NAME: _____

GRADE: _____

HILLCREST HIGH SCHOOL

GRADE 8 TECHNOLOGY EXAM JUNE 2014

TIME: 2 HOURS

MARKS: 120

Instructions:

1. Answer on this question paper.

QUESTION 1: MATCHING COLUMNS - (10)

Choose a description from column B that matches an item in column A. Write only the letter in the blank column in the middle of the table.

COLUMN A	ANSWER	COLUMN B
1.1 Frame structure		A. Frame structures that are used to support heavy objects over great distances.
1.2 Roof truss		B. A member that pulls two other members of a structure together.
1.3 King post		C. Holds a frame structure together by pushing against it.
1.4 Queen post		D. Makes a structure stiff by members that cross over one another.
1.5 Strut		E. A beam that connects two opposite rafters it is in tension.
1.6 Tie		F. A framework used to construct the roof of a house.
1.7 Rafter		G. A truss with the centre beam attached to the tie beam.
1.8 Tie beam		H. This structure supports a load or spans a gap.
1.9 Pylon		I. Parallel beams that are connected to a roof truss.
1.10 Cross Bracing		J. A truss with two supporting beams attached to the tie beam.

QUESTION 2: TRUE OR FALSE (10)

State whether the following statements are true or false. Write the answer in column B.

COLUMN A	COLUMN B
2.1 A shell structure is hollow and can be used to keep things safe.	
2.2 An electric pylon is a shell structure.	
2.3 A golf ball is an example of a mass structure.	
2.4 Cross bracing is not necessary when building electric pylons.	
2.5 Roof trusses form strong triangular shapes.	
2.6 A tie beam will be under a twisting force.	
2.7 Concrete is strong in compression.	
2.8 The wire cables in a suspension bridge experience compression.	
2.9 Steel is strong in tension.	
2.10 Bricks are strong in compression	

QUESTION 3 – MULTIPLE CHOICE (10) Circle the correct answer

Read through each of the following statements. Circle the correct answer.

3.1 I – beams are usually made from:

A Wood.

B Steel or aluminium.

C Concrete.

D Bricks.

3.2 A lintel is a:

A Beam above a window or door.

B A column under a roof.

C Support for a dome.

D Made from polystyrene.

3.3 A suspension bridge:

A Is used to span short distances.

B Has one central support column.

C Is arch shaped.

D Is held in place by cables.

3.4 A cable stayed bridge:

A Has steel girders as the frame.

B Has arches under the road way.

C The cables are connected directly to the nearest pole.

D Has only one cable.

3.5 The longest suspension bridge in the world is in:

A Japan

B China

C America

D Russia

3.6 An arch:

A Was used in buildings for the first time about 100 years ago

B Can span greater distances than beams.

C Is held together by tensile forces.

D Is square in shape.

3.7 An arch bridge:

A Needs to have triangulation.

B Was one of the earliest designs for bridges.

C Needs a truss on top of it.

D Cannot be made from stone.

3.8 A cantilever:

A Is a type of strut.

B Is a vertical structure.

C Is supported at two ends.

D Is a beam that is supported at one end only.

3.9 An aeroplane's wings are an example of

A A cantilever
B A lintel
C An arch
D A column

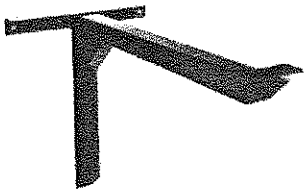
3.10 A column is:

A A vertical member of a frame structure
B A horizontal member of a frame structure
C Slanting beam.
D A guy rope.

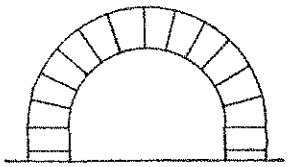
QUESTION 4 (7)

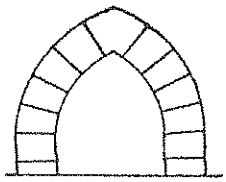
Look at the structures below. Write down the name of these structures. Choose from this list: i- beam, tiebeam, suspension bridge, arch, column, cantilever, lintel, cable stayed bridge. Write the answers on the line under the picture.

A_____

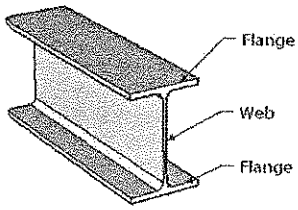


B_____

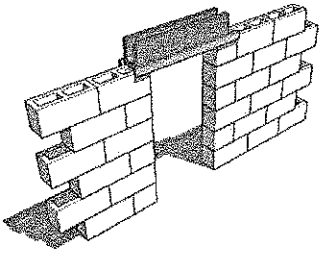




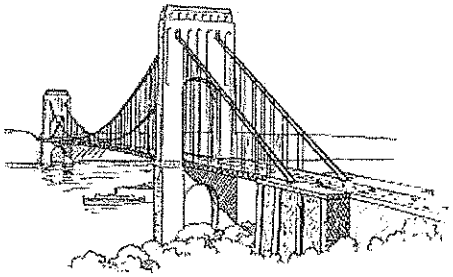
C_____



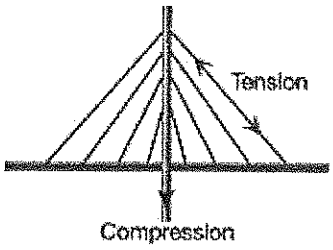
D_____



E_____



F_____



G_____

QUESTION 5 (6)

List the three most common causes of structural failure and describe each one.

1.

2.

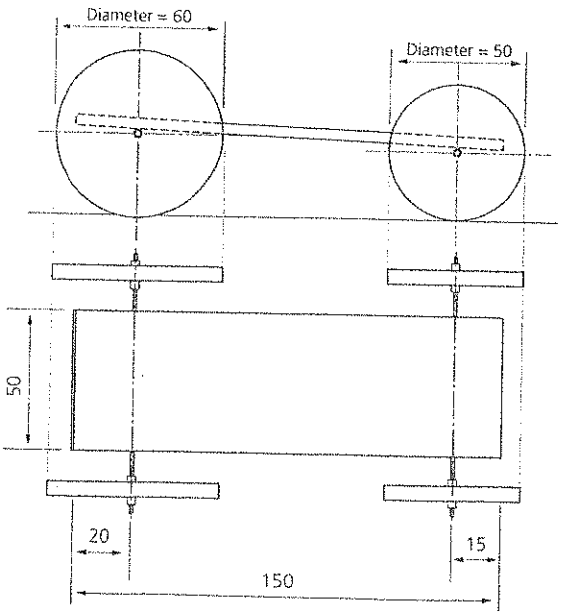
3.

QUESTION 6 (3)

What makes a structure stable?

QUESTION 7 (10)

Below is a working drawing of a cardboard vehicle. Make a list of all the special lines that were used to make the drawing. Include in your list each type of line and a copy of the line as it appears on the drawing.

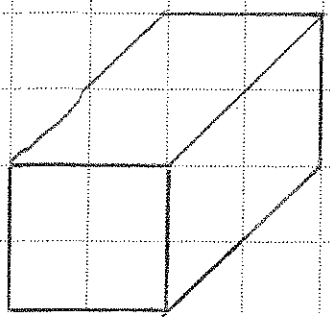


Answer in this block below

QUESTION 8 (15)

Copy the drawing below. Use the scale 2:1. This means you have to scale your drawing up. Add dimensions (measurements) to show the length, height and depth of the drawing and use the correct line types for each part of the drawing. Include the hidden detail. Start your drawing on the bottom line to fit it in.

Scale 1:1



QUESTION 9 (12)

Look at the picture on the right, and answer the questions in the space below the question.

9.1 Identify each simple machine in the egg beater. (3)

_____

_____

9.2 Explain the meaning of mechanical advantage. (4)

_____

_____

_____

_____

9.3 Explain how this machine works. Use the words input, process and output to help you with your answer. What is the input motion and the output motion? (5)

_____

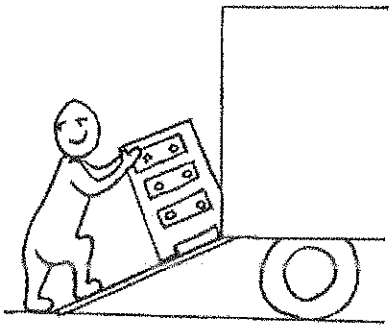
_____

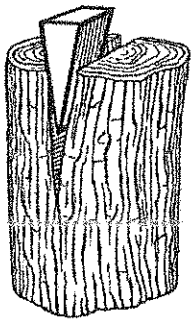
_____

_____

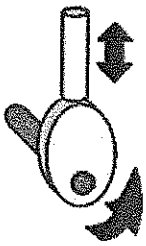
10. **QUESTION 10 (4)**

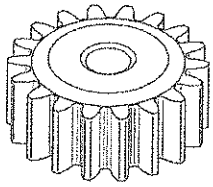
Identify the simple machines below.





10.1 _____ 10.2 _____

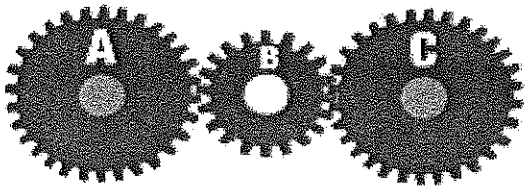




10.3 _____ 10.4 _____

QUESTION 11 (3)

Look at the drawing of the gears below and answer the questions.



11.1 What is the gear in the middle called? (1)

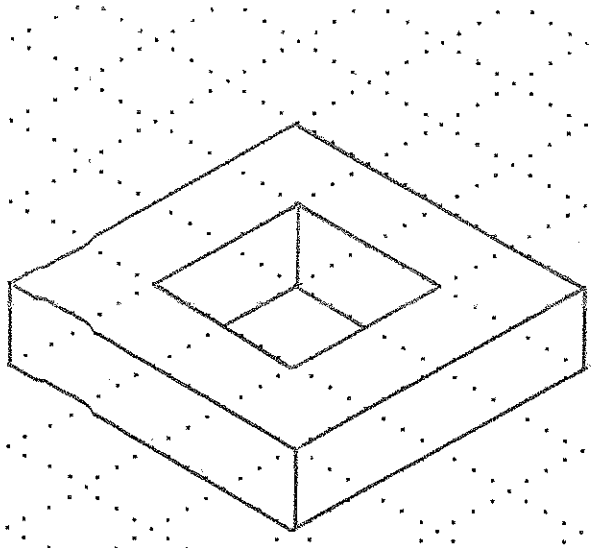
_____

11.2 What is the function of this gear? (2)

_____

QUESTION 12 (10)

Copy the picture of the isometric drawing onto the grid.



QUESTION 13 (10)

Do a double vanishing point drawing of a house in the space below. Use the lines provided for your picture. Render and shade the house. You may also use pencil or colour. Your house should have a door and windows.

QUESTION 14 (10)

Do a 3 D drawing of a design for a funfair ride in the space below. Make your drawing as big as possible. Use all the available space. Render, shade and add colour to your design to make it look realistic.