

**Eligibility criteria required for appearing examination under
Madras Port, Harbour Craft Rules – 1980, For Engine Side Candidates**

Engine Side	2 nd Class Motor Engine-driver	1 st Class Motor Engine- driver	Motor Engineer
Age	Minimum 21 years at the time of application	Minimum 22 years at the time of application with holding (+) 2 nd Class Engine Driver under these rules.	Minimum 22 years at the time of application
Nationality	Indian		
For Engine Candidates	At least 6 months on board within the last 3 years preceding the date of his application		
Sea service	<p>3 Yrs. as apprentice or journeyman in the making, fitting and/or repairing of internal combustion or marine steam engines and (+) 6 months in E/Room of motor vessel not less than 85 BHP or 9 months on not less than 40 BHP.</p> <p align="center"><u>OR</u></p> <p>4 Yrs. in E/Room of motor vessel not less than 226 BHP (in which 01 Yrs. service must as syrang, principal tindal or chief greaser).</p> <p align="center"><u>OR</u></p> <p>5 Yrs. service in Engine Room not less than 85 BHP</p> <p align="center"><u>OR</u></p> <p>6 Yrs. service in Engine Room as Syrang, tindal or chief greaser not less than 40 BHP</p> <p align="center"><u>OR</u></p> <p>2 Yrs. in-charge of the engine of a factory or mill under a certified engineer and (+) 1 year in E/R not less than 85 BHP <u>or</u> 18 months in E/R not less than 40 BHP as Syrang, tindal or chief greaser.</p> <p align="center"><u>OR</u></p> <p>6 months while holding 2nd Class ED granted under IV Act, 1917 on vessel not less than 85 BHP <u>or</u> 9 months not less than 40 BHP</p> <p align="center"><u>OR</u></p> <p>2 Yrs. with possession of "PERMIT" (under IV Act)</p>	<p>Min. 1 Yr. as engine driver on regular watch on the main engines not less than 565 BHP</p> <p align="center"><u>OR</u></p> <p>Min. 1 ½ Yrs. as, 2nd driver with holding COC as 2nd ED granted under these rules in charge of a watch on not less than 226 BHP</p> <p align="center"><u>OR</u></p> <p>Min. 4 Yrs. in Engine Room not less than 226 BHP in which 01 Yrs. must be served a chief greaser, syrang or principal tindal</p> <p align="center"><u>OR</u></p> <p>Min. 5 Yrs. in Engine Room not less than 170 BHP in which 02 Yrs. must be served as syrang, principal oilman or chief greaser</p> <p align="center"><u>OR</u></p> <p>Min. 1 ½ Yrs. as driver-in-charge of main engines not less than 113 BHP</p> <p align="center"><u>OR</u></p> <p>2 Yrs. syrang, principal tindal or chief greaser on not less than 226 BHP</p> <p align="center"><u>OR</u></p> <p>3 Yrs. in-charge of the engine of a factory or mill under a certificated engineer and must have served 01 Yrs as Asst. Engineer, Syrang, Principal Tindal or chief greaser not less than 226 BHP.</p> <p align="center"><u>OR</u></p> <p>2 Yrs. as engine driver on</p>	<p>1(a). 4 Yrs. as an apprentice engineer or journeyman at the making, fitting & repairing of motor or steam engine in workshop should be recognized as useful training for a marine engineer. In which 3 yrs. of this period must be spent at fitting, erecting or repairing of internal combustion engines. Remaining 01 Yrs. must spend either wholly or in part on work of this nature.</p> <p align="center"><u>IF</u></p> <p>Deficiency in the 4 Yrs. of above service may be made up by service afloat on regular watch in main engine room of a vessel not less than 565 BHP.</p> <p>If vessel is sea going, one and half times period of deficiency must be served. If, Inland vessel, two & quarter times period of deficiency must be served. (Thus, not had workshop service must serve 6 yrs. on sea going or 09 yrs. on Inland vessel in lieu of apprenticeship.)</p> <p align="center"><u>And</u></p> <p>1(b). In addition to fulfilling above condition, he must also serve 18 months at sea as an engineer or regular watch on main engine of not less than 565 BHP or 27 months on in a similar Inland Vessel.</p>

regular watch on the main engines of a motor vessel of not less than 226 BHP with holding a **1st class engine driver certificate for steam vessel** granted under ISV Act, 1917 or under these rules.

OR

4 Yrs. as engine driver on regular watch on the main engines of a motor vessel of not less than 226 BHP.

OR

Must hold engine driver certificate for **Sea Going Ships** granted under MS Act, 1923 (**I of 1923**) and **(+)** must have served at least **01 Yrs.** on regular watch on the main engines of a motor vessel of not less than 226 BHP.

2(a). Whilst holding a 1st Class COC for sea going, granted under MS Act, 1894 (57 & 58 Vict., c.60). must have **06 months** service as an Asst. Engineer or on a regular watch on main engine of a seagoing vessel not less than 565 BHP other wise **09 months** in similar Inland vessel. And must satisfy the examiner that he is fully conversant with internal combustion of engine & able to show both in **writing** & **viva** exam that he has knowledge of the subjects covered by rules **33 to 38** & **43 to 46** of these rules (*mentioned below under the syllabus for references.*)

OR

2(b). Whilst holding a 2nd Class COC for sea going, granted under MS Act, 1894 (57 & 58 Vict., c.60). must have **12 months** service as an Asst. Engineer or on a regular watch on main engine of a seagoing vessel not less than 565 BHP other wise **18 months** in similar Inland vessel. And must satisfy the examiner that he is fully conversant with internal combustion of engine & able to show both in **writing** & **viva** exam that he has knowledge of the subjects covered by rules **33 to 38** & **43 to 46** of these rules (*mentioned below under the syllabus for references.*)

OR

Engineers in possession of ordinary certificate granted under ISV Act, 1917 or under these rules may be examined provided have served **12 months** as Asst. Engineer on regular watch on main engines of **sea-going vessel** not less than

			565 BHP or 18 months on a similar Inland -Vessel
Preferred Language of Exam	English		
Syllabus	<ol style="list-style-type: none"> 1. The candidate must know on the working of the various types of internal combustion engines and be able to name the principal parts of the machinery. 2. Must know what attention is required by the various parts of the machinery, understand the use and management of the different valves, cocks, pipes and connections and be familiar with the various methods of supplying air and fuel to the cylinders. 3. 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 and 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. 4. 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. 5. Must be familiar with the nature and properties of 	<p>Same syllabus as applicable for 2nd Class Motor Engine Driver Certificate</p> <p><u>But</u></p> <p>Of a more advance character.</p>	<p>Rule 32. All candidates must write a legible hand & have a good knowledge of arithmetic including vulgar & decimal fractions and square root. Able to work out questions relating to spring or lever-loaded and relief valves, consumptions of oil and stores, capacities of tank, bunkers etc., speed of vessels and other similar problems. Be able to calculate suitable working pressures for air receivers of given dimensions and the stress per square inch on crank & tunnel shafts & other parts of the machinery when the necessary data are furnished.</p> <p>Rule 33. Abe to give 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 understand the details of the construction of those in general use.</p> <p>Rule 34. 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 carbureting, atomizing or gasifying the fuel and the means for cooling the cylinders,</p>

the various fuel oils used in internal combustion engines. He must understand what is meant by "Flash-Point"

6. 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 vapor from the vaporizer when the engines are stopped. He must also know how to deal with fire should it break out.

7. 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.

8. Must possess a working knowledge of the auxiliary steam-boilers and machinery connected therewith, namely electric light engines, steering engines, evaporators and pumps.

pistons etc.

Rule 35. Must have satisfactory knowledge of the process employed in the construction of internal combustion engines in the workshop & of the methods used in fitting the machinery on boardship.

Rule 36. Must know what attention is required by the various parts of the machinery and understand the use & management of the different valves, cocks, pipes and connections.

Rule 37. Able to state & describe the chief causes which may make the engines difficult to start & to explain how he would proceed to remedy any defects arising therefrom. Also must understand the mechanism of the starting & reversing arrangement and is competent to deal with defects therein.

Rule 38. Must understand 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 affected in case of derangements or total breakdown.

Rule 39. Understand the construction of the pressure gauge, barometer, thermometer and other instruments used in the engine-room and the principles on which they work.

Rule 40. Must understand the construction & working of centrifugal bucket, and plunger pumps and the principles on which they act.

Rule 41. Understand the construction & working of air compressors, gas producers, steering engines, electric light engines and dynamos, electric motors, refrigerating, hydraulic and other auxiliary machinery found on board-ship.

Rule 42. Possess a good knowledge of the construction and management of auxiliary steam boilers and machinery and familiar with the prominent facts relating to combustion, heat and steam.

Rule 43. Familiar with the nature & properties of the various oils generally used in internal combustion engines. Must understand what is meant by flash point and have a knowledge of the explosive properties of gas or the vapor given off by these oils, etc., when mixed with definite quantities of air and be thoroughly conversant with the danger of exposing such gas or vapor to a naked light or of allowing any leakage from the oil tanks particulars into the vessels bilges and unventilated spaces or from gas producers, pipes, vaporizers etc.

Rule 44. Must thoroughly understand the precautions to be taken against fire or explosion from oil or gas and know how to deal with

			<p>fire should it break out. 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 explosion or ignition of oil vapor therein.</p> <p>Rule 45. 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.</p> <p>Rule 46. Must able to take off and calculate indicator diagrams and understand the action of the gas in the cylinder as shown thereby.</p> <p>Rule 47. Must be able to make a dimensioned working sketch drawing of some simple part of the machinery.</p>
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