



Noah's Ark Independent Primary School

Subject: Technology	Examiner: Moyo, S.
Type: Mid-Year Exam	Moderator: Rwizi, A
Date: 20 May 2019	Grade: 7
Marks: 100 Marks	Time: 2 hours 30 minutes

Name: _____

Instructions:

Read the questions carefully before you start writing.

Make sure you answer ALL the questions.

Write neatly and legibly.

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1. Multiple choice. Circle the correct answer. (5)
 - 1.1 The design process involves the following stages.
 - a. Investigate, develop, make and communicate.
 - b. Investigate, design, evaluate and make.
 - c. Investigate, draw, make, and communicate.
 - d. Investigate, design, make, evaluate and communicate.
 - 1.2 The difference between frame structure and shell structure
 - a. Shell structure break easily compared to frame structure.
 - b. Frame structure should be stronger than shell structure
 - c. Both structures are forms of construction that support the load.
 - d. Shell structure support from outside and frame structure from inside.

- 1.3 A fixed relationship between a real object and a drawing.
- Sketch
 - Scale
 - Dimension
 - Measurement
- 1.4 When a small input is turned into a bigger output force, it is called.
- Mechanical advantage.
 - Mechanical disadvantage.
 - Mechanical systems.
 - None of the above.
- 1.5 The state of being steady and unlikely to change, fall or move is
- Stability
 - Rigidity
 - Strength
 - All of the above.

2. Complete the following sentences by choosing a word in the bracket. Simply underline it. (3)

2.1 _____ makes modifications or alterations easy and quick (scaling / dimensioning / sketching)

2.2 A _____ is a horizontal cross piece in a frame structure that supports the other members by holding or pulling the sections together (tie beam / strut / column)

2.3 Thick, dark, continuous lines that indicate the outlines of an object and all the parts that are visible from outside are called _____ (construction / outlines / hidden lines)

3. Your friend argues that landline telephone system should be abolished because this is the 21st century and the technological generation where only cell phones should be used. You are of the different opinion; you feel they still have a place in this century. Justify your answer. (6)

4. State whether TRUE or FALSE. (4)

4.1 Triangular shapes in order to make a frame structure stronger. _____

4.2 Design issues include centre of gravity, foundation , guy and visual pollution. _____

4.3 A closed system contains a fixed amount of a substance under pressure and does not let any of that substance in or out. _____

4.4 Mechanical advantage of third class levers is always: $MA < 1$

5. Match the words in column A to definitions in column B (3)

Column A	Answer	Column B
Column		a) Tensioned cable that is used to keep a vertical structure upright.
Foundation		b) A vertical structural element that transmits the weight of the structure above to the other structural elements
Guy		c) The load bearing part of a structure on top of which other parts are built

6. Cell phone towers are designed to transmit signals so that cell phone users can talk to each other. When designing such a tower there are several design issues to consider. Discuss centre of gravity as one of the issues to consider. (7)

7. Your aunt has moved into a home for old people due to her age. She needs a phone to use so she can contact you since you cannot always visit her due to work commitments. She is confusing whether she should go for a cell phone or a landline. Describe to her the disadvantages of both these phones so she can choose from an informed position. (8)

8. Read the case story provided then answer the following:

Case study How cellphones affect bees

Research has shown that the signals from cellphones affect bees.

Bees react to cellphones placed near or in hives. The bees sense the signals transmitted when the phones rang and make a buzzing noise during the calls.

The phone signals confuse the bees and cause them to fly erratically.

Bees are pollinators so they are a crucial part of our agricultural and ecological systems.



- 8.1 Evaluate the effect of cell phones on agriculture and the economy. (4)

8.2 On the basis of your answer in 8.1 would you recommend the banning of cell phones? Justify your answer. (3)

9. Study the picture below and answer the questions that follow

a)



b)



c)



d)



e)



f)



g)



h)



9.1 Classify the above picture of structures as frame, shell or solid and whether they are natural or man-made. (4)

Frame structure		Shell structure		Solid structure	
natural	man-made	natural	man-made	natural	man-made

9.2 Structures have four functions: to protect, support, contain and span. For questions a. and b. write your answer in the table below. (6)

- Match an example from Question 9.1 with each of the functions mentioned.
- Add an example of your own for each of the functions.

Functions of structure	Example from Q9..	Your own example
Protect		
Support		
Contain		
Span		

10. Study the two cell phone towers below then answer the questions that follow.



Tower 1



Tower 2

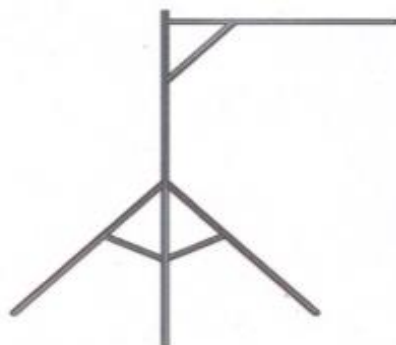
10.1 Identify two features in tower 1 that makes it stable. (2)

10.2 Explain what makes tower 1 strong? (3)

10.3 Compare the impact of the two towers on the environment. You can use this table below to compare the two towers. (6)

Tower 1	Tower 2

11. Study the structure below and answer the questions that follow.



a. Identify a strut and indicate it with a letter "a". (1)

b. Identify a tie beam and indicate it with a letter "b". (1)

c. Explain the term compression. (2)

d. Which is used to manage compression a strut or a tie beam? (1)

12. Your class is having a cake sale to collect money to provide for disadvantaged children that attend the school. You need a structure to use to display the cakes on. The structure must be ready for use in 3 days time. It must be strong enough to support the weight of the cakes and ice cream container, that you will need to use as a till. The structure must be 70 cm high, 100 cm long and 50 cm wide. You may use boxes made from corrugated card but not those made from polystyrene.

12.1 Formulate a design brief for the above situation. Your design brief must address the following: (4)

- a. The product that must be designed.
- b. Who the product is for.
- c. The purpose of the product.
- d. Safety.

12.2 List three specifications of the product. (3)

12.3 Name two constraints.

(2)

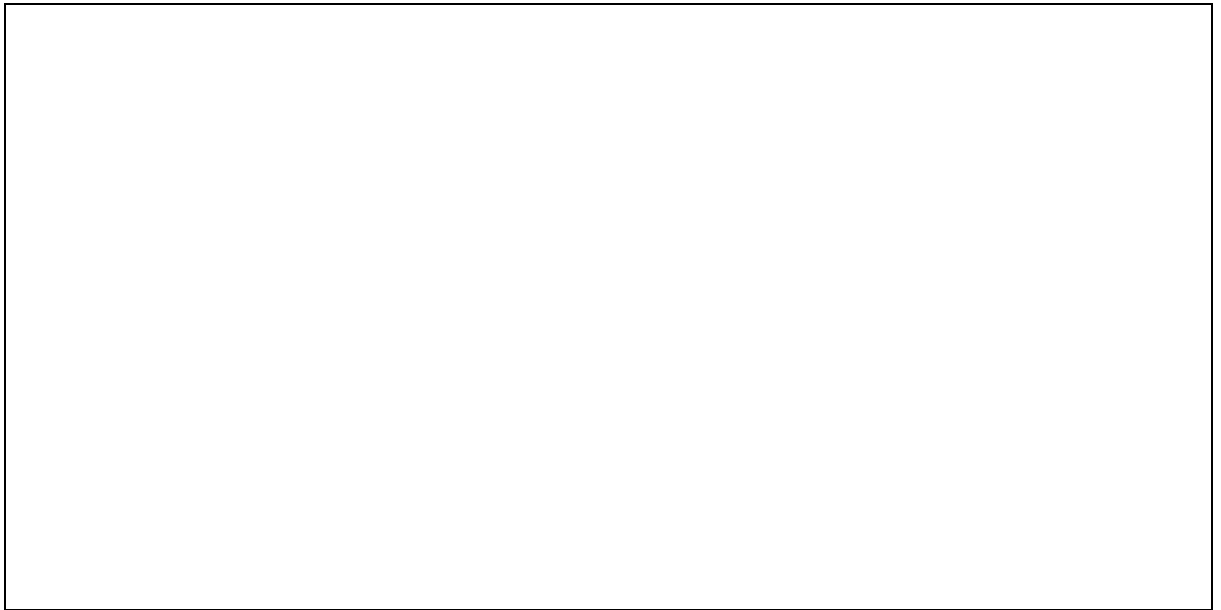
13. You are to draw part of the structure explained in question 12. Use the scale of 1:10.

13.1 Calculate the length of the structure on the drawing. (2)

13.2 Calculate the width of the structure on the drawing. (2)

13.3 Calculate the height of the structure on the drawing. (2)

13.4 Using the dimensions you calculated in 13.1-3. Draw a 3D oblique drawing of the top surface of the table, which is a rectangular prism. Use thickness of 2 cm. Do not erase your construction lines. Include your hidden lines too. (12)



14. Evaluate the importance of using a lever that gives mechanical advantages. (2)

15. Define a mechanism. (2)

_____ / 100 Marks