



UNIVERSITY  
OF  
JOHANNESBURG

<b><u>FACULTY</u></b>	: EDUCATION
<b><u>DEPARTMENT</u></b>	: CHILDHOOD EDUCATION
<b><u>CAMPUS</u></b>	: SWC
<b><u>MODULE</u></b>	: SATINA2 SCIENCE AND TECHNOLOGY FOR THE INTERMEDIATE PHASE 2
<b><u>SEMESTER</u></b>	: First
<b><u>EXAM</u></b>	: Exam May 2019

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**MODERATOR** : DR M Kazeni (UJ)

**DURATION** : 2 HOURS

**MARKS** : 100

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NUMBER OF PAGES: 6 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
2. Number your answers clearly
3. Write neatly and legibly.

**QUESTION 1**

- 1.1 Discuss your understanding of technology by highlighting its most important characteristics. (5)
- 1.2 Differentiate between the natural world and the technological world. (4)
- [9]**

**QUESTION 2**

Copy the table below in your answer book. Give one **unique** property of each metal and an example of a product made from the specific metal.

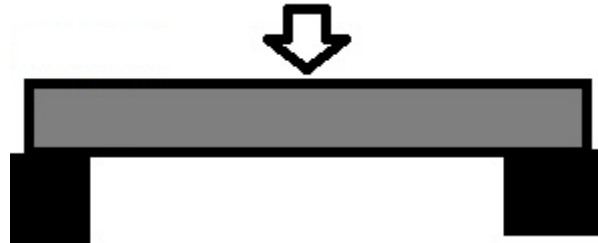
	Metal	Unique property	Product	
2.1	Mild steel			(2)
2.2	Stainless steel			(2)
2.3	Aluminium			(2)
2.4	Copper			(2)
2.5	Brass			(2)

**[10]****QUESTION 3**

- 3.1 Which four (4) aspects must be considered by a designer when choosing a material for a specific product? (4)
- 3.2 Briefly discuss the concept “composite material” by referring to an example. (3)
- [7]**

**QUESTION 4**

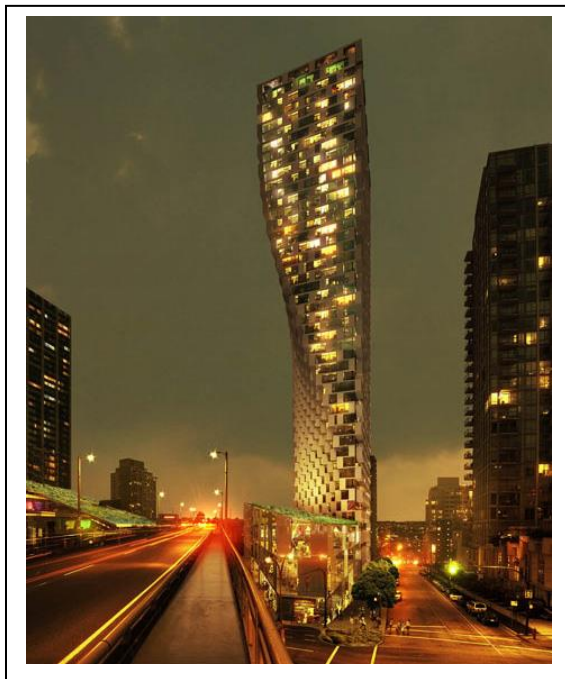
4.1 Figure 1 shows a structural member under load.



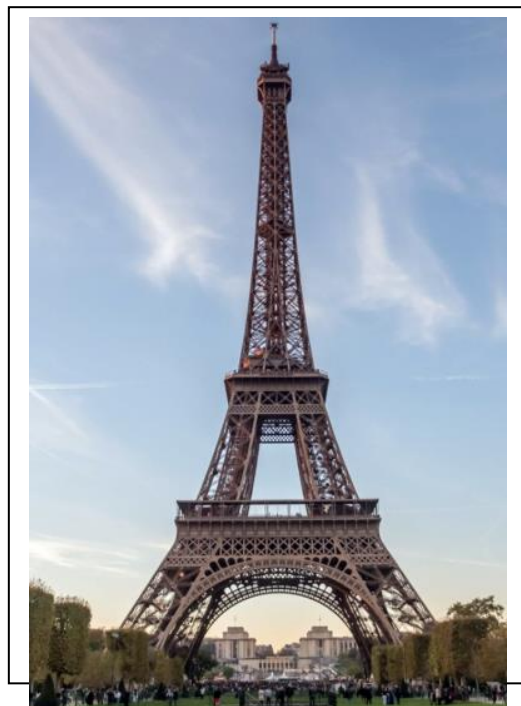
**Figure 1**

Sketch a similar structural member to the one in Figure 2 and indicate the three (3) forces that normally act on such a member under load. (5)

4.2 Figure 2 and Figure 3 shows different structures. Analyse the pictures and identify the most stable structure of the two. (2)



**Figure 2**



**Figure 3**

4.3 Motivate your answer to question 4.2 by referring to building design aspects that influence the stability of a structure. (4)

**[11]**

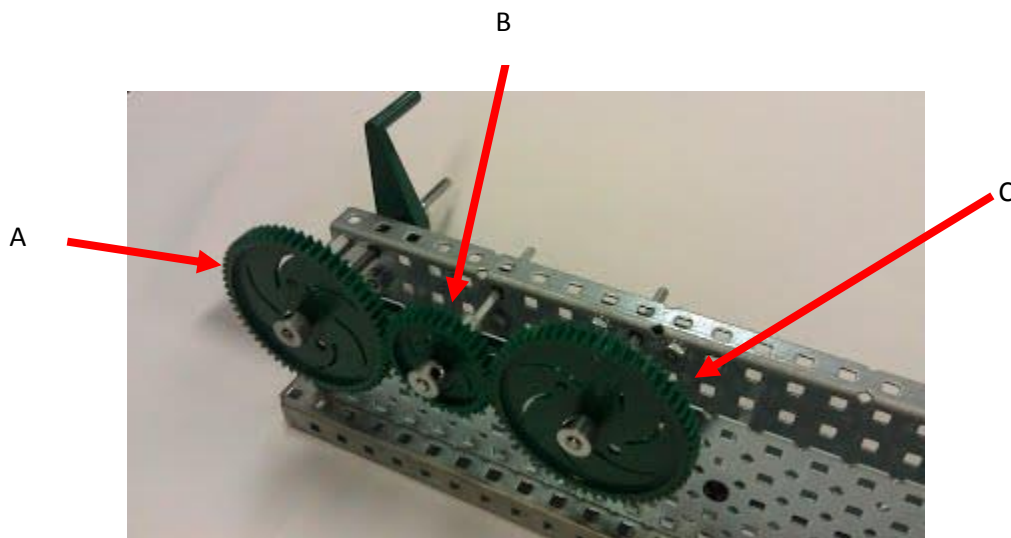
4/...

**QUESTION 5**

Fibres used in textiles are obtained from different sources. Differentiate between the various sources of fibres by referring to an example of each. [6]

**QUESTION 6**

6.1.1 Identify the transmission mechanism in Figure 4 and justify its use. (3)



**Figure 4**

6.1.2 What is the term used for part “B”? (1)

6.2 Identify the mechanism shown in Figure 5 and give an example of where it is typically used. (3)

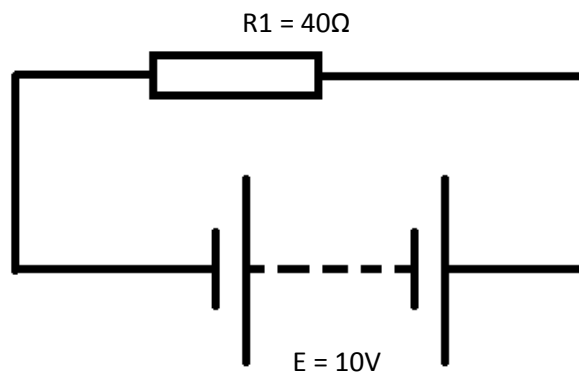


**Figure 5**

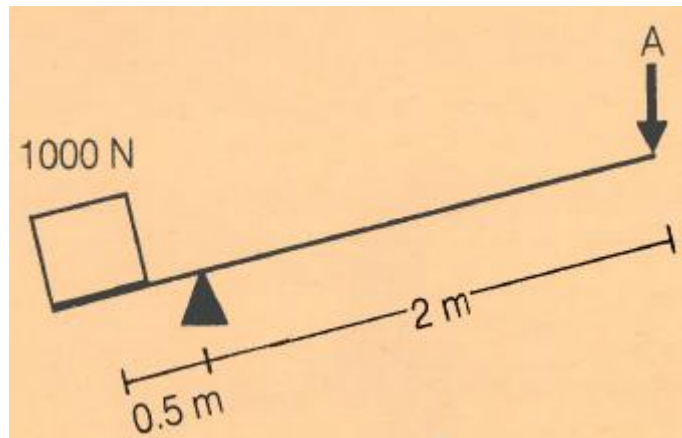
[7]

**QUESTION 7**

- 7.1 Your bar heater's element has a power rating of 1800 watt. You keep it switched on for **four** (4) hours to heat your room. The current rate for electric energy in your area is R1.50 per Kwh. Calculate how much it will cost you to heat your room. (4)
- 7.2 Differentiate between renewable and non-renewable energy sources by referring to an example of each. (4)
- 7.3 Calculate the current in the circuit below. (3)



- 7.4 Write down the unit for measuring, as well as the symbol for each of the following:
- 7.4.1 Energy (2)
- 7.4.2 Power (2)
- 7.4.3 Potential difference (2)
- 7.4.4 Resistance (2)
- 7.5 The diagram below shows a lever pivoting on a fulcrum. Calculate the force that needs to be applied to the lever at **A** to just balance the load.



(6)

- 7.6 Calculate the kinetic energy a car has if it has a mass of 1300kg and travels at 40 kilometers per hour. ....(6)

**[31]****QUESTION 8**

- 8.1 Briefly explain what a homogenous mixture is. (2)
- 8.2 Briefly explain what a heterogeneous mixture is. (2)
- 8.3 Distinguish between a solution and a colloid by referring to an example of each. (4)
- 8.4 Briefly explain the difference between an element and a compound and give an example of each. (4)
- 8.5 Briefly explain what the periodic table is. (2)
- 8.6 What would you call a liquid with a pH of 3? (1)
- 8.7 What would you call a liquid with a pH of 9? (1)
- 8.8 What would the pH of distilled water be? Motivate your answer. (3)

**[19]****TOTAL: 100**