HERBERT HURD PRIMARY SCHOOL

GRADE 7	FIRST SEMESTER EXAMINATION	JUNE 2017
TIME: 1 HOUR	Technology	TOTAL: 35

1) Give a definition for the following:

Mechanical advantage.....

Spanning structure.....

Simple mechanism.....

Pneumatics.....

(4)

2) Write down three steps of the design process (3)

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3) Case study: *The Merciless Alarm Clock*

An interesting design

The Merciless* Alarm Clock was invented by students of the Technical University of Wildau in Germany. It was exhibited to the public at the 2011 CeBIT High Tech Fair. This is the world's largest IT expo, where thousands of the latest gadgets are put on display.

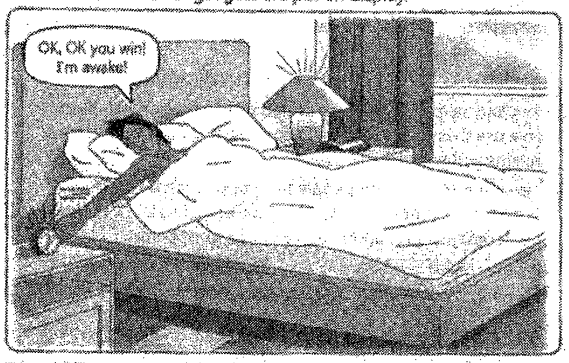

Figure 1.2 The sequences of the irritating alarm clock

How does this irritating alarm work?

Step 1: At the set time the curtains get instructed to open.
Step 2: Five minutes later the lights get turned on.
Step 3: Five minutes later the radio switches on loudly.
Step 4: Five minutes later the alarm makes a variety of random* irritating noises.
Step 5: You can only stop the alarm by standing on the sensor pad for five seconds.
Step 6: Now that you are awake it will make coffee.

(a) Describe **the problem** that made the students design and make the alarm clock. (1)

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(b) Explain why you think it was important for the students to **draw the alarm, before making it.** (2)

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(c) List 2 methods of **investigation** the students could have used at the start of their design process. (2)

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(d) How did the students **communicate** their invention? Why did they choose this venue? (3)

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(e) Why would the students have needed to evaluate their product? (3)

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(f) Specifications are the exact requirements that guide the design process. Write down three things they often include. (3)

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4) ***The problem: People in wheelchairs find it difficult to pick up things they have dropped on the floor.***

Using this information, write:

(a) the design brief (2)

(b) specifications-***in bullet points*** (3)

(c) constraints-***in bullet points*** (2)

(d) three sentences that you could use as an evaluation of your product (3)

(e) Now plan your idea by sketching and labelling it on the space provided below the lines on the next page. (4)

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