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

Deck Side	2nd Class Engine Driver	1st Class Engine Driver	Motor Engineer's Certificate
Age	Not less than 21 years as on 15-09-2018	Not less than 22 years as on 15-09-2018	Not less than 22 years as on 15-09-2018
Nationality	**INDIAN**		
Sea service	At least **3 (three)** years of service as an apprentice or repairing of internal combustion engine and in addition must have served for **6 (six**) months in the engine room having engines of **not less than 85 BHP** or **9 (nine)** months on **not less than 40 BHP** **OR** At least **4 (four)** years of service in engine room of motor vessel **not less than 226 BHP**, of which at least **1 (one)** year as an **oilman** **OR** At least **5 (five)** years of service in engine room of vessel **not less than 85 BHP** **OR** At least **2 (two)** years of service whilst in possession of a license as an **Engine Driver granted under IV act, 1917 or CPT (Harbour Craft) Rules** of a motor vessel having engines of **80 BHP** **OR** At least **3 (three)** years of service in engine room of a motor vessel having engines of **more than 80 BHP** as **Serang, Tindal or Oil man**.	At least **1 (one)** year of service as engine driver **on regular watch on the main engines** of a motor vessel of **not less than 565 BHP** whilst holding a **2nd class engine driver COC under IV Act 1917 or CPT (Harbour Craft) Rules** **OR** At least **1.5 (**18 months) years of service as **2nd driver** with a **COC of 2nd class engine driver COC under IV Act 1917 or CPT (Harbour Craft) Rules in charge of a watch** of **not less than 226 BHP** **OR** At least **4 (four)** years of service in engine room of motor vessel of **not less than 226 BHP**, of which at least **1 (one)** year as a **Chief Greaser** or **Serang** or **Principal Tindal** whilst holding a **2nd class engine driver COC under IV Act 1917 or CPT (Harbour Craft) Rules** **OR** At least **5 (five)** years of service in engine room of motor vessel of **not less than 170 BHP** of which at least **2 (two)** years must have been served as **Serang** or **Principal Oilman** or **Chief Greaser** whilst holding **2nd class engine driver COC under IV Act 1917 or CPT (Harbour Craft) Rules** **OR** At least **1.5 (18 months)**	At least 4 Yrs. apprentice engineer or motor engines. **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. a) **If the vessel is sea going** than one and half times the period of deficiency must be served. b) **If an Inland vessel** than two and a quarter times the period of deficiency shall be required. **OR** Candidates not having workshop service must serve at least 6 yrs. on Sea Going Vessel, **or** must serve at least 9 yrs. in Inland Vessel on not less than 565 BHP. ***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.***

		years of service with **2nd class engine driver COC under IV Act 1917 or CPT (Harbour Craft) Rules** as **driver-in-charge** of the engines of motor vessel of **not less than 113 BHP** **OR** At least **4 (four)** years of service as **Engine Driver** on **regular watch** on the main engines of a motor vessel of **not less than 226 BHP** whilst holding **2nd class engine driver COC under IV Act 1917 or CPT (Harbour Craft) Rules**	
Preferred Language of Exam	**English**		
Syllabus	**1 The candidate 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.** **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**	**1 The candidate 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.** **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**	**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, 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.** **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**

	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. 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. 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" 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	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. 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. 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" 5 The candidate must know the danger resulting from leakage from the fuel oil tanks and must understand the precautions to be	those in general use. 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. 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. 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 he understands the mechanism of the starting and reversing arrangements, and is competent to deal with defects therein. 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. 7. He must understand the construction of the pressure gauge, barometer, thermometer, and other

	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. 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.	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. 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.	instruments used in the engine-room and the principles on which they work. 8. He must understand the construction and working of centrifugal bucket, and plunger pumps, and the principles on which they act. 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. 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 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.**