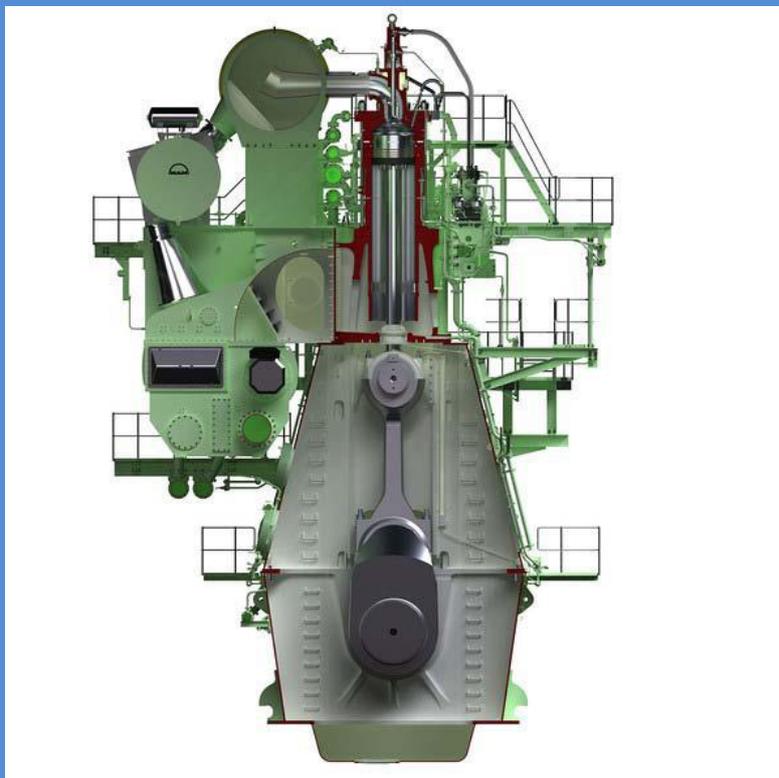


Marine Engineers and Superintendents Technical Support
<http://MarEngine.com>

50 Questions and Answers For Marine Engineers Issue 1



Diesel Engine, Turbocharger, Fuel, Oil

Operation & Service Manuals, and Spare Parts Catalogs <http://engine.od.ua>
Marine spare parts and equipment <http://brovertex.com>

1. Which standards govern the specifications for supply of Residual Marine Fuels and Distillate Marine Fuels onboard merchant ships?

- A. ISO 3012:1999
- B. ISO 3648:1996
- C. ISO 8216-1:2010
- D. ISO 8217:2010

Answer-D

2. Crank web deflection readings will give a positive indication of

- A. worn main bearing journals
- B. torsional stress deformation
- C. slack thrust bearings
- D. bearing shells shim dimensions

Answer-A

3. The advantage of tie rods over an engine without tie rods is that:

- A. The engine is very easily aligned after any misalignment has taken place between different components of the engine
- B. The engine does not require thrust pads for transmission of thrust to the ship's hull as the same is being taken care of by the tie rods
- C. The engine components are much lighter leading in overall reduction in engine weight with a high power generation with the elimination of fatigue stresses
- D. There are no advantages of engines with tie rods, because tie rods require regular maintenance and replacement like connecting rods and overall engine becomes more expensive to operate

Answer-A

4. The purpose of an air cooler in a supercharging system is to:

- A. Reduce temperature of supercharged air in order to condense and remove maximum possible moisture from the air prior entry to the engine
- B. Reduce the temperature of the supercharged air in order to increase the density & also to cool down below dew point to remove moisture from air prior entry to the engine
- C. Cool supercharged air to increase its density such that the dew point is not reached to avoid entry of moisture into the engine
- D. Cool supercharged air to increase its density and also to keep the peak temperature and exhaust gas temperature within limits

Answer-B

5. Which of the following is an example of a solid bearing?

- A. Piston pin bushing
- B. Turbo-generator turbine bearing
- C. Spring bearing
- D. Thrust bearing

Answer-A

6. In comparison to exhaust valves, intake valves of diesel engines may be fabricated from low-alloy steels because

- A. the beveled edges of the intake valves provide for self-centering during seating
- B. intake valves utilize stellite-coated valve seat inserts which reduce wear
- C. the volume of air passing through intake valves is less than the volume of air passing through exhaust valves
- D. intake valves are less affected to the corrosive action of exhaust gases

Answer-D

7. Why is it essential to renew turbocharger bearings after a preset number of hours of running even if the bearings are in seemingly perfect condition?

- A. Because they are prone to failure due to prolonged exposure to high temperature conditions.
- B. Because they are subject to cyclic loading and are prone to failure due to metal fatigue.
- C. It is not essential to renew if condition monitoring suggests perfect condition.
- D. Lube oil contamination is bound to occur and affect the condition of the bearings.

Answer-B

8. Modern marine turbochargers use a _____ type of compressor

- A. Radial flow
- B. Axial flow
- C. Mixed flow
- D. Turbulent flow

Answer-A

9. Which of the following is a disadvantage of water as cooling medium for pistons, when compared to oil?

- A. Chemical treatment is required
- B. Higher thermal stresses in piston
- C. Piston of more complicated design
- D. All of the above

Answer-D

10. In a 2-stroke marine diesel engine if the o-ring for Jacket cooling water sealing is leaking then

- A. The water will leak directly into the crankcase
- B. The water will leak into the under piston space
- C. The water will come out through tell-tale hole provided between the two o-rings
- D. The water will come out from the top of cylinder jacket

Answer-C

11. The lube oil pump used in a diesel engine is a

- A. volute pump
- B. centrifugal pump
- C. diaphragm pump
- D. gear pump

Answer-D

12. The coating which is provided on the valve stem of exhaust valves of modern marine diesel engines is of:

- A. Nickel
- B. Stellite
- C. Chromium
- D. Nimonic

Answer-B

13. Which of the following statements is true, about slow speed engines?

- A. A scavenge fire can lead to a crankcase explosion
- B. A scavenge fire can lead to deformation of diaphragm plate
- C. A scavenge fire can lead to damage to tie rods.
- D. All of the above.

Answer-D

14. For a two stroke engine two o-rings are provided on the liner. The function of the top o-ring is to _____ and function of the lower o-ring is to _____

- A. Seal jacket cooling water; act as secondary seal in case 1st o-ring leaks
- B. Seal jacket cooling water, Seal scavenge air
- C. Seal scavenge air, Seal Jacket cooling water
- D. Seal combustion gases, Seal jacket cooling water

Answer-B

15. Even if there is an oil mist concentration inside a crankcase, and there is also a hot spot, crankcase explosion will only take place when

- A. The hot spot provides the ignition temperature for the oil mist concentration
- B. When the oil mist - air mixture is in the flammable range
- C. Both A and B
- D. None of the above

Answer-C

16. Some 4-stroke engines are fitted with a rotorcap on the cylinder head valves. For what reason?

- A. Rotate the inlet valve during operation.
- B. Distribute the exhaust gas or the air inlet better to improve combustion.
- C. Improve the scaling surface function, increase the service time of the exhaust valve in the engine
- D. To prevent the valve spindle from sticking

Answer-C

17. What do you mean by surge limit of a turbocharger?

- A. Characteristic curve of a turbocharger
- B. Portion of compressor characteristic curve which lies on the left side of the point of maximum pressure
- C. A line joining all the points of maximum pressure on compressor characteristic curves, drawn at various speeds of operation
- D. Maximum rpm limit of T/C above which surging will start

Answer-C

18. A large, low-speed, main propulsion diesel engine uses sea water to directly cool the

- A. cylinder heads
- B. exhaust valves
- C. scavenging air
- D. injectors

Answer-C

19. Exhaust Grouping is required in case of _____ turbocharging in order to

- A. constant pressure, prevents shockwave generation
- B. pulse pressure, prevent interference with scavenging of other cylinders
- C. constant pressure, prevent interference with scavenging of other cylinders
- D. pulse pressure, prevents shockwave generation

Answer-B

20. After prolonged operation, jerk type fuel pumps wear on the top edge of plunger and edges of spill ports and helix due to erosion by high pressure fuel as it spills. This wear would result in

- A. Late start of injection and early end of injection
- B. Early start of injection and late end of injection
- C. Early start of injection and early end of injection
- D. Late start of injection and late end of injection

Answer-A

21. Labyrinth seal fitted on the back surface of a compressor wheel of a turbocharger:

- A. Prevents bearing lube oil contamination
- B. Prevents bearing lube oil being sucked into the air stream
- C. Helps to keep the shaft cool by controlled leakage of air
- D. None of the above

Answer-C

22. It is a known fact that centrifugal pumps require priming for pumping liquids, as they cannot handle air and will lose suction due to air entry. But on the other hand T/Cs use centrifugal compressors for supercharging. Which of the following do you think makes a centrifugal compressor to pump air and behave differently than the centrifugal pumps?

- A. Presence of air cooler
- B. Presence of Labyrinth seal
- C. High speed of rotation, very fine internal clearances and large impeller diameters
- D. Difference in principle of operation

Answer-C

23. In case of 2-stroke marine diesel engines, the top part of the liner forming the combustion chamber experiences very high pressure induced mechanical stresses as well as high thermal stresses. Which of the following is a correctly designed liner for catering both the above stresses?

- A. Thick top portion with jacket cooling to take care of both the high mechanical and thermal stresses
- B. Thick top portion to take care of high mechanical stresses while bore cooling to reduce thermal gradients
- C. Thin top portion to reduce thermal gradients and hence thermal stresses while supporting ribs to take care of mechanical stresses
- D. Thick top portion to take care of high mechanical stresses with jacket cooling combined with allowance for thermal expansion to minimize the thermal stresses

Answer-B

24. Which of these fuel oil impurities can cause maximum abrasive damage?

- A. Water
- B. Ash
- C. Catalytic fines
- D. Sodium

Answer-C

25. In modern marine 2-stroke diesel engines, _____ is sometimes used as a coating on the underside of the exhaust valve disc, to reduce the rate of hot corrosion.

- A. monel
- B. chromium
- C. inconel
- D. cermet

Answer-C

26. Irregular circumferential wear of liner due to diminishing neutralizing capacity of cylinder oil away from lubricating holes is known as:

- A. Micro seizure
- B. Scuffing
- C. Scoring
- D. Clover leafing

Answer-D

27. Which of the following is a reasonable statement about water washing of turbine side of a T/C?

- A. It leads to thermal shock and reduces the life of the T/C
- B. It leads to thermal shock and not so effective as solid washing
- C. If properly carried out keeping rpm, load, temperature limits & other factors into account; it is quite safe and more effective than solid washing
- D. It should never be carried out as most of the engine manufacturers recommend against the same

Answer-C

28. Which of the following statements correctly describes the phenomenon of surging in a 2-stroke crosshead type engine?

- A. Due to sudden increase in engine load the exhaust gases may flow back through scavenge ports causing surge
- B. Due to sudden decrease in engine load the turbocharger pressure ratio drops. This causes high pressure downstream of T/C in scavenge trunk causing flow reversal of scavenge air
- C. Due to sudden increase in engine load, the T/C turbine rpm may increase suddenly increasing the compressor pressure ratio to surge
- D. Due to sudden decrease in engine load, the turbocharger may stall as the higher pressure downstream in exhaust system may cause reversal of flow of exhaust gases

Answer-B

29. To check the setting of the over speed trip on a diesel powered generator, you would use a

- A. tachometer
- B. torsion meter
- C. dynamometer
- D. pony brake

Answer-A

30. Which of the following specifications/qualities of cylinder oils counter corrosive wear?

- A. Viscosity
- B. TBN
- C. Detergency
- D. Specific gravity

Answer-B

31. What is meant by elastohydrodynamic lubrication?

- A. Formation of hydrodynamic film under high pressure with minor elastic deformation of mating surfaces, distributing load over a greater area
- B. Addition of extreme pressure additive (EP) to the lubricant
- C. Addition of Viscosity index improvement additive
- D. Addition of elastomer based additives

Answer-A

32. In a bypass type filtering system for a medium or high speed diesel engine, the lube oil bypassing the filter

- A. returns directly to the suction side of the pump
- B. returns directly to the sump
- C. flows to the engine bearings
- D. flows through a second-stage strainer, reheated, and returns to the sump

Answer-C

33. Types of corrosion in fresh water of Diesel Engines

- A. Stress
- B. Hot corrosion
- C. Bimetallic
- D. Selective phase corrosion

Answer-D

34. Which of the following types of damages are metal seatings of a valve subject to? Choose the correct alternative.

- A. Corrosion, Erosion, Abrasion, Deformation
- B. Corrosion, Fatigue failure, brittle fracture, caustic cracking
- C. Erosion, caustic cracking, brittle fracture, Clover leafing
- D. None of the above

Answer-A

35. When A/E stand by F.O. heater to be used for main engine

- A. Sudden opening F.O. inlet valve pressurized and damage the heater
- B. F.O. in vapor lock inside heater allow steam
- C. F.O. inlet valve causes pressure drop M/E F.O. pressure standby water is not pressurized may cause sudden change in engine /per load/rpm
- D. Heater leaking.

Answer-C

36. Viscosity of fuel oil used for ME was 145cst, new fuel comes whose viscosity was more than earlier, what u should do

- A. Increase temp setting
- B. Change setting of viscotherm
- C. Do nothing
- D. Open steam valve manually more

Answer-C

37. Which of the following can be done to reduce the cold corrosion of Main Engine cylinder liners using high sulphur fuel oil

- A. Increasing cylinder oil feed rate
- B. Using high TBN cylinder oil
- C. Increasing scavenge air temperature
- D. Decreasing cylinder oil feed rate

Answer-B

38. When main engine is running in emergency condition which of the alarms can't be bypassed

- A. LO low pressure
- B. Jacket water high temp
- C. Piston cooling water high temp
- D. All the above

Answer-D

39. Which of the following will be required to be done in order to reduce sulphur corrosion of main Engine Components?

- A. Increasing the atomization pressure of fuel injectors
- B. Fitting exhaust valves with valve rotators
- C. Running engine at or near normal sea load
- D. Decreasing the F.O. purifier feed rate, running two purifiers in series one acting as purifier and other as clarifier

Answer-A, B, C and D

40. Sudden stop of diesel engine (multiple choices)

- A. air in system
- B. water in system
- C. air filter chocked
- D. water in air filter

Answer-A, B and C

41. Mixed lubrication consist of

- A. Mix two lubes oil
- B. Contamination of hydrodynamic lube oil.
- C. Mixed grease and oil

Answer-B

42. The muffling of exhaust gas noise in 4 stroke auxiliary engines is achieved by

- A. Allowing the gas to expand.
- B. Change the direction of their flow.
- C. Cool the gas with injected water.
- D. Cool the gas with scavenges air.

Answer-A and B

43. An auxiliary engine turbocharger makes strange noises when the load changes. The engine parameters however are absolutely fine. An external examination of turbocharger parameters as stated in the manual also reveals nothing. Would you

- A. Continue to run the engine and wait for some time
- B. Stop the engine for a while and make some checks
- C. Reduce the load of the engine
- D. Run it on steady load to make some checks.

Answer-B

44. To avoid the engine running too long on critical speed during start up it is necessary to

- A. Start at speeds above critical speed.
- B. Start at speeds just below critical speed and quickly move across the critical speed.
- C. Start at maximum speed and quickly bring down to just above critical speed.
- D. Eliminate totally the hazards of critical speed by ignoring it.

Answer-B

45. Supercharging an existing medium speed naturally aspirated engine will

- A. Reduce weight of the engine.
- B. Reduce bulk of the engine.
- C. Increase existing power.
- D. Increase piston speed.
- E. Reduce fuel consumption.

Answer-C and E

46. When using low sulfur fuel oil for Emission Control Areas (ECA'S), ideally the TBN of the cylinder oil used should be

- A. Lower than normal
- B. Higher than normal
- C. Same as normal
- D. Same as normal if the feed is kept higher

Answer-A

47. Which of the following functions is done by a cam operating an exhaust valve?

- A. It governs the timing of opening and closing of the valve.
- B. It governs the speed at which the valve operates
- C. It governs the amount of opening of the valve
- D. All of the above

Answer-D

48. In the latest concept of Variable Geometry Turbocharging, _____ angle can be varied to match the turbocharger at varying engine loads

- A. Compressor vane
- B. Turbine blade
- C. Nozzle ring blade
- D. Diffuser ring blade

Answer-C

49. Directional intake ports in diesel engines are used to

- A. reduce air charge turbulence
- B. induce air swirl
- C. deflect hot combustion gas away from the valves
- D. oppose the effects of piston induced squish

Answer-B

50. Why does a chain stretch in service?

- A. Due to plastic elongation
- B. Due to high temperature expansion
- C. Due to wear on rollers and bushes
- D. Due to the phenomenon of creep

Answer-C

*These questions mainly were taken from the website <http://www.class4exam.com>.
Thanks for web site administration and marine engineers who shared your experience.*