



UNIVERSITY
OF
JOHANNESBURG

<u>FACULTY</u>	: EDUCATION
<u>DEPARTMENT</u>	: CHILDHOOD EDUCATION
<u>CAMPUS</u>	: SWC
<u>MODULE</u>	: SATINA2 SCIENCE AND TECHNOLOGY FOR THE INTERMEDIATE PHASE 2
<u>SEMESTER</u>	: First
<u>EXAM</u>	: June 2021

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MODERATOR : DR CF VAN AS (UJ)

DURATION : SUBMISSION **MARKS** : 100

NUMBER OF PAGES: 6 PAGES

INSTRUCTIONS:

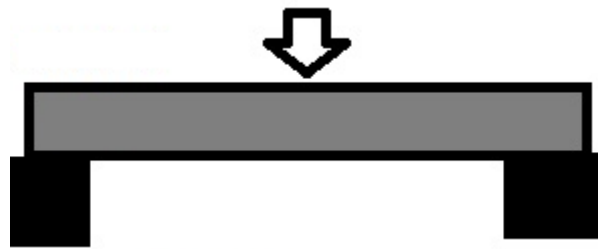
1. Answer ALL THE QUESTIONS.
2. Number your answers clearly.
3. You will receive this take home exam 72 hours (3 days) before the submission date.
4. You are allowed to complete this assignment on your own time at home, but submit the answers electronically through Blackboard on the scheduled examination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

QUESTION 1

- 1.1 Which four (4) aspects must be considered by a designer when choosing a material for a specific product? (4)
- 1.2 Briefly discuss the concept “composite material” by referring to an example of a product where a specific composite material is used. (3)
- 1.3 Briefly describe the process of curing concrete and explain why it is necessary. (3)

[10]**QUESTION 2**

- 2.1 Figure 1 shows a structural member under load.

**Figure 1**

Sketch a similar structural member to the one in Figure 1 and indicate the three (3) forces that normally act on such a member under load. (4)

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

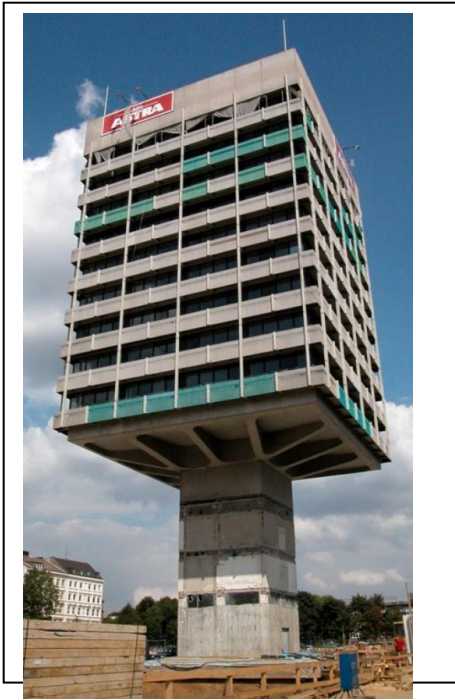


Figure 2

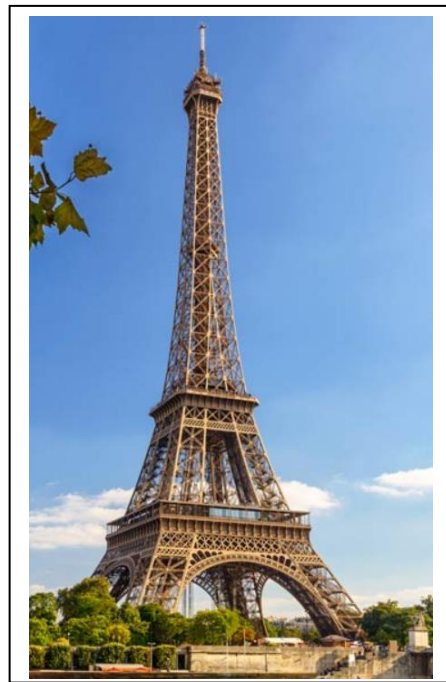


Figure 3

- 2.3 Motivate your answer to question 3.2 by referring to building design aspects that influence the stability of a structure. (4)

[10]

QUESTION 3

There is a variety of different ways we use to preserve different kinds of food. Design a worksheet for your learners to teach them about the different methods for preserving food. Your worksheet should not only include the basic information about the different methods for preserving food with examples, but also assessment activities to assess their understanding. **[10]**

QUESTION 4

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

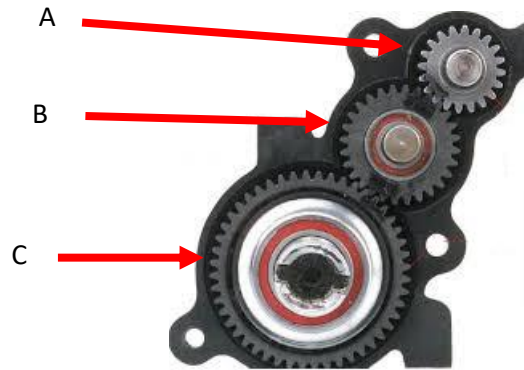


Figure 4

4.1.2 Sketch a similar mechanism to the one in Figure 4 and indicate the direction of rotation of “A”, “B” and “C”. (3)

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

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



Figure 5

[10]

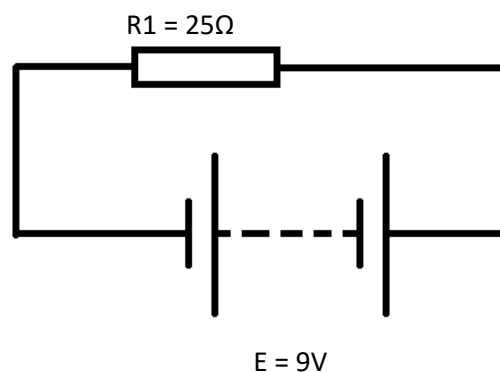
QUESTION 5

- 5.1 Your bar heater's element has a power rating of 2100 watt. You keep it switched on for six (6) hours to heat your room. The current rate for electric energy in your area is R1.85 per Kwh. Calculate how much it will cost you to heat your room. (4)
- 5.2 Differentiate between renewable and non-renewable energy sources by referring to an example of each. (4)
- 5.3 The diagram below shows a beam with various loads acting on it.



Calculate the force needed to be applied to B to balance the see-saw. (7)

- 5.4 Calculate the current in the circuit below. (3)

**[18]****QUESTION 6**

- 6.1 Briefly explain the difference between a homogenous mixture and a heterogeneous mixture by referring to an example of each. (4)
- 6.2 Distinguish between a solution and a colloid by referring to an example of each. (4)
- 6.3 Briefly explain the difference between an element and a compound and give an example of each. (4)

6/...

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- 6.4 Design an experiment that you can have your learners do to help them understand the pH scale. Describe the experiment and its procedure in detail taking care to refer to aspects such as group size, resources and time management of the experiment. (15)
- 6.5 Design a work sheet that learners can use to document the data they collect during the experiment in 7.4 and in which they can write their findings and conclusions. (15)

[42]

TOTAL: 100