TONGA FORM SIX CERTIFICATES
2016
DESIGN TECHNOLOGY

QUESTION AND ANSWER BOOKLET

Time allowed: 3 Hours

INSTRUCTIONS

1. Answer ALL questions.
2. This examination has **TWO** Sections.  
   **A** = 35 marks  
   **B** = 30 marks

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>DESIGN UNDERSTANDING</td>
<td>Compulsory. Answer ALL questions.</td>
</tr>
<tr>
<td>B</td>
<td>MAJOR OUTCOMES</td>
<td>Choose ONE (Major 1 – Major 6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major</th>
<th>Topic</th>
<th>Questions</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wood Technology</td>
<td>B1-B4</td>
<td>9-18</td>
</tr>
<tr>
<td>2</td>
<td>Metal Technology</td>
<td>B5-B8</td>
<td>19-28</td>
</tr>
<tr>
<td>3</td>
<td>Food and Nutrition</td>
<td>B9-B11</td>
<td>29-34</td>
</tr>
<tr>
<td>4</td>
<td>Textiles and Garment Construction</td>
<td>B12-B14</td>
<td>35-40</td>
</tr>
<tr>
<td>5</td>
<td>Technical Graphics</td>
<td>B15-B18</td>
<td>41-50</td>
</tr>
</tbody>
</table>

3. Select only ONE major and answer all the questions in that major.
4. Write your answers in the spaces provided in this booklet.
5. Write your **Student Enrolment Number (SEN)** in the box at the top right hand corner of this page and on the last page of this booklet.
   Check that this booklet contains 43 pages in the correct order. Pages 42-43 has been deliberately left blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR BEFORE YOU LEAVE THE EXAMINATION ROOM.
SECTION A: DESIGN UNDERSTANDING

Answer ALL questions in this section

Question A1: Multiple Choice

Circle the letter of the best answer to each of the following multiple choice questions.

1. The main stages in the designing process are
   A. problem, specification and task.
   B. evaluating, building and decision making.
   C. designing, making and evaluating.
   D. investigation, processes and developing.

2. The small arrows in the designing process diagram shows the
   A. direction of production.
   B. revisiting of stages for evaluation.
   C. big picture of the process.
   D. main flow of the designing process.

3. What is the sample used to test a design concept through observation?
   A. observation
   B. prototype
   C. designing
   D. specification

4. A detailed description of what the client needs such as the necessary features is
   A. design brief.
   B. document.
   C. summary.
   D. solution.
5. Why it is important to keep records during the process of making the product?

   A. to calculate cost
   B. for evaluation
   C. to save energy and time
   D. to see the progress made

6. Two activities taking place during the production process are

   A. repairing task and building a prototype.
   B. thinking about the outcome and modifying the product.
   C. building a prototype and investigating solution.
   D. constructing the product and collecting information.

7. During the designing stage, the very first thing to do before investigating the solution is

   A. model the solution.
   B. identify the problem.
   C. develop ideas.
   D. evaluate and document.
**QUESTION A2:**

1. Complete the table below with example of the given design components based on your Project.

<table>
<thead>
<tr>
<th>Design Component</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Expectation</td>
<td></td>
</tr>
<tr>
<td>2 Specification</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>NR</td>
</tr>
</tbody>
</table>

2. Complete the table below with a brief explanation of the given design components based on your project.

<table>
<thead>
<tr>
<th>Design Component</th>
<th>Brief Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Investigation</td>
<td></td>
</tr>
<tr>
<td>2 Closed Design Brief</td>
<td></td>
</tr>
<tr>
<td>3 Skills</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>NR</td>
</tr>
</tbody>
</table>
QUESTION A3:

1. Name main components of a design brief.
   i. _______________________________________________________
   ii. _______________________________________________________
   iii. _______________________________________________________

2. Give **TWO** (2) reasons why it is important to collect information on appropriate tools and equipment before making decision on which to be used.
   i. _______________________________________________________
   ii. _______________________________________________________

3. Why proper and appropriate techniques and skill have positive impact on our product? Give **THREE** (3) reasons.
   i. _______________________________________________________
   ii. _______________________________________________________
   iii. _______________________________________________________

4. What do these **TWO** (2) activities mean in the designing stage?
   i. Investigating ideas for solution
      _______________________________________________________
   ii. Model or trial the proposal
      _______________________________________________________

Skill level 3

<table>
<thead>
<tr>
<th>3</th>
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</table>

Skill level 2

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</thead>
</table>

Skill level 3

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<tr>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>NR</th>
</tr>
</thead>
</table>
QUESTION A4:

1. State ONE (1) evaluation point and elaborate how you evaluate your product when finish.

________________________________________________________________________
________________________________________________________________________

2. List THREE (3) activities involved in making a product.
   i.  
       ______________________________________________________________________
   ii. ______________________________________________________________________
   iii. ______________________________________________________________________

3. The more information collected the more ideas are available to help in designing proposal ‘for the solution’. Explain how this works in your solution design proposal.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. Explain the difference between Model or trial the proposal and Build and test a prototype?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Skill level 2
2
1
0
NR

Skill level 3
3
2
1
0
NR

Skill level 4
4
3
2
1
0
NR
MAJOR 1: WOOD TECHNOLOGY

QUESTION B1.

1. Timber are commonly classified as either Hardwood or Softwood. Indicate whether the corresponding statement refers to Hardwood or Softwood by labelling either H for Hardwood and S for Softwood in the boxes provided.

<table>
<thead>
<tr>
<th></th>
<th>Skill level 1</th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>a</td>
<td></td>
<td>1</td>
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<tr>
<td>b</td>
<td></td>
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<tr>
<td>c</td>
<td></td>
<td>1</td>
<td>0</td>
<td>NR</td>
</tr>
<tr>
<td>d</td>
<td></td>
<td>1</td>
<td>0</td>
<td>NR</td>
</tr>
</tbody>
</table>

a. Trees that lose their leaves in winter.

b. Needle-leaved trees.

c. Trees that produce uncovered seed.

d. Trees with visible pores on the end grain.
2. Shown below is the cross section of a tree trunk. Study the diagram carefully and answer the question.

a. Complete the table below with the correct name of the parts of the tree trunk indicated by the letter.

<table>
<thead>
<tr>
<th>Parts</th>
<th>Name</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>

3. Briefly define the following timber properties.

a. Texture:

b. Hardness:
QUESTION B2.

a. Timber Conversion

i. Name and briefly explain one method of Timber Conversion.

Name: ___________________________________________________________

Explanation: _____________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

b. Seasoning of Timber

i. Name and briefly explain one method of Timber Seasoning

Name: ___________________________________________________________

Explanation: _____________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
c. Wood Working Machine

i. Name and explain TWO (2) different types of operations that can be safely carried out on the wood working lathe machine.

**Name of Operation 1**: __________________________________________

**Explanation**:  
__________________________________________________________________  
__________________________________________________________________  
__________________________________________________________________  
__________________________________________________________________  
__________________________________________________________________  
__________________________________________________________________  
__________________________________________________________________  

**Name of Operation 2**: __________________________________________

**Explanation**:  
__________________________________________________________________  
__________________________________________________________________  
__________________________________________________________________  
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__________________________________________________________________  

<table>
<thead>
<tr>
<th>Skill level 2</th>
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<tbody>
<tr>
<td>2</td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NR</td>
<td></td>
</tr>
</tbody>
</table>
a. Moisture Content

i. Calculate the moisture content (MC) of a sample piece of timber weigh 240 grams. After oven trying, the weight goes down to 200 grams. What is the application of the timber with the calculated moisture content?

Calculation:

\[
\text{Moisture Content (\%)} = \frac{240 - 200}{240} \times 100
\]

Application: ________________________________
______________________________
______________________________

Skill level 3

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>2</th>
<th>1</th>
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<th>NR</th>
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</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
b. **Fastening & Fittings**

Study the drawing of the drawer given below and answer questions that follow.

![Drawer Diagram]

i. Name the 2 suitable types of joint for joint B.

Name of suitable Joint 1: ________________________________

Name of suitable Joint 2: ________________________________

ii. Compare the 2 joints stated in part i) and name the most suitable joint to be used for joint B.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

<table>
<thead>
<tr>
<th>Skill level 3</th>
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<tbody>
<tr>
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<td>2</td>
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<tr>
<td>1</td>
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<tr>
<td>0</td>
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<tr>
<td>NR</td>
</tr>
</tbody>
</table>
c. Study the student’s desk given below and answer the question that follow.

Complete the table below by:

i. Listing TWO required properties that must be considered in choosing material for the top and the leg of the student’s desk.

ii. Suggesting the most appropriate material that matches the two properties stated in part i).

<table>
<thead>
<tr>
<th>Parts</th>
<th>Required properties</th>
<th>Suggested material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>Legs</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

Skill level 3

<table>
<thead>
<tr>
<th>4</th>
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</thead>
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<tr>
<td>1</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>NR</td>
</tr>
</tbody>
</table>
d. Study the dining table below and answer the question that follow.

Use the information given below to calculate the cost of the timber required for the dining table.

<table>
<thead>
<tr>
<th>Table Parts</th>
<th>Size</th>
<th>Material</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg</td>
<td>75 mm x 75 mm</td>
<td>Hardwood - Tawa</td>
<td>$8.50/m</td>
</tr>
<tr>
<td>Rail</td>
<td>25 mm x 75 mm</td>
<td>Hardwood - Tawa</td>
<td>$4.30/m</td>
</tr>
<tr>
<td>Top</td>
<td>25 mm x 100 mm</td>
<td>Hardwood - Tawa</td>
<td>$6.20/m</td>
</tr>
</tbody>
</table>

i. Calculation of 4 Legs

ii. Calculation of 4 Rails
iii. Calculation of the top

TOTAL Timber cost for the Dining Table: ________________________
METAL TECHNOLOGY

QUESTION B5.

1. **Workshop Safety**

   Study the cartoon below and answer the questions that follow.

   ![Cartoon Image]

   i. Describe one way in which boy A is neglecting common sense safety practice in which he is working.

   ____________________________________________________________________
   ____________________________________________________________________

   ii. Give one reason why the grinding machine shown is dangerous that should not be used.

   ____________________________________________________________________
   ____________________________________________________________________

<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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>NR</td>
</tr>
</tbody>
</table>
2. **Metal Lathe Tool**

   a. The side view of a lathe tool suitable for cutting soft steel is shown below.

   ![Diagram of a lathe tool]

   i. The angle of 10° is known as ______________________________

3. **Solder** is an example of:

   A. Ferrous Metal.
   B. Non-Ferrous Metal.
   C. Ferrous Alloy.
   D. Non-Ferrous Alloy.

4. A simple formula used to calculate the tap drill required to a metric tap when a tap drill chart is not available is:

   Outside diameter minus pitch equals tap drill size

   The tap drill required for the M12 x 1.75 is:

   A. 12 mm.
   B. 10.75 mm.
   C. 10.50 mm.
   D. 10.25 mm.
5. **Oxy-Acetylene Welding**

   a. The oxy-acetylene welding equipment in most schools is fitted with flash-back arrestor. What is the purpose of the flash-back arrestor?

   ____________________________________________________________

   b. Name the correct tool used to clean a block welding torch tip.

   ____________________________________________________________

6. **Metal Lathe Machine**

   a. Name 2 factors that should be considered in selecting the speed of a lathe machine if the lathe tool is from high speed steel (HSS).

      Factor 1: _______________________________________________________

      Factor 2: _______________________________________________________

7. **Electric Arc Welding**

   a. Name 1 factor that should be considered in choosing the right electrode for an electric arc welding job.

      Factor 1: _______________________________________________________

Skill level 1
1
0
NR

Skill level 1
1
0
NR

Skill level 1
1
0
NR
QUESTION B6

1. **Soldering**
   
a. Preparation for soldering of sheet metal would include the use of flux. Give 2 reasons why flux is used in soldering.

   **Reason 1:** ______________________________________________________
   _________________________________________________________________
   **Reason 2:** ____________________________________________________
   _________________________________________________________________

2. **Hand Tools**
   
a. Complete the table below by naming the hand tools and the description of their use.

<table>
<thead>
<tr>
<th>Hand Tools</th>
<th>Name</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Hand Tool Image]</td>
<td>![Hand Tool Name]</td>
<td>![Hand Tool Use]</td>
</tr>
<tr>
<td>![Hand Tool Image]</td>
<td>![Hand Tool Name]</td>
<td>![Hand Tool Use]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill level 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
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<tr>
<td>1</td>
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</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>
3. **Material Properties**

a. Briefly explain the following mechanical properties of metal.

a. Elasticity: ______________________________________________________
   ________________________________________________________________
   ________________________________________________________________

b. Plasticity: _____________________________________________________
   ________________________________________________________________
   ________________________________________________________________
**QUESTION B7**

1. **Fasteners**
   
a. Complete the table below by stating one advantage and one disadvantage of the following common fasteners if you need to join causes of the following n galvanised sheet metal for a funnel.

<table>
<thead>
<tr>
<th>Types of Fasteners</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soldering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screw</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. **Drilling Operation**
   
a. Complete the table below by listing the causes of the following faults that can occur when drilling.

<table>
<thead>
<tr>
<th>Faults</th>
<th>Cause(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oversize hole</td>
<td></td>
</tr>
<tr>
<td>Drill squeaks and won’t cut</td>
<td></td>
</tr>
<tr>
<td>Wall of hole is rough</td>
<td></td>
</tr>
</tbody>
</table>
3. **Form Work**

a. The golden rule when calculating the material for formed work is to take measuring to the inside of square sharp bends and to use the centre line material (MD) for all curved work.

Calculate the length of the bar required to bend the pipe bracket in the diagram below.

**Material:** 75 mm x 10 mm flat steel bar

Calculation of part (A) =

Calculation of part (B) =

Calculation of part (C) =
Calculation of part (D) =

Calculation of part (E) =

Total Length of the bar = ______________________________

4. **Metal Turning Process**

A pictorial sketch of a model cannon is shown below. Four wheels are to be made to the sizes given.
The table below shows how the four wheels could be made from ONE setting of the material in the lathe machine.

Complete the table by writing the correct Operation and Description in the spaces provided.

**Material:** 150 mm long x 32 mm diameter from free cutting mild steel.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Setting up</td>
<td>Hold in a 3 jaw chuck approximately half way along its length</td>
</tr>
<tr>
<td>ii. Facing</td>
<td>a. __________________________________________________________________</td>
</tr>
<tr>
<td></td>
<td>b. __________________________________________________________________</td>
</tr>
<tr>
<td></td>
<td>c. __________________________________________________________________</td>
</tr>
<tr>
<td>iii. ____________</td>
<td>Use a right-hand tool in tool holder and machine the outside diameter to 30 mm for a length of 60 – 70 mm</td>
</tr>
<tr>
<td>iv. Drilling</td>
<td>a. __________________________________________________________________</td>
</tr>
<tr>
<td></td>
<td>b. __________________________________________________________________</td>
</tr>
<tr>
<td></td>
<td>c. __________________________________________________________________</td>
</tr>
<tr>
<td>v. Parting Off</td>
<td>a. Set parting off tool up square and on centre.</td>
</tr>
<tr>
<td></td>
<td>b. Using cutting fluid and a slow speed, cut wheel off 10 mm wide.</td>
</tr>
</tbody>
</table>
MAJOR 3                         FOOD AND NUTRITION

Answer ALL questions in this section

Question B1                        Essential Nutrients

1. Explain **ONE** (1) function of each of the following nutrients in the human body.

   i. Protein: _________________________________

   ii. Lipid: ________________________________

   iii. Vitamin: ______________________________

2. i. Name **ONE** (1) nutrition-related disease discussed in the classroom.

   __________________________________________

   ii. Explain the cause of the disease and how to prevent it from happening.

   __________________________________________

   __________________________________________

3. Fill in the table below to show the nutritional requirements of each type of people and identify why they need that particular nutrient.

<table>
<thead>
<tr>
<th>Type of people</th>
<th>Nutrient needs</th>
<th>Why</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Sports people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. Elderly people</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question B2   Food Quality and Food Preparation

1. Fill in the table below to show the changes happen to food when put in the refrigerator longer than it should be.

<table>
<thead>
<tr>
<th>Food</th>
<th>Physical change</th>
<th>Nutritional change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Safe food handling and preparation is very important when preparing food for your family or any other occasion. Explain the following techniques and give ONE (1) example each.

i. **Personal hygiene**

________________________________________________________________________
________________________________________________________________________

Example:________________________________________________________________

ii. **Kitchen hygiene**

________________________________________________________________________
________________________________________________________________________

Example:________________________________________________________________

3. Explain what are ‘high risk’ food and give 2 examples

**Explanation**

________________________________________________________________________

**Example**

________________________________________________________________________
4. To prepare a healthy meal for your family, it is important to use very little fat and salt when cooking. Explain **TWO** (2) reasons for this advice.

i. ____________________________________________________________________
   ____________________________________________________________________

ii. ____________________________________________________________________
    ____________________________________________________________________
**Question B3**  
**Food issues and solution**

1. Healthy food is very expensive here in Tonga and unhealthy food is cheap. This makes people buy unhealthy foods that make them suffered different type of diseases.

   i. Name **TWO** (2) healthy foods that are expensive and **TWO** unhealthy foods that are cheap.

   **Healthy foods**

   ___________________________________________________________

   **Unhealthy foods**

   ___________________________________________________________

   ii. How can you help to solve this problem and make healthy food cheaper? Give **TWO** (2) ways.

   ___________________________________________________________

   ___________________________________________________________

2. Explain how you could promote good nutrition and health in your school. Give **TWO** (2) ways.

   ___________________________________________________________

   ___________________________________________________________

   ___________________________________________________________

   ___________________________________________________________
3. One of the most killing diseases to the Tongan people is Diabetic. This is primarily due to their eating habit. Write down an appropriate lunch menu for a diabetic woman’s diet. Explain your food choice.

Menu:

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

Reason:

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
MAJOR 4 TEXTILES AND GARMENT CONSTRUCTION

Answer ALL questions in this section

Question B4 Textiles Properties & Fabric Construction

1. Blending of wool and cotton will improve the properties of the fabric.
   
i. List TWO (2) good properties of fabrics that are made from blending of wool and cotton.

   _____________________________________________________________

   _____________________________________________________________

   ii. What could you make from this fabric?

   _____________________________________________________________

   _____________________________________________________________

   iii. How would you launder it?

   _____________________________________________________________

2. Describe the following properties of fibre

i. Resilience

   _____________________________________________________________

ii. Absorbency

   _____________________________________________________________

iii. Elasticity

   _____________________________________________________________

iv. Lustre

   _____________________________________________________________
3. List any **TWO** (2) reasons why we wear clothes.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
1. Describe what happens to the figure when wearing fabric with the following lines.

a. Curved

__________________________________________________________________

__________________________________________________________________

b. Horizontal

__________________________________________________________________

__________________________________________________________________

c. Vertical

__________________________________________________________________

__________________________________________________________________

2. Explain how could you use design to emphasize a person with the following body features:

a. Attractive faces

__________________________________________________________________

__________________________________________________________________

b. Slim waistline

__________________________________________________________________

__________________________________________________________________

c. Attractive legs

__________________________________________________________________

__________________________________________________________________
3. Describe the following design elements with example.

a. Texture

__________________________________________________________________
__________________________________________________________________

b. Point

__________________________________________________________________
__________________________________________________________________

C. Line

__________________________________________________________________
__________________________________________________________________

D. Shape

__________________________________________________________________
__________________________________________________________________

<table>
<thead>
<tr>
<th>Skill level 4</th>
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</thead>
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<tr>
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</tr>
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</table>
Question B6  Garment Construction and Techniques

1. Select **TWO** (2) best methods of transferring pattern symbols, giving reasons for your choices.

   **Method 1:** ______________________________________________________________
   
   Reason: ________________________________________________________________
   
   ________________________________________________________________

   **Method 2:** ______________________________________________________________
   
   Reason: ________________________________________________________________
   
   ________________________________________________________________

<table>
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<tr>
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<td>NR</td>
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</tbody>
</table>

2. Explain the purpose of the following sewing techniques that are used on a garment.

   i. Clip
   
   ________________________________________________________________
   
   ________________________________________________________________

   ii. Dart
   
   ________________________________________________________________
   
   ________________________________________________________________

   iii. French seam
   
   ________________________________________________________________
   
   ________________________________________________________________

<table>
<thead>
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<tr>
<td>0</td>
</tr>
<tr>
<td>NR</td>
</tr>
</tbody>
</table>
3. Explain how you handle the following problems when using your sewing Machine

   i. The lower thread is loosening

      __________________________________________________________
      __________________________________________________________

   ii. Breaking of needle thread

      __________________________________________________________
      __________________________________________________________

   iii. Skipping of stitches

      __________________________________________________________
      __________________________________________________________

<table>
<thead>
<tr>
<th>Skill level 3</th>
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<tbody>
<tr>
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**MAJOR 5: TECHNICAL GRAPHICS**

**Question B1 - TG**

a. Complete the Table below with standard line drawing of the following line types.

<table>
<thead>
<tr>
<th>Line Types (description)</th>
<th>Standard Line Drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Continuous Thin Line</td>
<td></td>
</tr>
<tr>
<td>ii. Thin Dashed Line</td>
<td></td>
</tr>
<tr>
<td>iii. Continuous Thick Line</td>
<td></td>
</tr>
<tr>
<td>iv. Chain Line, Thick at the ends and at change of direction but Thin elsewhere</td>
<td></td>
</tr>
</tbody>
</table>

b. Complete the table below by the correct name of the standard technical drawing symbol.

<table>
<thead>
<tr>
<th>Standard Technical Drawing Symbols</th>
<th>Correct Name of Standard Technical Drawing Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Ø</td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td></td>
</tr>
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<td>iii.</td>
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<table>
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<td></td>
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</tr>
</tbody>
</table>
c. The dimension $\varnothing 12 \pm 25$ is given in the diagram below.

i. What is $25$ mean? : ____________________________________________

ii. What is the total length of the diagram above: ____________________

iii. What is the total height of the diagram above: ____________________

d. Bisect the angle BCA of the triangle ABC given below. Show Construction Line.
e. The projection of an oblique line AB onto the horizontal and vertical planes is given below.

Use the rotational method to determine the true length and true angle of inclination of the line AB to:

i. the horizontal plane
ii. the vertical plane. (Show ALL construction lines)
Question B2 - TG

a. Given below is the plan and incomplete elevation of interpenetration cylinders.
Complete the elevation by drawing of intersection. Show all construction lines.
b. Given below is the Space diagram of parallel forces acting on a beam. Use the Funicular, force and Polar diagram to determine the following:

i. Position of the resultant force.

ii. Reaction RL and RR at the supports.

30 N  35 N  25 N

RL = ________  RR = ________

Scale: ________
c. **Simple Assembly Drawing**

Below is an exploded front view of a CI Support Bracket.

Draw the sectional assembly front view of the CI Support Bracket, taking into consideration the shaft, bushes and the web.
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