

Specifications of minimum standard of competence for: Marine Mechanic Class A

- a) Taking charge of the machinery of vessels with a propulsion power of less than 5000 BHP (3745 KW)
Operating near coastal area

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competency	Criteria for evaluating competency
	<p>The candidate may be required to perform calculations relating to the following:</p> <ul style="list-style-type: none"> (a) Force, gravitational units, force as a vector; (b) Coefficient of friction, friction losses in simple slides; (c) Direct stress, shear stress, elasticity, working stress and factor of safety; (d) Equilibrium of floating bodies; (e) Linear expansion; (f) Heat transfer through a composite body, conduction, radiation; (g) Heat value of fuel, fuel consumption and engine power; (h) Electrical units and relation between them, series and parallel circuit and e.m. f. of resistance; (i) Calculation of electrical power given a network of resistance and applied voltage 	<p>Oral and Written Examination.</p>	<p>Pass the requisite examination. (Oral and written)</p>

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ENGINEERING KNOWLEDGE	<ul style="list-style-type: none"> (a) Properties of common marine engineering materials and methods of joining. Manufacture of simple components. Simple heat treatment; (b) Properties of liquids and gases commonly used aboard vessels; (c) Precautions against fire or explosions. Dangers of oil or gas leakage into bilges or enclosed spaces. Action of wire gauze diaphragms; (d) Methods of dealing, with fire aboard vessels, testing and use of the various portable and -fixed fire extinguishers and installations. Remote shut offs and closing appliances; (e) Precautions before entering tanks or enclosed spaces; (f) Common shipbuilding terms. Simple details of rudders, propellers, stern Tubes, under-water fittings, tank management and effect on ship stability; 	Oral and Written Examination	Pass the requisite examination. (Oral and written)

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	<ul style="list-style-type: none"> (g) Elementary principles and care and management of auxiliary power sources; (h) Elementary principles and care and management of the various types of auxiliary pumps and pumping and piping systems, refrigerators and other shipboard auxiliaries; (i) Alignment of machinery and machinery parts; (j) Administration responsibilities. Oil pollution; (k) Use of lifesaving appliances; (l) Simple constructional details and the care and management of two-stroke and four-stroke cycle main propulsion. Diesel engines, with particular reference to safety, devices. Preparing for sea. Starting and reversing. Detection of defects; (m) engine cooling, fuel, and lubricating systems; (n) Care and attention required in the use of air compressors; (o) Refrigeration. The candidate may be 		
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	<p>required to show a knowledge of the following items;</p> <ul style="list-style-type: none">(i) Principles of refrigeration's;(ii) Properties of common refrigerants. Dangers associated with leakage;(iii) Operating temperatures and pressures. Methods of temperature control;(iv) Care and management of refrigeration equipment. Recognition of defects.		
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<p>Electrical Knowledge</p>	<p>(a) S.I. units amperes, volts, ohms;</p> <p>(b) Electrical Circuit ohms, law, resistance in series and parallel, batteries in series and parallel;</p> <p>(c) Heating effect of electrical current;</p> <p>(d) Electrical safety;</p> <p>(e) Colour coding;</p> <p>(f) Motor starter, overload and under voltage protection;</p> <p>(g) AC and DC generators, voltage control and load shaping;</p> <p>(h) Accumulation care and maintenance;</p> <p>(i) Power and lighting distribution systems 3 phases and single phase. Use of fuses and circuit breakers; use of earth lamps.</p> <p>The examiner may during oral/practical examination ask any relevant questions as deemed necessary.</p>	<p>Oral and Written Examination</p>	<p>Pass the requisite examination. (Oral and written)</p>

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(b) **Qualifying Services Compulsory Training and Qualifications**

- (i) Repealed by SI. 56 of 2010.
 - (ii) Not less than 12 months at sea as Marine Mechanic while holding a Mechanic Certificate as Marine Mechanic Class B.
 - (iii) Not less than 6 months at sea as Marine Mechanic on ships of not less than 550HP (410KW) propulsion power on completion of an engineering apprenticeship acceptable to the Marine Board.
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- (a) Pass the requisite examination
 - (b) Minimum age: 23 years
 - (c) A medical certificate giving evidence of physical including eyesight and colour vision and medical fitness.