UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
JUNE EXAMINATION 2017

PROGRAMME: B Ed (INTERMEDIATE PHASE)
MODULE: SCIENCE AND TECHNOLOGY FOR THE INTERMEDIATE PHASE 2
CODE: SATINA2
TIME: 2 hours
MARKS: 100
EXAMINER: Mr W Engelbrecht
MODERATOR: Dr CF Van As (UJ)

(This paper consists of **five (5)** pages and **eight (8)** questions)

INSTRUCTIONS

Read the following instructions carefully before answering the questions:

1. Answer all the questions.
2. Write neatly and legibly.

QUESTION 1:

1.1 Explain your understanding of technology by describing its most important characteristics. (7)

1.2 Differentiate between the natural world and the technological world by describing each of them. (6)

[13]

QUESTION 2

Copy the table below in your answer book and differentiate between ferrous and non-ferrous metals by completing the table.

		Ferrous metals	Non-ferrous metals	
2.1	Examples of metals			(2)
2.2	Properties			(4)

2.3	Examples of products			(4)
2.4	Examples of processing			(2)

[12]

QUESTION 3

3.1 Which four aspects will you consider when choosing a material for a specific product? (4)

3.2 Briefly explain why it is necessary to fire clay products after it has been formed. (3)

3.3 Briefly discuss the concept "composite material". (2)

3.4 Which "composite material" is used to fabricate bullet proof jackets? (1)

3.5 Briefly describe the process of curing concrete and explain why it is necessary. (4)

[14]

QUESTION 4

The members of structures have to withstand a variety of forces.

4.1 Figure 1 shows a structural member under load. Identify the member. (2)

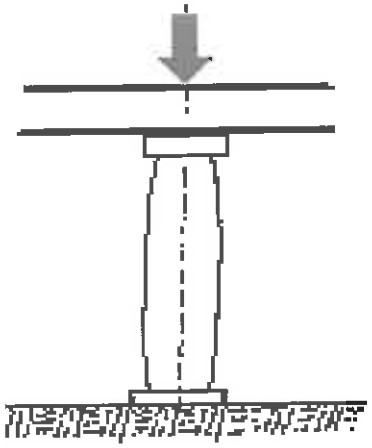


Figure 1

4.2 Sketch a similar structural member to the one in Figure 1 and indicate the main force acting on it. (2)

4.3 Figure 2 shows a structural member under load. Identify the member. (1)

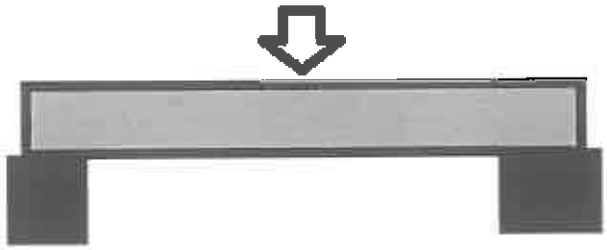


Figure 2

4.4 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)

4.5 Figure 3 and Figure 4 shows different tower structures. Analyse the pictures and identify the most stable structure of the two. (2)

Figure 3

Figure 4

4.6 Motivate your answer of 4.5 by referring to building design aspects that influence the stability of a structure. (5)

[17]

QUESTION 5

5.1 Fibers used in textiles are obtained from different sources. Differentiate between the various fibers we use in textiles by drawing a diagram of the classification of textile fibers. (7)

5.2 Write a short paragraph on the preservation of food by referring to three examples. (3) (6)

[13]

QUESTION 6

6.1 Identify the transmission mechanism in Figure 5 and justify its use. (3)

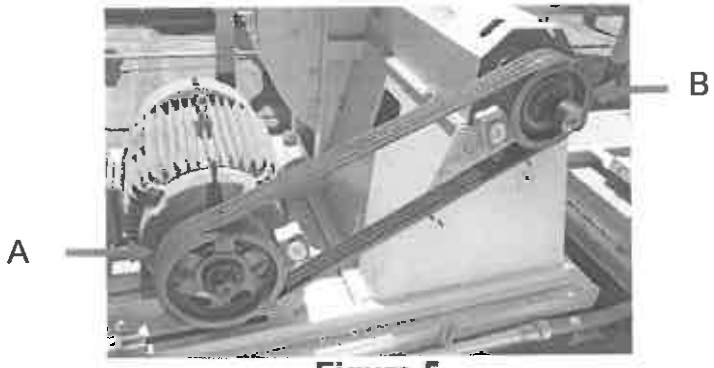


Figure 5

6.2 Sketch a similar mechanism to the one in Figure 5 and indicate the direction of rotation of "A" and "B". (4)

6.3 Identify the system shown in Figure 6 and give an example of where it is typically used. (3)

Figure 6

6.4 Identify the transmission mechanism in Figure 7 (1)

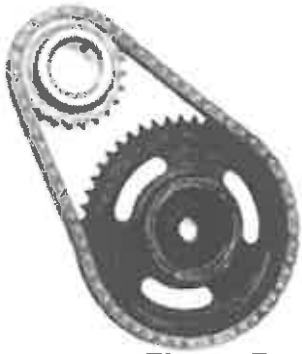


Figure 7

6.5 Give an example of an application where you would rather use a transmission system like the one in Figure 7 than the one shown in Figure 5. Motivate your answer. (3)

[14]

QUESTION 7

7.1 Define the concept "fossil fuel" and name three forms of fossil fuels.

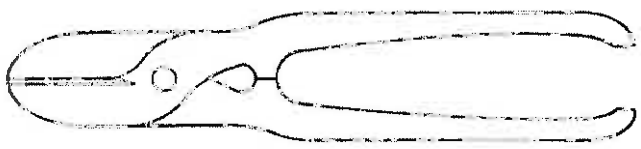
(5)

7.2 Briefly discuss any three (3) alternatives to fossil fuel that may be used for generating electricity by referring to its advantages and disadvantages. (6)

[11]

QUESTION 8

Apply the block method to draw a freehand sketch of the tin snips, twice the size of the drawing below.



[6]

TOTAL: 100