



Subject: Grade 9 Technology
Topic: Technology: Term 1 - Mini-exam
Total: 99 Marks

Name: _____

Date: _____

Question 1: Text Input

3 marks

During which phase of the Design Process would you assess the positives and negatives about your design and consider possible improvements?

Note: Your answer must be one word.

This image refers to question: 2



Question 2: Text Input

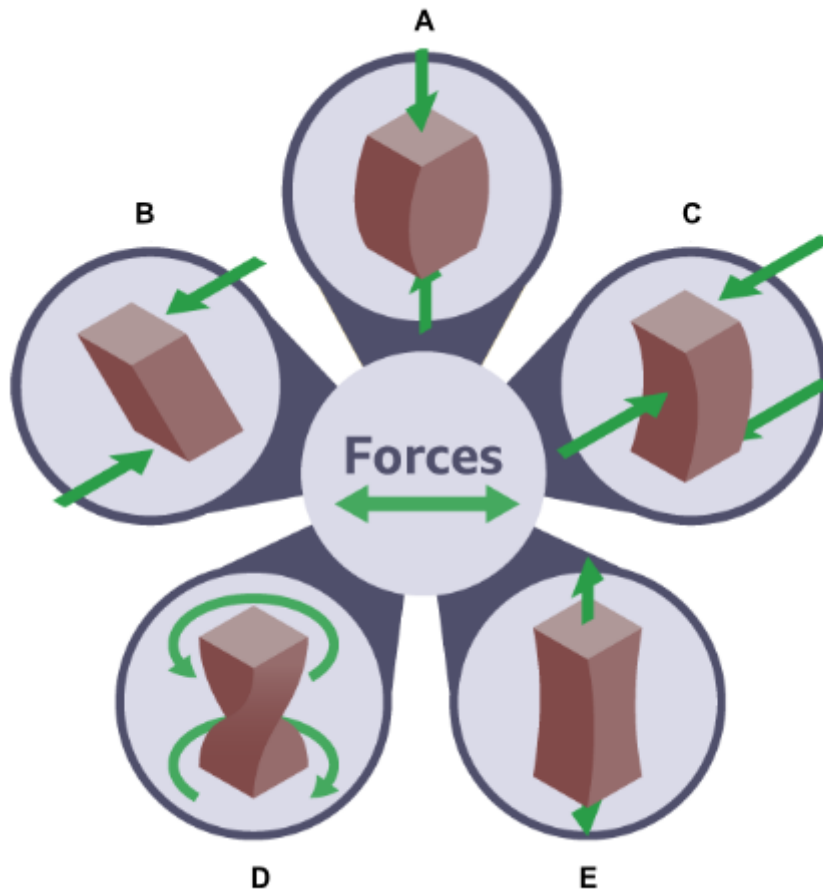
3 marks

Provide the name of the *sloped access* next to the steps which is for wheelchair users.

Note: Your answer must be one word only.

This image refers to question: 3





Question 3: Please Fill In The Blanks

8 marks

This graphic shows the 5 main types of forces acting on structures.

Image (1) shows a tension force. Torsion is shown in image (2) . Image A shows a (3) force and C is a (4) force.

Possible Answers: B | D | E | torsion | compression | bending

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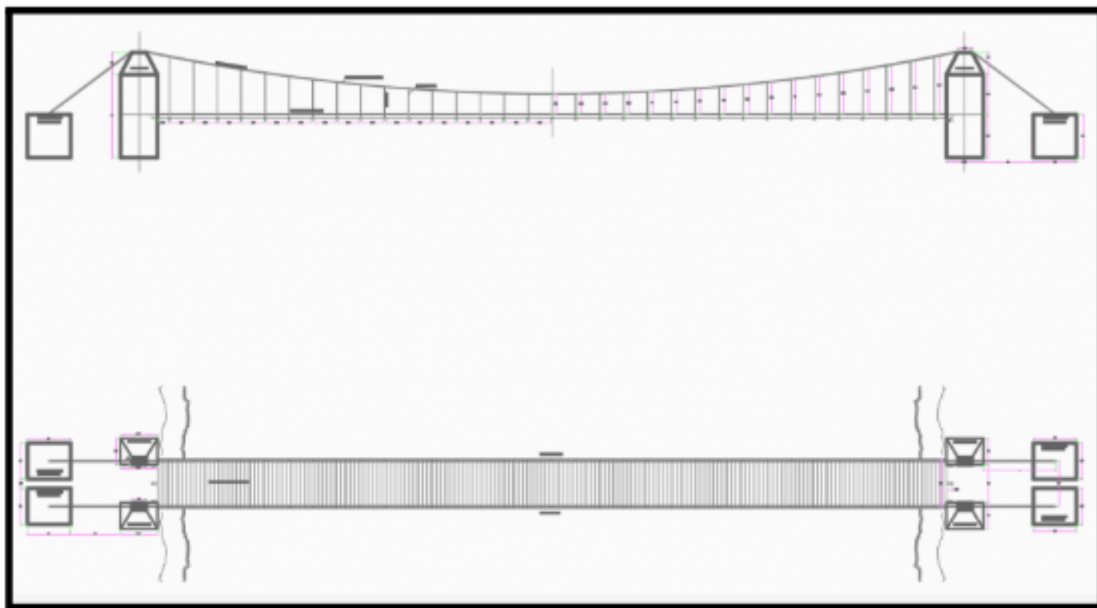
Question 4: Multiple Choice

4 marks

The lines on a technical drawing with accurate measurements are called ... lines.

- | | |
|----------|-----------|
| A | dimension |
| B | height |
| C | scale |
| D | measuring |

This image refers to question: 5

**Question 5: Please Fill In The Blanks**

6 marks

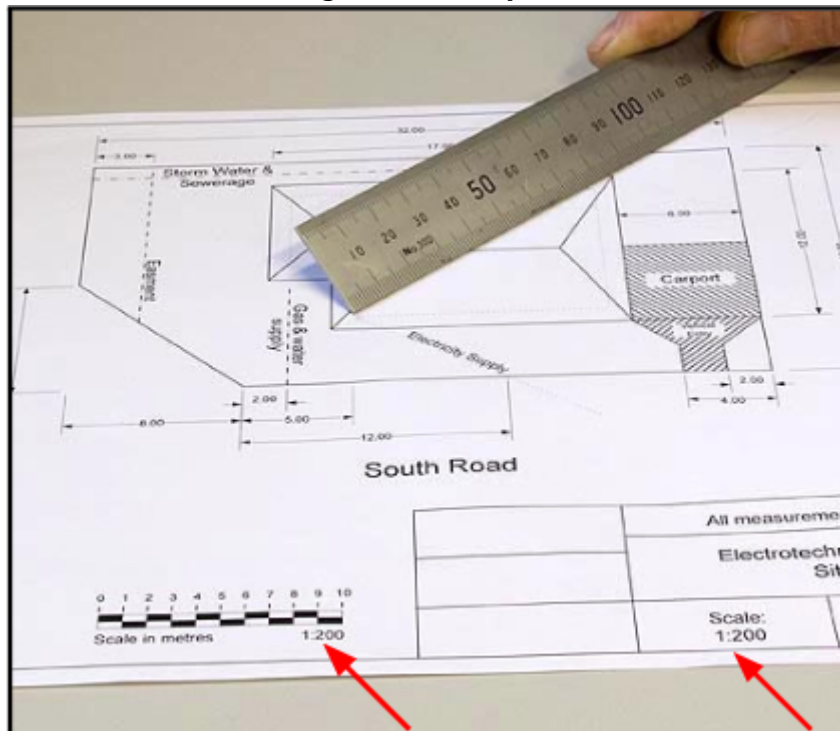
This image shows the side and (1) view of a bridge design. These drawings are part of the views in the (2) projection drawings. If (3) are added to the views they will then become working drawings.

Possible Answers: notes and labels | Isometric | top | dimensions | Orthographic | front

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This image refers to question: 6



Question 6: Multiple Choice

4 marks

This drawing plan shows a scale of 1:200 which means that

- | | |
|----------|---|
| A | the plan is 200 times larger than the building |
| B | the drawing is 200 times smaller than the actual building |
| C | one metre measured on the piece of paper is 200 m |
| D | there are 200 dimensions on the plan. |

This text refers to question: 7, 8, 9, 10, 11

BRIDGE SCENARIO

Your company has been asked to tender to build a bridge. The local high school is next to a busy road. The learners need to cross the road to reach the nearby sports fields, bus stops, taxis, lifts or just to walk home. It is a four lane busy road and is very dangerous for the learners to cross the road, even with a pedestrian crossing as many of the vehicles do not stop. The school has decided to build a pedestrian bridge to cross the road.

The bridge needs to be 2 meters wide to allow at least two pedestrians to walk abreast or pass each other. The bridge must have a vertical clearance of 5 500 mm so that large trucks and busses can pass underneath it. There must be a railing at least 1 m high for safety. The school has two learners who are in wheelchairs and the bridge must be accessible for all learners. The bridge must be constructed from durable, non-corrosive materials. It is also important that the bridge is aesthetically pleasing and blends in well with the existing road and nearby buildings.

You need to design and submit a model bridge to the school. Your proposal must include all relevant technical drawings and the proposed budget.

Question 7: Multiple Choice

4 marks

Consider the given scenario.

Which of these statements is not a specification for the bridge?

- | | |
|----------|--|
| A | The height of the bridge must be 5,5 m above the road. |
| B | The railing on the bridge should be 1 000 mm high for safety. |
| C | The bridge must be able to withstand 500 kg of weight. |
| D | The bridge must be inclusive and also allow access for physically challenged people. |

Question 8: Please Fill In The Blanks

8 marks

When applying the Design Process to the given scenario your first step is to research the type of bridge best suited for this scenario. This is the (1) phase.

Building a model bridge from sucker sticks, straws and cardboard is part of the (2) phase.

Your company must present your model to the school in the (3) phase.

You will draw sketches and create working drawings in the (4) phase of the Design Process.

Possible Answers: Design | Make | Communication | Selling | Process | Evaluation | Investigation

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Question 9: Please Fill In The Blanks

8 marks

The given scenario has various (1) which state the criteria the bridge must meet. It also describes the (2) or challenge which the design must resolve. As well as the functionality of the bridge the designer should also consider the (3) of the bridge. Costing is important and a (4) should be drawn up including all expenses that the bridge construction would incur.

Possible Answers: invoice | problem | design brief | aesthetics | measurement | specifications | purpose | budget

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Question 10: Please Fill In The Blanks

6 marks

According to the scenario the best materials from which to construct the bridge would be (1) . These materials are durable which means they will (2) . They are also both non-corrosive and will therefore (3) .

Possible Answers: not conduct | last a long time | brick and glass | not rust | not bend | concrete and steel

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Question 11: Multiple Choice

4 marks

Consider the given scenario and select the most accurate design brief statement.

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|----------|--|
| A | Design and make a small pedestrian bridge on the grounds of a high school. |
| B | Design and make a pedestrian bridge to allow all high school learners to cross the main road safely. |
| C | Design and make a bridge to allow sporty high school kids to get to their matches. |
| D | Design and make a four lane bridge to cross the road to get to school. |
-

Question 12: Text Input

3 marks

Which *one* of these materials is *malleable*?

- Glass
- Aluminium
- Concrete

Note: Select ONE of the given materials.

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Question 13: Multiple Choice

4 marks

Which of these is not a method used to stabilise structures like bridges and buildings?

- | | |
|----------|----------------------|
| A | Cross bracing |
| B | Wide base |
| C | Triangulation |
| D | Force multiplication |
-

This image refers to question: 14



Question 14: True/False

2 marks

Plastic PVC pipes are used for plumbing and water distribution because they are stiff and resist ground movement.

TRUE

FALSE

Question 15: Multiple Choice

4 marks

Select the most correct dimension conventions that apply to technical drawings.

- | | |
|----------|---|
| A | clear bold outlines, measured in cm, units clearly shown |
| B | broken lines, dimensions in millimetres, circles at the end of each line |
| C | dimensions in millimetres, soft construction lines, arrowheads on lines |
| D | soft construction lines, arrowheads on lines, measurements in centimeters |

This image refers to question: 16



Question 16: True/False

2 marks

This image is an example of a working drawing which is used when building a model bridge.

TRUE

FALSE

Question 17: True/False

2 marks

Structural failure occurs when a structure cannot withstand the forces acting on it.

TRUE

FALSE

Question 18: True/False

2 marks

An Isometric projection is a three dimensional drawing done at a 30° angle to the horizontal.

TRUE

FALSE

Question 19: Text Input

3 marks

Which property makes both glass and plastic (acrylic/ plexiglass) the ideal materials to use for windows?

Note: One word answer.

This image refers to question: 20



Question 20: True/False

2 marks

The people walking across a pedestrian bridge exert a static force on the deck of the bridge.

TRUE

FALSE

Question 21: True/False

2 marks

When making a model during Technology for a mini-PAT at school you should try and include using recycled materials such as discarded paper, cardboard, straws, bottle tops and other plastic items.

TRUE

FALSE

Question 22: Text Input

3 marks

When designing a new product or structure is it more important to focus on the **appearance** or **function** of the design?

Note: Your answer must only be one of the bold words.

Question 23: Text Input

3 marks

The load in a truck should be **evenly** / **unevenly** distributed.

Note: Select ONE of the words in bold to complete the statement correctly.

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Question 24: Text Input

3 marks

Is high density a property of clay bricks?

Note: Your answer must only be **YES** or **NO**.

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Question 25: Please Fill In The Blanks

6 marks

A staircase is used to access a higher place or next level in a building. Steps consist of vertical (1) and horizontal (2) . For safety a (3) must be added to any open side of a staircase.

Possible Answers: treads | platforms | risers | balcony | steps | handrail

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Total: 99 Marks