by the IMO to ensure the safe operation of ships and the prevention of pollution. It requires shipping companies to establish a Safety Management System (SMS), define responsibilities, conduct risk assessments, maintain emergency procedures, and continuously improve safety performance.

Jawaban (Indonesia):

International Safety Management (ISM) Code adalah standar internasional yang dibuat oleh IMO untuk menjamin pengoperasian kapal yang aman dan mencegah pencemaran lingkungan. ISM Code mewajibkan perusahaan memiliki Safety Management System (SMS), menetapkan tanggung jawab, melakukan risk assessment, memiliki prosedur darurat, serta terus meningkatkan budaya keselamatan.

Q & A INTERVIEW THIRD ENGINEER

77. What is a Permit to Work (PTW)?

Answer (English):

A Permit to Work (PTW) is a formal written authorization that ensures hazardous work is carried out safely. It identifies the job scope, hazards, control measures, responsible personnel, validity period, and required PPE. Common PTWs include hot work, enclosed space entry, electrical work, working aloft, and working overboard.

Jawaban (Indonesia):

Permit to Work (PTW) adalah izin kerja tertulis yang digunakan untuk memastikan pekerjaan berisiko dilakukan dengan aman. PTW mencantumkan ruang lingkup pekerjaan, bahaya, tindakan pengendalian, penanggung jawab, masa berlaku izin, dan APD yang wajib digunakan. Contohnya adalah hot work, enclosed space entry, pekerjaan listrik, working aloft, dan working overboard.

78. What is LOTO?

Answer (English):

LOTO stands for Lock Out Tag Out. It is a safety procedure used to isolate machinery from all energy sources before maintenance. The equipment is locked and tagged to prevent accidental operation while personnel are working on it. This protects workers from electrical, mechanical, hydraulic, pneumatic, and stored energy hazards.

Jawaban (Indonesia):

LOTO (Lock Out Tag Out) adalah prosedur keselamatan untuk mengisolasi peralatan dari seluruh sumber energi sebelum dilakukan perawatan. Peralatan dikunci dan diberi label agar tidak dapat dioperasikan secara tidak sengaja selama pekerjaan berlangsung. Prosedur ini melindungi pekerja dari bahaya listrik, mekanik, hidrolik, pneumatik, maupun energi tersimpan.

79. What PPE is required in the engine room?

Answer (English):

The required PPE includes a safety helmet, safety shoes, coveralls, gloves, safety glasses, hearing protection, and, when necessary, a face shield, respiratory protection, or chemical-resistant clothing depending on the task and risk assessment.

Jawaban (Indonesia):

APD yang wajib digunakan di kamar mesin meliputi safety helmet, safety shoes, coverall, sarung tangan, kacamata pelindung, pelindung pendengaran, dan bila diperlukan face shield, respirator, atau pakaian tahan bahan kimia sesuai jenis pekerjaan dan hasil risk assessment.

Q & A INTERVIEW THIRD ENGINEER

80. What would you do if an oil spill occurred?

Answer (English):

If an oil spill occurs, I would stop the source of the leak immediately, inform the Chief Engineer and Master, activate the SOPEP procedures, contain the spill using absorbent materials or spill kits, prevent the oil from reaching the sea or drains, clean the affected area safely, dispose of contaminated materials according to MARPOL requirements, and record the incident.

Jawaban (Indonesia):

Jika terjadi tumpahan minyak, saya akan segera menghentikan sumber kebocoran, melaporkan kepada Chief Engineer dan Master, mengaktifkan prosedur SOPEP, membatasi penyebaran minyak menggunakan absorbent atau spill kit, mencegah minyak masuk ke laut atau saluran pembuangan, membersihkan area dengan aman, membuang limbah sesuai MARPOL, dan mencatat kejadian tersebut.

81. What is MARPOL Annex I?

Answer (English):

MARPOL Annex I contains regulations for the prevention of pollution by oil from ships. It covers oil discharge limits, oily water separators, sludge management, Oil Record Book requirements, SOPEP, and procedures to prevent accidental oil pollution.

Jawaban (Indonesia):

MARPOL Annex I berisi peraturan mengenai pencegahan pencemaran laut oleh minyak dari kapal. Annex ini mengatur batas pembuangan minyak, penggunaan oily water separator, pengelolaan sludge, Oil Record Book, SOPEP, dan prosedur pencegahan pencemaran akibat minyak.

82. What is enclosed space entry?

Answer (English):

Enclosed space entry is the controlled process of entering a confined space that may contain oxygen deficiency, toxic gases, flammable gases, or other hazards. Before entry, the space must be isolated, ventilated, tested for oxygen and gas levels, a Permit to Work must be issued, communication established, and a standby person assigned outside the space.

Jawaban (Indonesia):

Enclosed space entry adalah prosedur memasuki ruang tertutup yang berpotensi memiliki kadar oksigen rendah, gas beracun, gas mudah terbakar, atau bahaya lainnya. Sebelum masuk, ruang

Q & A INTERVIEW THIRD ENGINEER

harus diisolasi, diventilasi, diuji kadar oksigen dan gasnya, memiliki Permit to Work, tersedia komunikasi, serta ada petugas standby di luar ruangan.

83. What is a toolbox meeting?

Answer (English):

A toolbox meeting is a short safety discussion conducted before starting a job. It reviews the work scope, identifies hazards, discusses risk control measures, confirms responsibilities, verifies PPE requirements, and ensures that all personnel understand the task before work begins.

Jawaban (Indonesia):

Toolbox meeting adalah diskusi singkat mengenai keselamatan yang dilakukan sebelum pekerjaan dimulai. Dalam pertemuan ini dibahas ruang lingkup pekerjaan, potensi bahaya, langkah pengendalian risiko, pembagian tugas, APD yang diperlukan, serta memastikan seluruh personel memahami pekerjaan yang akan dilakukan.

84. What is a risk assessment?

Answer (English):

A risk assessment is the process of identifying hazards, evaluating the likelihood and severity of risks, implementing control measures, and reviewing whether the risks have been reduced to an acceptable level before work starts.

Jawaban (Indonesia):

Risk assessment adalah proses mengidentifikasi bahaya, menilai kemungkinan dan tingkat keparahan risiko, menentukan langkah pengendalian, serta memastikan risiko telah dikurangi ke tingkat yang dapat diterima sebelum pekerjaan dimulai.

85. What would you do during an engine room fire?

Answer (English):

If an engine room fire occurs, I would raise the alarm immediately, inform the bridge, identify the fire source, stop fuel supply if safe, isolate ventilation, shut down machinery when required, use the appropriate portable fire extinguisher for small fires, and prepare the fixed fire-fighting system such as CO₂ if the fire cannot be controlled. I would follow the ship's emergency procedures and instructions from the Master and Chief Engineer.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Jika terjadi kebakaran di kamar mesin, saya akan segera membunyikan alarm, menginformasikan ke anjungan, mengidentifikasi sumber api, menghentikan suplai bahan bakar jika aman, menutup ventilasi, menghentikan mesin bila diperlukan, menggunakan APAR yang sesuai untuk kebakaran kecil, dan menyiapkan fixed fire extinguishing system seperti CO₂ apabila api tidak dapat dikendalikan. Saya akan mengikuti prosedur darurat kapal dan instruksi Master serta Chief Engineer.

86. What is the purpose of the emergency generator?

Answer (English):

The emergency generator automatically supplies electrical power to essential equipment if the main power supply fails. It provides electricity for emergency lighting, communication systems, navigation equipment, fire pumps, alarms, and other critical safety systems required by SOLAS.

Jawaban (Indonesia):

Emergency generator berfungsi menyediakan tenaga listrik secara otomatis apabila sumber listrik utama gagal. Generator ini menyuplai listrik untuk emergency lighting, sistem komunikasi, peralatan navigasi, fire pump, alarm, dan peralatan keselamatan penting lainnya sesuai persyaratan SOLAS.

87. What is SOPEP?

Answer (English):

SOPEP stands for Shipboard Oil Pollution Emergency Plan. It provides procedures for responding to oil spills, including reporting requirements, spill containment methods, use of spill response equipment, communication with authorities, and measures to minimize environmental damage.

Jawaban (Indonesia):

SOPEP (Shipboard Oil Pollution Emergency Plan) adalah rencana darurat kapal untuk menangani pencemaran minyak. Dokumen ini berisi prosedur pelaporan, langkah penanggulangan tumpahan minyak, penggunaan spill response equipment, komunikasi dengan pihak berwenang, dan tindakan untuk meminimalkan dampak terhadap lingkungan.

Q & A INTERVIEW THIRD ENGINEER

88. How do you dispose of sludge?

Answer (English):

Sludge is collected in the sludge tank and disposed of in accordance with MARPOL Annex I. It may be incinerated onboard using an approved incinerator or discharged to an approved shore reception facility. Every transfer or disposal must be accurately recorded in the Oil Record Book.

Jawaban (Indonesia):

Sludge dikumpulkan di sludge tank dan dibuang sesuai MARPOL Annex I. Sludge dapat dibakar menggunakan incinerator yang disetujui atau diserahkan ke fasilitas penerima limbah di darat. Setiap proses pemindahan atau pembuangan wajib dicatat di Oil Record Book.

89. What are your duties during an emergency?

Answer (English):

During an emergency, I follow the station bill and carry out my assigned duties promptly. I report to my emergency station, communicate effectively with the team, operate emergency equipment if required, follow the Master's and Chief Engineer's instructions, and ensure that safety procedures are strictly observed throughout the emergency.

Jawaban (Indonesia):

Saat keadaan darurat, saya mengikuti station bill dan segera melaksanakan tugas yang telah ditentukan. Saya menuju emergency station, berkomunikasi dengan tim, mengoperasikan peralatan darurat bila diperlukan, mengikuti instruksi Master dan Chief Engineer, serta memastikan seluruh prosedur keselamatan dijalankan dengan benar.

90. How do you ensure safe engine room operations?

Answer (English):

I ensure safe engine room operations by following the Safety Management System, conducting risk assessments, using the correct PPE, complying with Permit to Work procedures, maintaining good housekeeping, performing regular inspections, reporting hazards immediately, following Planned Maintenance System schedules, and promoting effective communication and teamwork among the engine crew.

Jawaban (Indonesia):

Saya memastikan operasi kamar mesin tetap aman dengan mematuhi Safety Management System, melakukan risk assessment, menggunakan APD yang sesuai, mengikuti prosedur Permit to Work, menjaga housekeeping, melakukan inspeksi rutin, segera melaporkan potensi bahaya, menjalankan

Q & A INTERVIEW THIRD ENGINEER

Planned Maintenance System, serta membangun komunikasi dan kerja sama yang baik di antara seluruh kru mesin.

SECTION 8 – TROUBLESHOOTING & INTERVIEW SCENARIOS (91–100)

91. A generator suddenly trips. What would you do?

Answer (English):

If a generator suddenly trips, I would first ensure that the standby generator starts automatically or manually restore power if necessary. Then I would identify the trip alarm, such as overload, low lubricating oil pressure, high cooling water temperature, reverse power, or overspeed. After securing the generator, I would inspect the fuel, lubrication, cooling, and electrical systems to determine the root cause. Once the fault has been corrected and all operating parameters are normal, I would restart the generator in accordance with the manufacturer's procedure and report the incident to the Chief Engineer.

Jawaban (Indonesia):

Jika generator tiba-tiba trip, saya akan memastikan standby generator otomatis masuk atau menghidupkannya secara manual bila diperlukan. Setelah itu saya mengidentifikasi alarm penyebab trip, seperti overload, tekanan oli rendah, temperatur air pendingin tinggi, reverse power, atau overspeed. Selanjutnya saya mengamankan generator, memeriksa sistem bahan bakar, pelumasan, pendinginan, dan kelistrikan untuk menemukan akar masalah. Setelah gangguan diperbaiki dan semua parameter normal, generator dijalankan kembali sesuai prosedur pabrikan dan kejadian dilaporkan kepada Chief Engineer.

92. The boiler fails during cargo operations. How would you respond?

Answer (English):

I would immediately identify the boiler alarm and assess the operational impact. I would check the burner, fuel supply, water level, feed water pump, steam pressure, and control system. If the problem cannot be solved immediately, I would inform the Chief Engineer and Master because cargo operations may be affected. After correcting the fault, I would restart the boiler safely and verify stable steam production.

Jawaban (Indonesia):

Saya akan segera mengidentifikasi alarm boiler dan menilai dampaknya terhadap operasi. Saya memeriksa burner, suplai bahan bakar, level air, feed water pump, tekanan steam, dan sistem kontrol. Jika gangguan tidak dapat segera diatasi, saya akan melaporkan kepada Chief Engineer dan Master karena operasi muatan dapat terganggu. Setelah masalah diperbaiki, boiler dijalankan kembali dengan aman dan dipastikan menghasilkan steam secara stabil.

Q & A INTERVIEW THIRD ENGINEER

93. The purifier is overflowing. What is the possible cause?

Answer (English):

Purifier overflow may be caused by an incorrect gravity disc, insufficient sealing water, improper operating water pressure, excessive feed rate, bowl contamination, worn seals, blocked outlet lines, or incorrect bowl assembly after maintenance. I would stop the purifier if necessary, inspect the bowl, verify all operating parameters, clean the components, and reassemble the purifier according to the manufacturer's manual.

Jawaban (Indonesia):

Purifier overflow dapat disebabkan oleh gravity disc yang salah, sealing water tidak cukup, tekanan operating water tidak sesuai, laju aliran bahan bakar terlalu besar, bowl kotor, seal aus, saluran keluar tersumbat, atau kesalahan pemasangan bowl setelah perawatan. Saya akan menghentikan purifier bila diperlukan, memeriksa bowl, memastikan seluruh parameter operasi benar, membersihkan komponen, dan merakit kembali sesuai manual pabrikan.

94. Lube oil pressure suddenly drops. What actions would you take?

Answer (English):

A sudden drop in lubricating oil pressure is a critical condition. I would reduce engine load if possible and monitor the pressure carefully. I would check the lubricating oil level, oil pump, pressure relief valve, filters, oil cooler, and possible leakage. If the pressure continues to fall below the safe operating limit, I would stop the machinery according to company procedures to prevent serious engine damage and immediately report the situation to the Chief Engineer.

Jawaban (Indonesia):

Penurunan tekanan oli secara tiba-tiba merupakan kondisi yang sangat serius. Saya akan mengurangi beban mesin bila memungkinkan dan terus memonitor tekanan. Saya memeriksa level oli, oil pump, pressure relief valve, filter, oil cooler, serta kemungkinan adanya kebocoran. Jika tekanan tetap turun di bawah batas aman, mesin harus dihentikan sesuai prosedur perusahaan untuk mencegah kerusakan besar dan segera dilaporkan kepada Chief Engineer.

95. Cooling water temperature becomes too high. What will you check?

Answer (English):

I would inspect the cooling water pumps, seawater flow, freshwater level, thermostatic valve, central cooler, strainers, heat exchangers, and check for trapped air in the cooling system. I would also verify whether the engine is overloaded or whether there is fouling inside the cooling passages. Corrective action would depend on the identified cause.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Saya akan memeriksa cooling water pump, aliran air laut, level air tawar, thermostatic valve, central cooler, strainer, heat exchanger, serta memastikan tidak ada udara yang terjebak di dalam sistem. Saya juga memeriksa apakah mesin mengalami overload atau terdapat kerak pada jalur pendingin. Tindakan perbaikan dilakukan sesuai penyebab yang ditemukan.

96. Air compressor cannot build pressure. What could be wrong?

Answer (English):

Possible causes include leaking suction or discharge valves, worn piston rings, damaged gaskets, leaking pipelines, faulty non-return valves, unloader malfunction, blocked air filters, or insufficient compressor speed. I would systematically inspect each component, repair the defective parts, and perform a pressure test before returning the compressor to service.

Jawaban (Indonesia):

Penyebabnya dapat berupa suction atau discharge valve bocor, piston ring aus, gasket rusak, kebocoran pada pipa, non-return valve rusak, unloader bermasalah, filter udara tersumbat, atau putaran compressor tidak mencukupi. Saya akan memeriksa setiap komponen secara sistematis, memperbaiki bagian yang rusak, dan melakukan pressure test sebelum compressor dioperasikan kembali.

97. The engine room loses electrical power. What would you do?

Answer (English):

If a blackout occurs, I would remain calm and ensure the emergency generator starts automatically. If it does not, I would start it manually according to the emergency procedure. After restoring essential power, I would identify the cause of the blackout, inspect the generators and switchboard, restore the electrical system step by step, and report all findings to the Chief Engineer.

Jawaban (Indonesia):

Jika terjadi blackout di kamar mesin, saya akan tetap tenang dan memastikan emergency generator bekerja otomatis. Jika tidak berhasil, saya akan menjalankannya secara manual sesuai prosedur darurat. Setelah listrik darurat tersedia, saya mencari penyebab blackout, memeriksa generator dan switchboard, memulihkan sistem kelistrikan secara bertahap, lalu melaporkan hasil pemeriksaan kepada Chief Engineer.

Q & A INTERVIEW THIRD ENGINEER

98. A pump is vibrating excessively. How would you troubleshoot it?

Answer (English):

I would first determine whether the vibration is caused by cavitation, bearing failure, shaft misalignment, damaged impeller, loose foundation bolts, or air entering the suction line. I would inspect the pump thoroughly, measure vibration if equipment is available, repair or replace defective components, and test the pump before returning it to normal operation.

Jawaban (Indonesia):

Saya akan terlebih dahulu menentukan apakah getaran disebabkan oleh cavitation, bearing rusak, shaft tidak sejajar, impeller rusak, baut pondasi longgar, atau adanya udara pada jalur hisap. Saya melakukan inspeksi menyeluruh, mengukur getaran bila tersedia alat, memperbaiki atau mengganti komponen yang rusak, kemudian menguji pompa sebelum dioperasikan kembali.

99. How do you prioritize machinery repairs during a busy voyage?

Answer (English):

I prioritize repairs based on safety, operational impact, and risk assessment. Equipment that directly affects propulsion, power generation, steering, fire protection, or pollution prevention receives the highest priority. I coordinate with the Chief Engineer, follow the Planned Maintenance System, ensure spare parts are available, and schedule repairs to minimize operational disruption.

Jawaban (Indonesia):

Saya menentukan prioritas perbaikan berdasarkan keselamatan, dampak terhadap operasional, dan hasil risk assessment. Peralatan yang berhubungan langsung dengan propulsi, pembangkit listrik, steering, fire protection, atau pencegahan pencemaran menjadi prioritas utama. Saya berkoordinasi dengan Chief Engineer, mengikuti Planned Maintenance System, memastikan ketersediaan suku cadang, dan menjadwalkan pekerjaan agar tidak mengganggu operasional kapal.

100. Why are you the right candidate for this Third Engineer position?

Answer (English):

I believe I am the right candidate because I have solid technical knowledge, practical engine room experience, and a strong commitment to safety. I am responsible, disciplined, and able to work effectively under pressure. I always follow company procedures, communicate well with my team, and continuously improve my professional skills. I am confident that I can contribute to the safe, efficient, and reliable operation of your vessel.

Q & A INTERVIEW THIRD ENGINEER

Jawaban (Indonesia):

Saya yakin merupakan kandidat yang tepat karena memiliki pengetahuan teknis yang baik, pengalaman praktik di kamar mesin, serta komitmen tinggi terhadap keselamatan kerja. Saya bertanggung jawab, disiplin, dan mampu bekerja dengan baik di bawah tekanan. Saya selalu mengikuti prosedur perusahaan, mampu bekerja sama dalam tim, dan terus meningkatkan kemampuan profesional. Saya siap memberikan kontribusi terhadap operasi kapal yang aman, efisien, dan andal.