



海船船员适任考试用书

轮机英语综合

(3000kW及以上船舶二/三管轮适用)

LUNJI YINGYU

ZONGHE

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3 000 kW及以上船舶二/三管轮适用

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前言

PREFACE

轮机英语大证考试范围广、难度大、题量多、通过率低,一直是广大船员和考生参考难点之一,本书正是为了方便广大船员和考生顺利通过海船船员适任证书轮机英语考试而编写。

本书根据《78/95 海员培训、发证和值班标准国际公约》和《中华人民共和国船员培训管理规则》,严格按照《中华人民共和国海船船员适任考试大纲》中《轮机英语》要求编写。全书分为三部分:第一篇章节训练(适用于3 000 kW及以上二、三管轮),第二篇历届考证题(包括3 000 kW及以上二、三管轮,大管轮,轮机长),第三篇是模拟试题(适用于3 000 kW及以上二、三管轮)。本书根据新版的轮机英语培训教材,最新的轮机英语考证题及原题库,并按课文内容编排相应的考证题,便于教学和同步学习训练。章节训练篇中包括词组翻译、句子翻译、选择题,每题都附有翻译注释,还包括一部分关联题及注释。

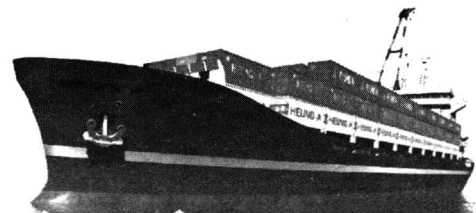
本书由江苏海事职业技术学院吴雪花主编,李恩亮、刘玉红主审。编写人员有蔡雪英(负责章节训练篇1-6课)、刘婷婷(负责章节训练篇7-12课)、胡红花(负责章节训练篇13-19课)、张琴(负责章节训练篇20-26课)、赵丹(负责章节训练篇27-33课)、吴雪花(负责章节训练篇34-51课)。吴雪花负责历届考证题篇和模拟试题篇编写工作。李恩亮负责最终审核和统稿工作。

本书的编写得到了不少同行的关心和支持,并参阅、引用了国内外有关资料,在此,向这些作者和同行表示衷心的感谢。

由于编者水平有限,书中不足之处难免,敬请读者批评指正。

编者

2010年12月

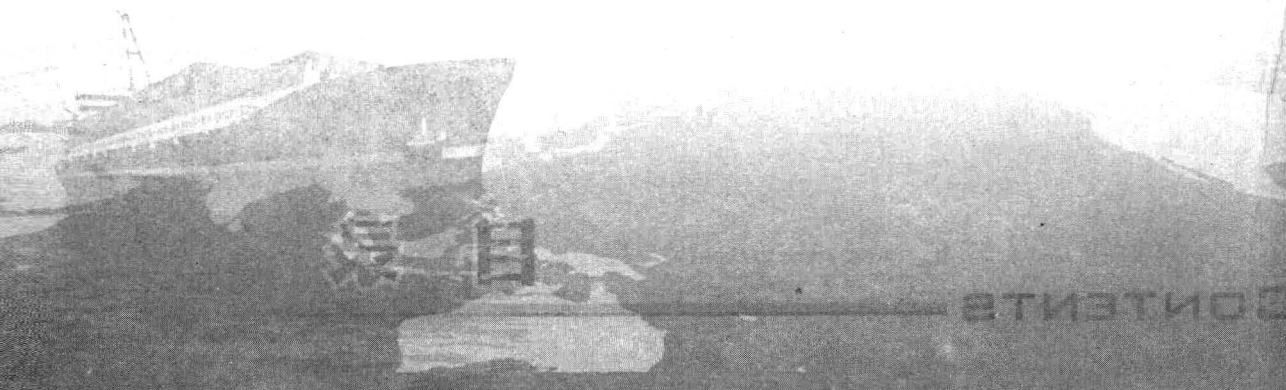


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第一篇 章节训练



Lesson 1 Ships and Machinery

I. Translate the following phrases into Chinese:

- | | |
|--------------------------|-------------------------|
| 1. naval architect | 2. marine engineer |
| 3. longitudinal bulkhead | 4. transverse bulkhead |
| 5. container vessel | 6. roll on and roll off |
| 7. bulk carrier | 8. crude carrier |
| 9. passenger ship | 10. displacement |
| 11. light weight | 12. deadweight |
| 13. metric ton | 14. long ton |

II. Translate the following sentences into Chinese:

- Some overlap in responsibilities occurs between naval architects and marine engineers in areas such as propeller design, the reduction of noise and vibration in the ship's structure, and engineering services provided to considerable areas of the ship.
- Depending on the nature of their cargo, and sometimes also the way the cargo is loaded/unloaded, ships can be divided into different categories, classes, and types, some of which are mentioned in Table 1.
- Displacement comprises the ship's light weight and its deadweight, where the deadweight is equal to the ship's loaded capacity, including bunkers and other supplies necessary for the ship's propulsion.
- The three layouts involve the use of direct-coupled slow-speed diesel engines, medium-speed diesels with a gearbox, and the steam turbine with a gearbox drive to the propeller.

III. Multiple choices:

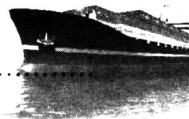
- _____ can be found on most medium to large merchant vessels even if the main engine is either a steam turbine or 2-stroke crosshead engine.
 - The medium speed 4-stroke trunk piston engine
 - The low speed 2-stroke crosshead engine





轮机英语综合

- C. The medium speed 2-stroke crosshead engine
D. The low speed 4-stroke trunk piston engine
2. _____ are increasingly used as main engine on merchant vessels, because they have a high HP/Weight ratio.
- A. Slow speed diesel engines B. Medium-speed diesel engines
C. Steam engines D. Gasoline engines
3. Propulsion of the vast majority of contemporary merchant ships (especially container ships and VLCCs) utilizes _____ as prime mover.
- A. gas turbine B. diesel engine C. steam engine D. gasoline engine
4. The abbreviation "M/E" is used to represent the _____.
- A. measure equipment B. main electrical
C. my engine D. main engine
5. With _____ the engine needs not to be aligned with reduction gears or propeller shaft.
- A. diesel engine propulsion B. diesel electric propulsion
C. steam engine propulsion D. gas turbine propulsion
6. Diesel engines instead of steam engines were used as main engine on board ships is mainly because _____.
- A. they have a high mechanical efficiency
B. they have a high thermal efficiency
C. they are more reliable
D. they are good looking
7. A diesel engine is similar to a gasoline engine except that the former has no _____.
- A. cross-head B. cylinder C. connecting rod D. spark plug
8. The term "medium speed diesel" engine is currently taken to mean an engine with an operating rotational speed of _____ rpm.
- A. below 300 B. above 1200
C. between 300 to 1200 D. below 1200
9. To prevent the build up of high stresses engine must not be run continuously _____.
- A. faster than dead slow speed B. slower than dead slow speed
C. with the output of MCR D. at critical speeds
10. Under manoeuvring condition the main engine may run on _____.
- A. gas oil B. M. D. O C. residue oil D. crude oil
11. Some medium and high-speed diesel engines require reduction gear units to provide a useful propeller speed. In most reduction gears, the bull gear _____.
- A. must churn the oil in the sump
B. is connected to the propeller shaft
C. is driven at the highest RPM
D. compensates for alignment variations between the engine and pinion gear
12. When used with reversing reduction gears, medium-speed diesel engines should be bolted to their foundations with fitted bolts at the drive end and clearance (loosely fitted) bolts in other



- locations. This is done to _____.
- maintain alignment when the ship's hull is working in heavy seas
 - ensure engine vibrations correspond to the natural frequency of the hull
 - permit the engine to expand away from the driven equipment as the engine heats up and expands
 - maintain engine thrust bearing clearances
13. Gas turbines differ from steam turbines in that _____.
- steam rather than gas is used to turn a shaft
 - vapor rather than gas is used to turn a shaft
 - the former uses gas to turn a shaft
 - the latter uses gas to turn a shaft
14. A diesel engine which is rated for normal operation at a crankshaft speed of 800 RPM, is commonly classed as a _____.
- slow-speed diesel
 - medium-speed diesel
 - high-speed diesel
 - constant-speed diesel
15. The reason why more and more of the large merchant vessels are being powered by medium-speed diesel engines is _____.
- they operate between 150 and 450 rpm
 - they are connected to the propeller by gearing
 - their smaller size and weight
 - they can be connected directly to the propeller without gearing
16. _____ the engines, the diesel engine is _____ used engine on board.
- Between; more commonly
 - Among; the most commonly
 - Between; not more commonly
 - Among; not the most commonly
17. The depth of the ship below waterline measured vertically to the lowest part of the hull is called _____.
- trim
 - lean
 - draft
 - tonnage
18. Which of the terms listed below represents the operational speed at which excessive engine vibration is created?
- Non-harmonic speed.
 - Critical speed.
 - Maximum speed.
 - Design maximum speed.
19. The term "moderate speed" was previously interpreted as meaning a speed which would enable a vessel _____ within half the range of visibility.
- stopping
 - being stopped
 - to stop
 - to be stopped
20. _____ allows the engine to be placed wherever is most suitable, as they no longer have to be aligned with reduction gearing and shafting as is the case with conventional installations.
- Diesel engine propulsion
 - Diesel electric propulsion
 - Steam engine propulsion
 - Gas turbine propulsion
21. Before using or operating any equipment, you should first _____ its manual thoroughly and understand its contents _____.

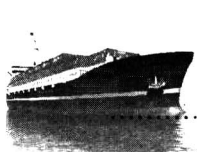
- A. read; sufficient B. consult; sufficiently
C. read; sufficiently D. consult; sufficient
22. The rotating range of the low speed diesel engine is usually lower than _____.
A. 100 rpm B. 200 rpm C. 300 rpm D. 500 rpm
23. Among the main propulsion units on board the ship with the same capacity, the lightest one is _____.
A. steam engine B. steam turbine C. gas turbine D. diesel engine
24. Typical marine propulsion plants include _____ directly coupled to the vessel's single large-diameter, fixed-pitch propeller.
A. single; long-stroke, slow-speed, turbocharged, two-stroke diesel engine
B. a single, long-stroke, medium-speed, turbocharged, four-stroke diesel engine
C. two medium-speed, turbocharged, four-stroke diesel engines
D. a variable-speed AC generator
25. _____ is an opening for supplying seawater to condensers, pumps, etc. located in the hull below the waterline and having means for the attachment of associated piping.
A. SEA CHEST B. SCUPPER C. SCUTTLE D. SEA PORT
26. A ship designed for carrying goods requiring refrigeration is called _____.
A. REEFER B. RO/RO SHIP C. CONTAINER D. TANKER
27. The displacement of a ship is _____ to the total weight, all told, of the relevant loaded ship.
A. larger B. equal C. smaller D. equivalent
28. Which of the devices listed is installed on a diesel engine to isolate some of the crankshaft vibrations caused by rotational and reciprocating forces?
A. Planetary gear set. B. Torsional vibration damper.
C. Friction clutch. D. Air bladder clutch.
29. Diesel engine electric starting motors generally require heavier duty motors and operate at higher voltages than comparable starting motors for gasoline engines due to _____.
A. higher speed required B. flywheel-effect
C. lower starting temperatures D. higher compression pressures
30. Medium speed engines have a _____ power to weight ratio than the slow speed two strokes, but due to the higher speeds tend to have _____ maintenance intervals.
A. higher; reduced B. higher; increased
C. lower; reduced D. lower; increased
31. The diesel engine is similar to the gasoline engine in that _____.
A. both of them are ignited by compressed air
B. both of them are the forms of external combustion engines
C. both of them have spark plugs
D. the power is developed by the piston in the cylinder
32. A diesel engine is operating at 1800 RPM and driving a propeller at 600 RPM. What is the speed reduction ratio?
A. 0.30 to 1. B. 3.00 to 1. C. 3.33 to 1. D. 33.0 to 1.



33. Engine displacement is equal to the cylinder _____.
 A. area times the stroke
 B. area times the stroke, times the number of cylinders
 C. volume times the stroke
 D. volume times the stroke, times the number of cylinders
34. In using reduction gears to obtain efficient propeller speeds, _____.
 A. they must be located at the after end of the engine
 B. they can only be used with one engine at a time
 C. they eliminate the need for controllable pitch propellers
 D. they are connected to the engine with a flexible coupling
35. Maximum horsepower of a diesel engine is attained _____.
 A. when the engine RPM is pulled down by overload
 B. at rated engine RPM
 C. at 95 % of rated engine RPM
 D. at 95 % of a properly adjusted governor RPM with the engine under full load
36. Which one is not true?
 A. Two main areas of skill are involved in the construction of ship.
 B. There are distinct divisions in responsibilities between naval architects and marine engineers.
 C. Each ship will assume varying proportions according to its type.
 D. Ships can be divided into different categories from different perspectives.
37. Why a gearbox is needed in a ship driven by a medium-speed diesel engine?
 A. To reduce the main engine speed.
 B. To increase the main engine speed.
 C. To govern the main engine speed.
 D. To fix the propeller shaft.
38. A propeller, in order to operate efficiently, must rotate at a relatively _____ speed.
 A. high B. low C. fast D. lowly

IV. Reading comprehension:

The diesel engine is a form of internal combustion engine similar to that used in a bus. Its power is expressed as brake horsepower (bhp). This is the power put out by the engine. Effective horsepower is the power developed by the piston in the cylinder, but some of this is lost by friction within the engine. The power output of a modern marine diesel engine is about 40,000 brake horsepower. This is now expressed in kilowatts. By comparison the engine of a small family car has an output of about 80bhp. Large diesel engines, which have cylinders nearly 3 ft in diameter, turn at the relatively slow speed of about 108rpm. These are known as slow-speed diesel engines. They can be connected directly to the propeller without gearing. Although higher power could be produced by higher revolutions, this would reduce the efficiency of the propeller, because the propeller is more efficient. The larger it is and the slower it turns. These large slow running engines are used in the larger merchant ships, particularly in tankers and bulk carriers. The main reason is their low fuel consumption. More and more of the larger merchant vessels are being



powered by medium-speed diesel engines. These operate between 150 and 450 rpm, therefore they are connected to the propeller by gearing. This type of engine was once restricted to smaller cargo ships, but now they are used in fast cargo liners as well as in tankers and bulk carriers. They are cheaper than slow-speed diesel engines, and their smaller size and weight can result in a smaller, cheaper ship.

1. Why do larger merchant vessels use slow-speed diesel engines?
 - A. Because they turn at about 108 rpm.
 - B. Because their propellers are more efficient.
 - C. Because they can be connected directly to the propeller without gearing.
 - D. Because they are fuel-saving.
2. According to the author's standpoint, what does the efficiency of slow-speed diesel engine propellers depend on?
 - A. Propeller power.
 - B. Both propeller size and revolutions.
 - C. Propeller size.
 - D. Propeller revolutions.
3. Why do medium-speed diesel engines have gearing?
 - A. In view of propeller efficiency.
 - B. In view of engine revolution.
 - C. In view of fuel consumption.
 - D. In view of merchant ship size.
4. What is probably the main reason why medium-speed diesel engines were once restricted to smaller cargo ships?
 - A. They are cheaper than slow-speed diesel engines.
 - B. The fuel consumption of the medium speed engine is more than that of the slow speed engine.
 - C. They operate between 150 and 450 rpm.
 - D. Smaller cargo ships require more efficient propellers.



Lesson 2 How Does a Marine Diesel Engine Work

I. Translate the following phrases into Chinese:

- | | |
|--|--------------------------------|
| 1. a diesel engine | 2. a marine diesel engine |
| 3. international combustion engine | 4. combustion chamber |
| 5. a charge of fresh air | 6. the fine spray of fuel |
| 7. do work on the crankshaft | 8. a four-stroke diesel engine |
| 9. suction, compression, expansion and exhaust | |
| 10. bottom dead center | 11. air inlet port |
| 12. scavenge port | 13. exhaust port |
| 14. top dead centre | 15. reduction gearbox |

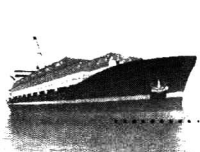
II. Translate the following sentences into Chinese:

- The diesel engine is a type of internal combustion engine which ignites the fuel by injecting it into hot, high pressure air in combustion chamber.
- The burning of the fuel adds more heat to the air charge, causing it to expand and force the engine piston to do work on the crankshaft which in turn drives the ship's propeller.
- Pressurized fresh air charges into the cylinder, blowing out any residual exhaust gases from the last stroke through the exhaust ports.

III. Multiple choices:

- Medium speed engines have a _____ power to weight ratio than the slow speed two strokes, but due to the higher speeds tend to have _____ maintenance intervals.
A. higher; reduced
B. higher; increased
C. lower; reduced
D. lower; increased
- In a diesel engine, exhaust valves open before the intake ports are uncovered to _____.
I reduce pumping losses; II reduce back pressure.
A. I only
B. II only
C. both I and II
D. neither I nor II





3. In a four-stroke/cycle diesel engine, after the completion of the power stroke, the piston will move _____.
A. up and draw in a fresh air charge B. down to burn off fuel
C. down to compress the fuel air charge D. up and force out the exhaust gases
4. In a single acting, two-stroke/cycle diesel engine, the power impulse in an individual cylinder occurs _____.
A. once every crankshaft revolution B. once every two crankshaft revolutions
C. once every piston stroke D. twice every piston stroke
5. The main propulsion diesel continues running after you try to shut down. You should now attempt to _____.
A. stop the combustion air supply B. engage the jacking gear
C. secure the lube oil pump D. shut off the fuel at the day tank
6. A two-stroke/cycle diesel engine requires less starting air than a four-stroke/cycle diesel engine, of equal displacement, because the two-stroke/cycle diesel engine _____.
A. has little or no internal friction
B. has a lower effective compression ratio.
C. operates with scavenge air under a positive pressure
D. operates without energy absorbing intake and exhaust strokes
7. Which of the following relationships should occur between the temperature developed in a combustion space, and the compression ratio of the engine?
A. Higher compression ratios create higher temperature.
B. Higher temperatures create higher compression ratios.
C. low temperatures create higher compression ratios.
D. Higher compression ratios create low temperatures.
8. A clearly visible benefit of RT-flex engines is their _____ operation at all ship speeds. This is achieved by the superior combustion performance.
A. shockless B. smokeless C. no vibration D. noiseless
9. The key feature of the Sulzer RT-flex system is that it gives complete freedom in the _____ and operation of fuel injection and exhaust valve actuation.
A. metering B. control C. using D. timing
10. The camshaft drive is designed to maintain proper camshaft speed relative to crankshaft speed. In maintaining this relationship, the camshaft drive causes the camshaft to rotate at _____.
A. one half crankshaft speed in a two-stroke cycle diesel engine
B. crankshaft speed in a two-stroke cycle diesel engine
C. two times crankshaft speed in a two-stroke cycle diesel engine
D. one-fourth times crankshaft speed in a four-stroke cycle diesel engine
11. In today's practice, with cylinders of equal diameter of bore and equal revolutions, the two-cycle engine delivers a power about 80 percent _____ than that of the four-stroke one.
A. greater B. better C. smaller D. less

