UNIVERSITY OF JOHANNESBURG

FACULTY	: EDUCATION
DEPARTMENT	: CHILDHOOD EDUCATION
CAMPUS	: SWC
MODULE	: SATINA2 SCIENCE AND TECHNOLOGY FOR THE INTERMEDIATE PHASE 2
SEMESTER	: First
EXAM	: June 2020

ASSESSOR(S) : MR W ENGELBRECHT

MODERATOR : DR CF van As (UJ)

DURATION : SUBMISSION **MARKS** : 100

NUMBER OF PAGES: 7 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
2. Number your answers clearly.
3. You will receive this take home exam 72 hours (3 days) before the submission date.
4. You are allowed to complete this assignment on your own time at home, but submit the answers electronically through Blackboard on the scheduled examination date.

QUESTION 1

1.1 Briefly discuss the purpose and nature of Technology education. (4)

1.2 Write a paragraph on the relationship between Science and Technology highlighting their unique characteristics. (4)

[8]

QUESTION 2

2 Two different methods were used to make the frame structures in the pictures below more rigid.

2.1 Identify the method used to make the frame structure in Figure 1 more rigid, and give another example of an application of the same method. (3)

Figure 1

2.2. Identify the method used to make the frame structure in Figure 2 more rigid, and give another example of an application of the same method. (3)

Figure 2

[6]

QUESTION 3

3.1 Identify the transmission system used in Figure 3 and explain why it is used in this particular application. (4)

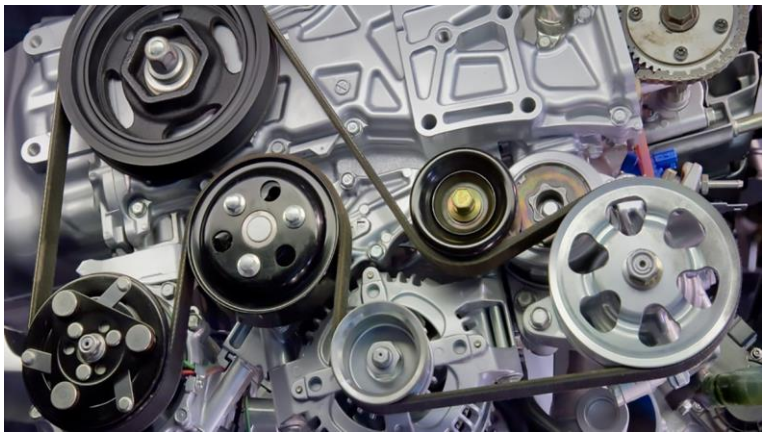


Figure 3

3.2 Identify the transmission system used in Figure 4 and briefly discuss its advantages and disadvantages by referring to an application. (4)

Figure 4

3.3 Identify the transmission system used in Figure 5 and briefly discuss its advantages and disadvantages by referring to an application. (4)

Figure 5

3.4 Figure 6 shows tools that represent levers.

		
A	B	C

Figure 6

3.4.1 Analyse Figure 6 and classify each tool as a class1, 2 or 3 lever. (3)

3.4.2 Make a freehand sketch of **A** and indicate the load, the fulcrum and the effort on the sketch. (3)

3.4.3 Make a freehand sketch of **B** and indicate the load, the fulcrum and the effort on the sketch. (3)

3.4.4 Make a freehand sketch of **C** and indicate the load, the fulcrum and the effort on the sketch. (3)

[24]

QUESTION 4

The table below contains information about different polymers with some of the information omitted. Copy the table and "fill in" the missing information.

Polymer name	Thermo plastic	Thermo-setting plastic	Properties	Common uses
High density polythene	✓		Hard and stiff quite tough Softens at 120-130˚C	
				Garden hose Electrical cable insulation Waterproof clothing Floor tiles
		✓	Very hard and brittle Good thermal insulator Dark glossy colour	
			Rigid High impact strength Softens around 150˚C Has the lowest density of the thermoplastics Can be flexed many times without breaking	
Low density polythene	✓			Plastic bags Squeezy bottles Buckets and bowls
	✓		Available in fibre and solid form Hard and tough God resistance to chemical attack Low frictional properties Hard wearing	
Acrylic	✓			Safety glasses Car's rear lights Fluorescent light diffuser

[13]

QUESTION 5

5.1 Write a short passage describing the steps of the process of turning fibres into textiles by referring to examples. (4)

5.2 Briefly discuss the preservation method used for the following food products:

5.2.1 Instant coffee. (2)

5.2.3 Bacon. (2)

[8]

QUESTION 6

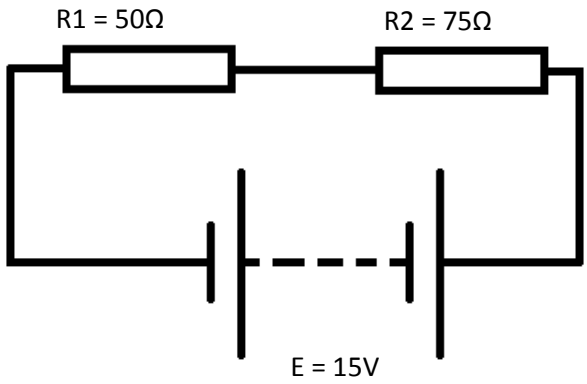
6.1 Write a passage in which you discuss the difference between chromium plated steel and stainless steel by referring to an example of a product made each. (4)

6.2 Motivate the use of concrete as a building material by referring to its ingredients and properties. (5)

[9]

QUESTION 7

7.1 Study the circuit diagram below and answer the questions that follow.



7.1.1 Calculate the total resistance in the circuit. (3)

7.1.2 Calculate the current in the circuit. (3)

7.2 Write down the unit for measuring, as well as the symbol for each of the following:

7.2.1 Electric resistance (2)

7.2.2 Electric current (2)

7.2.3 Potential difference (2)

7.3 Calculate what the energy cost would be to keep a light bulb with a power rating of 150W switched on for six (6) hours if the cost of energy is R1.70 per kWh. (4)

[16]

QUESTION 8

8.1 Draw a diagram of a simple atom and label the different parts (6)

8.2 Differentiate between an atom and a molecule by referring to an example of each. (4)

8.3 What does the atomic number of an element in the periodic table refer to? (2)

8.4 What is the pH scale used for? (2)

8.5 How does a pH indicator work? (2)

[16]

TOTAL: 100