

**Eligibility criteria required for appearing examination under Kochi Port, Harbour Craft Rules
For Engine Side Candidates**

Deck Side	2 nd Class Engine Driver	1 st Class Engine Driver	Motor Engineer's Certificate
Age	Minimum 21 years at the time of application	Minimum 22 years at the time of application (+) holding of COC as 2 nd Class Engine Driver	Minimum 22 years
Nationality	Indian		
Sea service	<p>3 Yrs. as apprentice / repairing of internal combustion and served 6 months in E/Room not less than 85 BHP or 9 months not less than 40 BHP</p> <p align="center">OR</p> <p>4 Yrs. Sea service not less than 226 BHP (in which 01 Yrs. as oil man)</p> <p align="center">OR</p> <p>5 Yrs. in E/Room not less than 85 BHP</p> <p align="center">OR</p> <p>2 Yrs. with possession of a license granted under IV Act, 1917 or CHCR, 1947 as an engine driver on 80 BHP</p> <p align="center">OR</p> <p>3 Yrs. service in Engine Room having engine of more than 80 BHP as Serang, Tindal or Oil Man</p>	<p>1 Yrs. service as Engine Driver not less than 565 BHP</p> <p align="center">OR</p> <p>1 ½ Yrs. as 2nd Driver on Not less than 226 BHP</p> <p align="center">OR</p> <p>4 Yrs. service in Engine Room (In which 01 Yr. as Chief Greaser, Syrang or Principal Tindal) not less than 226 BHP</p> <p align="center">OR</p> <p>5 Yrs. service in Engine Room (In which 02 Yr. as Chief Greaser, Syrang or Principal Oilman) not less than 170 BHP</p> <p align="center">OR</p> <p>1 ½ Yrs. as Driver-in-charge on Not less than 113 BHP</p> <p align="center">OR</p> <p>4 Yrs. as Engine Driver not less than 226 BHP</p>	<p>4 Yrs. apprentice engineer or motor engines.</p> <p>Note:- Any deficiency in the requisite 4 yrs. workshop service may be made up by service afloat on regular watch in the main engine room of a vessel of not less than 565 BHP.</p> <p>a) If the vessel is sea going than one and half times the period of deficiency must be served.</p> <p>b) If an Inland vessel than two and a quarter times the period of deficiency shall be required.</p> <p align="center">OR</p> <p>Candidates not having workshop service must serve 6 yrs. on Sea Going Vessel, or must serve 9 yrs. in Inland Vessel on not less than 565 BHP.</p> <p><i>In addition to above service, all candidates must have spent 18 months at sea as an engineer on regular watch on the main engines of a sea-going ship not less than 565 BHP or 27 months in a similar Inland Vessel.</i></p>
Preferred Language of Exam	English		
Syllabus	<p>1 The candidate must know what attention is required by the various parts of the machinery, understand the use and management of the different</p>	<p>1 The candidate must know what attention is required by the various parts of the machinery, understand the use and management of the different</p>	<p>1. He must write a legible hand and have a good knowledge of arithmetic up to and including vulgar and decimal fractions and square root. He must also be able to work out questions relating to spring or lever-loaded safety and relief valves, consumption of oil and stores, capacities of tanks, bunkers,</p>

	<p>valves, cocks, pipes and connections; and be familiar with the various methods of supplying air and fuel to the cylinders.</p> <p>2 The candidate must be able to describe the chief causes which may make the engine difficult to start and to explain how he would proceed to remedy any defects connected therewith; he must also be able to show that he understands the mechanism of the starting and reversing arrangements and that he is competent to deal with defects therein.</p> <p>3 The candidate must be able to overhaul the engine, to adjust the working parts and to put the engine together again in good working condition. He must also understand how to make good the result of ordinary wear and tear to the machinery and how to correct defects from accidents.</p> <p>4 The candidate must be familiar with the</p>	<p>valves, cocks, pipes and connections; and be familiar with the various methods of supplying air and fuel to the cylinders.</p> <p>2 The candidate must be able to describe the chief causes which may make the engine difficult to start and to explain how he would proceed to remedy any defects connected therewith; he must also be able to show that he understands the mechanism of the starting and reversing arrangements and that he is competent to deal with defects therein.</p> <p>3 The candidate must be able to overhaul the engine, to adjust the working parts and to put the engine together again in good working condition. He must also understand how to make good the result of ordinary wear and tear to the machinery and how to correct defects from</p>	<p>etc., speed of vessels, and other similar problems, and be able to calculate suitable working pressures for air receivers of given dimensions and the stress per square inch on crank tunnel shafts and other parts of the machinery when the necessary data are furnished.</p> <p>2. He must be able to give a clear explanation of the principles on which oil, gas or other internal combustion engines work, including the methods of ignition, to point out the differences between them, and to show by means of illustrative sketches and otherwise that he understands the details of the construction of those in general use.</p> <p>3. He must be familiar with the various methods of supplying air and fuel to the cylinders in the different types of engines, the construction of the apparatus for carburetting, atomising, or gasifying the fuel, and the means for cooling the cylinders, pistons, etc.</p> <p>4. He must have a satisfactory knowledge of the process employed in the construction of internal combustion engines in the workshop and of the . He must know what attention is required by the various parts of the machinery, and understand the use and management of the different valves, cocks, pipes and connections.</p> <p>5. He must be able to state and describe the chief causes which may make the engines difficult to start and to explain how he would proceed to remedy any defects arising there from. He must also be able to show that</p>
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	<p>nature and properties of the various fuel oils used in internal combustion engines. He must understand what is meant by 'flash-point'</p> <p>5 The candidate must know the danger resulting from leakage from the fuel oil tanks and must understand the precautions to be taken against explosion. He must also be able to take the necessary precautions to guard against the escape of inflammable vapour from the vaporiser when the engines are stopped. He must also know how to deal with fire should it break out.</p> <p>The candidate must also be able, if required, to know -his practical knowledge by actually working the engines of a motor vessel in the presence of the examiner.</p>	<p>accidents.</p> <p>4 The candidate must be familiar with the nature and properties of the various fuel oils used in internal combustion engines. He must understand what is meant by 'flash-point'</p> <p>5 The candidate must know the danger resulting from leakage from the fuel oil tanks and must understand the precautions to be taken against explosion. He must also be able to take the necessary precautions to guard against the escape of inflammable vapour from the vaporiser when the engines are stopped. He must also know how to deal with fire should it break out.</p> <p>The candidate must also be able, if required, to know - his practical knowledge by actually working the engines of a motor vessel in the presence of the examiner.</p>	<p>he understands the mechanism of the starting and reversing arrangements, and is competent to deal with defects therein.</p> <p>6. He must understand how to make good the results of ordinary wear and tear to the machinery, how to test the fairness of shafting, etc., how to correct defects from accident, delay, etc. and how a temporary or permanent repair could be effected in case of derangements or total breakdown.</p> <p>7. He must understand the construction of the pressure gauge, barometer, thermometer, and other instruments used in the engine-room and the principles on which they work.</p> <p>8. He must understand the construction and working of centrifugal bucket, and plunger pumps, and the principles on which they act.</p> <p>9. He must understand the construction and working of air compressors, steering engines, electric light engines and dynamos, electric motors, refrigerating, hydraulic and other auxiliary machinery found on boardship.</p> <p>10. He must be familiar with the nature and properties of the various oils, etc., generally used in internal combustion engines, must understand what is meant by flash point; and have a knowledge of the explosive properties of gas on the vapour given off by those oils, etc., when mixed with definite quantities of air, and be thoroughly conversant with the</p>
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danger of exposing such gas or vapour to a naked light; or of allowing any leakage from the oil tanks particularly into the vessel's bilges, and unventilated spaces or from gas producers pipes, vapourizers, etc.

11. He must thoroughly understand the precautions to be taken against fire or explosion from oil or gas and know how to deal with fire should it break out. He should also be familiar with the action of wire gauge diaphragms when placed in pipes and connections to oil tanks, etc., for the purpose of preventing the He must be able to explain the principal construction and arrangement of primary and secondary batteries and induction coils so far as is necessary for the efficient management of an oil engine.

12. He must be able to take off and calculate indicator diagrams and understand the action of the gas in the cylinder as shown thereby.

13. He must be able to make a dimensioned working sketch drawing of some simple part of the machinery.