INSTRUCTIONS

1. Answer ALL questions.
2. You are advised to spend the first TEN minutes of the examination time
   a. reading the instructions
   b. becoming familiar with the questions.
3. This paper consists of FOUR SECTIONS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>Topics</th>
<th>Total Skill Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE</td>
<td>Home Appliances</td>
<td>17</td>
</tr>
<tr>
<td>TWO</td>
<td>Land Surveying</td>
<td>15</td>
</tr>
<tr>
<td>THREE</td>
<td>Navigation</td>
<td>26</td>
</tr>
<tr>
<td>FOUR</td>
<td>Electronics</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>70</td>
</tr>
</tbody>
</table>

4. Write your Student Enrolment Number on the right hand corner and also
   on the last page.
5. Answer ALL questions in the space provide in this booklet
6. Check that your paper consists of 15 pages and that pages 14-15 has been
   deliberately left blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.
SECTION ONE: HOME APPLIANCE

1. Study the diagram of the Wick Stove given below and answer questions that follow:

   *Wick Stove*

   a. Name the **FOUR** (4) main parts of the Wick Stove.

      Part 1: _____________________________________________
      Part 2: _____________________________________________
      Part 3: _____________________________________________
      Part 4: _____________________________________________

   b. Identify any problems that may happen for Wick Stove. What is the problem that normally occur with the Wick Stove?

      _____________________________________________
      _____________________________________________
      _____________________________________________
      _____________________________________________

   c. What are the **TWO** (2) advantages of a Wick Stove over other stoves study in form 5?

      i. _____________________________________________
      _____________________________________________
      _____________________________________________

      ii. _____________________________________________
      _____________________________________________
      _____________________________________________
d. Describe the operation of the wick stove.

2. Study the Benzene Pressure Iron below and answer the questions that follow:

**Benzene Pressure Iron**

a. Name all the main parts of a Benzene Pressure Iron.

b. Describe how the benzene pressure iron operated.
c. One of the problems happen in the Benzene Pressure Iron is the loss of pressure, briefly explain the two possible cause of the problem.

Possible cause 1. _____________________________________________________________

Possible cause 2. _____________________________________________________________

d. Briefly explain the function of the three main parts of the benzene pressure iron?

Part 1: ____________________________________________________________________

Part 2: ____________________________________________________________________

Part 3: ____________________________________________________________________

3. Electrical Light

Circle the letter that corresponding to the most correct answer

a. An electric iron has the following details shown on the data plate.

SOKANY: Steam Iron
Model: DR-2088
1500 Watts
240 Volts
50 Hz

Which of the following fuse ratings should be used for the iron?
A. 20 amps.
B. 15 amps
C. 10 amps.
D. 5 amps
b. Study the floor plan of a storage shed given below and answer the following questions.

Complete the table below with the correct name of electrical fittings a, b, c and d.

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Correct name of electrical fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td></td>
</tr>
<tr>
<td>d</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
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</tr>
<tr>
<td>NR</td>
</tr>
</tbody>
</table>
SECTION TWO: LAND SURVEYING

1. Name the **THREE** (3) methods of plane table survey.

   **Method 1:** ________________________________________________________________
   **Method 2:** ________________________________________________________________
   **Method 3:** ________________________________________________________________

2. Briefly explain the function of the plane tabling equipment.

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

3. In point form list the correct method of how to carry out the chain surveying techniques.

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

4. Briefly describe the two methods of plane table technique.

   **Method 1:** ________________________________________________________________
   ________________________________________________________________
   **Method 2:** ________________________________________________________________
   ________________________________________________________________

5. Explain the main purpose of plane table technique.

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
6. Explain the method of surveying by offset.

**Offset Method:**

<table>
<thead>
<tr>
<th>Skill level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
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<tr>
<td>0</td>
</tr>
<tr>
<td>NR</td>
</tr>
</tbody>
</table>
SECTION THREE: NAVIGATION

1. List the detail for admiralty chart.

________________________________________________________________________
________________________________________________________________________

2. What scale do navigators use on navigational charts for distance?

________________________________________________________________________
________________________________________________________________________

3. Define the following navigation terms:
   a. Sounding
   ______________________________________________________________________
   ______________________________________________________________________
   
   b. Chart
   ______________________________________________________________________
   ______________________________________________________________________
   
   c. Beacons
   ______________________________________________________________________
   ______________________________________________________________________
   
   d. Abeam
   ______________________________________________________________________
   ______________________________________________________________________
   
   e. Starboard
   ______________________________________________________________________
   ______________________________________________________________________
   
   f. Variation
   ______________________________________________________________________
   ______________________________________________________________________
4. Describe the differences between longitude and latitude.

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

5. Describe the type of compass that used by navigators.

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________


   Method 1: ________________________________
   Method 2: ________________________________
   Method 3: ________________________________
   Method 4: ________________________________

7. In bearing, describe the different between compass bearing and true bearing.

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

8. Describe two-point fix.

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________
9. Complete the table below.

<table>
<thead>
<tr>
<th>COMPASS BEARING</th>
<th>MAGNETIC BEARING</th>
<th>TRUE BEARING</th>
</tr>
</thead>
<tbody>
<tr>
<td>116°15’</td>
<td></td>
<td>103°</td>
</tr>
<tr>
<td></td>
<td>12°25”</td>
<td>220°</td>
</tr>
</tbody>
</table>

10. On the Tongatapu Group chart the magnetic variation is 13° 18´ E in 1996. The annual drift is 02´ E. What is the magnetic variation for the year 2016?

______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

11. MV Lose depart from Nuku‘alofa at 0620 hr. tomorrow on a trip to ‘Oneata island. The distance from Nuku‘alofa to ‘Oneata island is 24 nautical miles. MV Lose travel on an average speed of 8 knots.

Calculate the EAT (Expected Arrival Time) at ‘Oneata island.

______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
SECTION D: ELECTRONICS

1. Complete the table below by write the name of electronic components shown by its picture.

<table>
<thead>
<tr>
<th>PICTURE/SYMBOL</th>
<th>NAME</th>
</tr>
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<tbody>
<tr>
<td><img src="image1.png" alt="Component 1" /></td>
<td><img src="image2.png" alt="Component 1 Name" /></td>
</tr>
<tr>
<td><img src="image3.png" alt="Component 2" /></td>
<td><img src="image4.png" alt="Component 2 Name" /></td>
</tr>
<tr>
<td><img src="image5.png" alt="Component 3" /></td>
<td><img src="image6.png" alt="Component 3 Name" /></td>
</tr>
</tbody>
</table>

2. Draw and label the symbol of Transistor.

3. Why is the power diode installed in front of the circuit compare to other component?
4. Manufactures of Light Emitting Diode (LED) provide you with two possible ways to easily identify the negative terminal of an LED. Describe each way.

**Possible way 1:** ____________________________________________________________
__________________________________________________________________________

**Possible way 2:** ____________________________________________________________
__________________________________________________________________________

5. Explain the functions of Transformer?

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Skill level 2

<table>
<thead>
<tr>
<th></th>
<th>2</th>
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Skill level 3

<table>
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</table>
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