FOURTH-CLASS ENGINEER

SET OF SPECIMEN EXAMINATION QUESTIONS

2nd EDITION
JULY 2007
Responsible Authority

The Director, Marine Personnel Standards and Pilotage is responsible for this document, including any change, correction, or update.

Approval

Capt. Naim Nazha
Director, Marine Personnel Standards and Pilotage
Marine Safety

Original Date Issued: December 2005          Date Revised: July 2007
### DOCUMENT INFORMATION

<table>
<thead>
<tr>
<th>Title</th>
<th>FOURTH-CLASS ENGINEER – SET OF SPECIMEN EXAMINATION QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP No.</td>
<td>14511E</td>
</tr>
<tr>
<td>Catalogue No.</td>
<td>T29-34/2007E</td>
</tr>
<tr>
<td>Edition</td>
<td>2nd</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Originator</th>
<th>Amir Maan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone</td>
<td>(613) 990-2075</td>
</tr>
<tr>
<td>Fax</td>
<td>(613) 990-1538</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:MarineSafety@tc.gc.ca">MarineSafety@tc.gc.ca</a></td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://www.tc.gc.ca/MarineSafety">http://www.tc.gc.ca/MarineSafety</a></td>
</tr>
</tbody>
</table>

### REVISIONS

<table>
<thead>
<tr>
<th>Revision No.</th>
<th>Date of Issue</th>
<th>Affected Pages</th>
<th>Author(s)</th>
<th>Brief Description of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>July 2007</td>
<td>Amir Maan</td>
<td></td>
<td>This document is updated taking into account the coming into force of the Canada Shipping Act, 2001.</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS

1. SCOPE AND APPLICATION ....................................................................................1
   1.1 PURPOSE: ...........................................................................................................1
   1.2 SCOPE: ...................................................................................................................1
   1.3 EFFECTIVE DATE: .................................................................................................1
   1.4 AUTHORITY: ...........................................................................................................1

2. GENERAL INFORMATION ..................................................................................2

3. SPECIMEN QUESTIONS ....................................................................................3

4. ANSWER SHEET ...............................................................................................6
1. SCOPE AND APPLICATION

1.1 PURPOSE:

(1) To provide information to seafarers and marine training institutions by outlining the guidance on the examination for obtaining the certificate of competency as Fourth-class Engineer, Motor-Ship, and Fourth-class Engineer, Steamship.

1.2 SCOPE:

(1) Recommended for all those seafarers who intend to write examinations for the certificate of competency as Fourth-class Engineer, Motor-Ship and/or Fourth-class Engineer, Steamship.

1.3 EFFECTIVE DATE:

(1) This document enters into force on July 1st, 2007.

1.4 AUTHORITY:

2. GENERAL INFORMATION

This document is intended to provide guidance to the candidates who intend to write the examination for the Fourth-class Engineer, Motor Ship, and Fourth-class Engineer, Steamship certificates.

(1) You must pass a written examination in each of the following subjects:
   • Engineering Knowledge, General;
   • Engineering Knowledge, Motor and/or
   • Engineering Knowledge, Steam.

(2) Questions may refer to any of the areas of knowledge mentioned in the syllabus.

(3) For each subject, you will be given three examination question books that contain a total of 150 questions (General) and 75 questions (Motor and Steam). All questions should be answered.

(4) Below each question, you will find four possible answers. Read each possible answer carefully and select the one that you consider to be the correct one. This guide contains some specimen questions. Attempt to answer them and check your answers with the correct ones marked on the answer sheet on the last page.

(5) On completion of the written examinations, you must also pass an oral examination to test your practical knowledge; this examination may include references to the answers given in the written examinations.

Before beginning the written examinations, read carefully the rules on the first page of the Answer Booklet. Any question should be addressed to the Examiner before beginning the examination.

Please visit the following Transport Canada Web sites:


For any other question about the Examination and Certification of Seafarers, [http://www.tc.gc.ca/marinesafety/TP/TP2293/menu.htm](http://www.tc.gc.ca/marinesafety/TP/TP2293/menu.htm).
3. **SPECIMEN QUESTIONS**

(1) A rectangular plate measures 500 mm by 250 mm. The area is ______ M².
   - (a) 12.5
   - (b) 125
   - (c) 0.125
   - (d) 0.00125

(2) The work done in moving an object through a certain distance is the product of this distance by the:
   - (a) torque.
   - (b) moment.
   - (c) couple.
   - (d) force.

(3) The purpose of the intercooler in an air compressor is to:
   - (a) condense the oil and water vapours from the air.
   - (b) reduce the temperature of the air between stages.
   - (c) increase the air pressure at the compressor outlet.
   - (d) obtain the results mentioned in (1) and (2).

(4) Cocks rather than valves are usually fitted for boiler water gauge glass mountings because:
   - (a) they can be shut off more quickly should the gauge glass break.
   - (b) they are easier to make and hence cheaper.
   - (c) they are easier to maintain and repair.
   - (d) they are required by Transport Canada Regulations.

(5) The anchor chain is lifted by the:
   - (a) capstan.
   - (b) mooring winch.
   - (c) windlass.
   - (d) cargo winch.

(6) A breaker is installed in an electric circuit to:
   - (a) protect the generator in case of reverse power.
   - (b) allow the fuses to safely carry a higher current.
   - (c) ensure reliability in case the fuse does not melt.
   - (d) protect the circuit from damage should it become overloaded.
(7) When topping-off the tanks whilst loading fuel oil, you should:
   (a) check the working pressure on the flexible transfer hose.
   (b) have the mooring lines tended to prevent stress on the transfer hose.
   (c) reduce the rate of flow to the tanks.
   (d) fit blank flanges on the unused manifold connections.

(8) Smoke coming from the crankcase breather of a Diesel engine usually indicates:
   (a) that there is too much lubricating oil in the engine base.
   (b) an overheated bearing.
   (c) worn or seized piston rings.
   (d) carbon dioxide discharge valve to the crankcase has been left open.

(9) A thermostat is installed in the cooling water system of a Diesel engine to control the
     ______________ of the coolant.
     (a) temperature
     (b) density
     (c) velocity
     (d) all of (1), (2) and (3)

(10) The purpose of the flywheel mounted on the end of an internal combustion engine is to:
     (a) provide for the fitting of the starter ring gear.
     (b) absorb energy from the power stroke and return some of it on the other strokes.
     (c) prevent the crankshaft from turning too fast on the exhaust stroke.
     (d) balance the load between each cylinder.

(11) The absence of carbon monoxide in the flue gases of a boiler indicates:
     (a) low carbon content of the fuel.
     (b) nearly complete combustion.
     (c) fuel contamination.
     (d) too much excess air.

(12) The steam used to operate the air ejector is condensed in the air ejector condenser by
     circulating ______________ through the tubes.
     (a) the condensate from the condenser
     (b) the brine from the evaporator
     (c) the turbine lubricating oil
     (d) sea water from the auxiliary circulating pump
(13) The main disadvantage of a submerged-coil type of evaporator is:
   (a) high steam consumption per kilogram of water evaporated.
   (b) high cleaning costs.
   (c) poor performance.
   (d) all of the disadvantages listed above.

(14) Abnormally high temperature of the oil in the fuel system of a boiler causes:
   (a) an increase of steam quantity and a better atomization.
   (b) excessive carbon deposits on the burner tips and spray defects.
   (c) cold burner tip leading to flame impingement.
   (d) damage to refractory materials and tubes due to the high viscosity.

(15) Above normal temperature of condensate in a marine condenser indicates:
   (a) leaky sea water tubes.
   (b) a cracked condenser casing.
   (c) a lack of circulating water.
   (d) overall high efficiency of the plant.
# 4. ANSWER SHEET

<table>
<thead>
<tr>
<th>Subject</th>
<th>N° RÉPONSE</th>
<th>N° RÉPONSE</th>
<th>N° RÉPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECIMEN 14th CLASS</td>
<td>SPECIMEN 14th CLASS</td>
<td>SPECIMEN 14th CLASS</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Answers are numbered across the page.