SASTRI COLLEGE

DEPARTMENT OF ENGINEERING GRAPHICS AND DESIGN

GRADE 8 TECHNOLOGY

NOVEMBER 2018

Instructions to learners.

1. Read all questions carefully.
2. Number your answers as the questions are numbered exactly.
3. Write neatly and legibly.
4. Approved scientific calculators may be used.
5. Round off all answers to TWO decimal places unless told otherwise.
6. Detach **DIAGRAM SHEET** and hand in with answer booklet.

Question One:

Multiple choice: Choose only the correct answer. Write down the question number and the letter that represents the correct answer.

1.1 The keystone is the main part of this structure.
- A) Arch bridge
- B) Cantilever bridge
- C) Beam bridge
- D) Dam wall (1)

1.2 A device that changes linear motion into reciprocating motion.
- A) Axle
- B) Cam
- C) Wheel
- D) Crank (1)

1.3 The ratio of load to effort in a system is known as the...
- A) Effort force
- B) Load distance
- C) Mechanical advantage
- D) Compression force. (1)

1.4 AMD stands for:
- A) Acid monitoring damage
- B) Acid mine drainage
- C) Acid mine design
- D) Non of the above. (1)

1.5 An output device in an electric circuit.
- A) Light bulb
- B) LED
- C) Buzzer
- D) All of the above (1)

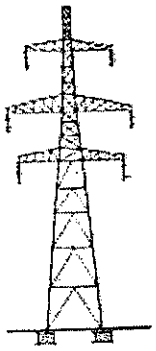
[5]

Question Two: Match column A with column B. Write only the question number and the letter that represents the correct answer.

COLUMN A	COLUMN B
2.1) lifting mechanism to help retrieve goods from underground.	A) triangulation
2.2) A combination of struts and beams to form triangles.	B) switch
2.3) Controlled device in a circuit.	C) cog
2.4) scale used to draw objects bigger than the original.	D) reduction scale
2.5) teeth on a gear wheel.	E) compression force
	F. pulley system.

5x2= [10]

Question Three: Study the following figure below and then answer the questions which follow:

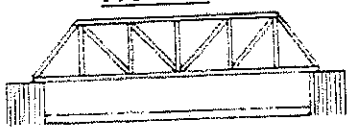


3.1) Identify the type of pylon in the figure above. (2)
3.2) Why is this pylon preferred over other types of designs? (2)
3.3) List two specifications of this design. (2)
[6]

Question Four : Study the following figures below:.

FIGURE B

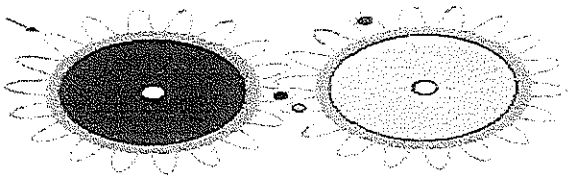
FIGURE A



4.1 Identify the type of bridge represented by figure A and B. (4)
4.2 Which figure, A or B can withstand more force? (1)
4.3 Give two reasons for answer in 4.2. (2)
4.4 How is the force distributed in figure B? (3)
4.5 Which bridge is cheaper to build? Suggest a reason for your answer. (3)
[13]

Question Five: Study the following sets of gears:

5.1



Gear A Gear B

5.1.1 What are above sets of gears in figure 1 known as? (2)

5.1.2 State the general direction of Gear B. (2)

5.2

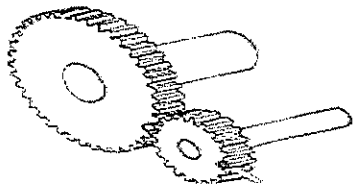


FIGURE 2.

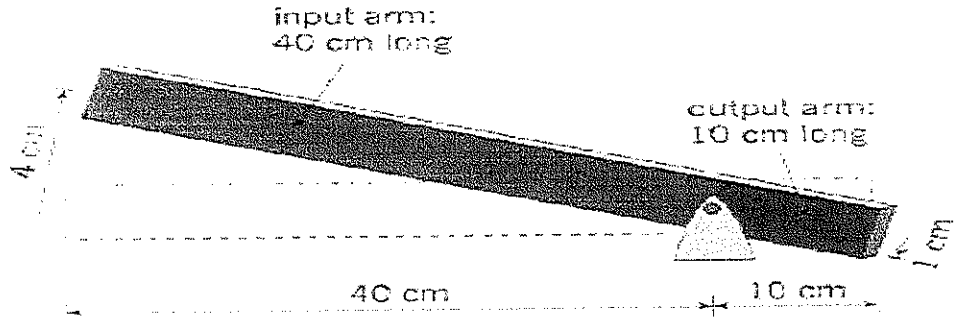
5.2.1 Identify the driven and driver gear in figure 2. (2)

5.2.2 If gear A has 48 teeth and gear B has 12 teeth, calculate the mechanical advantage and the gear ratio. (3)

5.2.3 Which device will enable gear A and B to rotate in the same direction? (2)

[11]

Question Six : Study the diagram below:



6.1 Calculate the total distance of the arm. (2)

6.2 If the input force applied is 750N, calculate the output force. (5)

6.3 Now, determine the mechanical advantage. (3)

6.4 How will the mechanical advantage of the system change if:

6.4.1 The distance between the input force is halved? (2)

6.4.2 The input force is doubled? (2)

6.4.3 Output distance is doubled? (2)

[16]

Question Seven: The impact technology has on our society

Mining is very important to South Africa. The mining industry has led to our country becoming very important as a provider of metals and **ores**. South Africa is one of the biggest producers of precious metals such as gold and platinum, and the country also has large amounts of iron, zinc, chrome and copper ore that are very important to many of our factories. Coal is also mined and this mineral provides the energy for many of our power stations.

An **ore** is a type of rock that contains important minerals, including metals. These ores are mined and then refined to extract the valuable material.

Because mining is such a large industry, it also provides employment for large numbers of people, both skilled and unskilled.

7.1.1 List two ways in which mining has impacted the envionment negatively. (4)
7.1.2 How does mining contribute towards the economy of South Africa? (3)
7.1.3 Has government intervened so as to sort out these problems?
Provide laws or any relevant intervention. (4)
7.2 State and discuss one tool of indigineos mining used 100 years ago. (5)
[16]

Question Eight: Electrical systems and components.

8.1) Study the following electric components below:

FIGURE A

FIGURE B

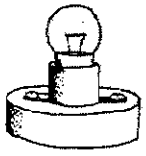


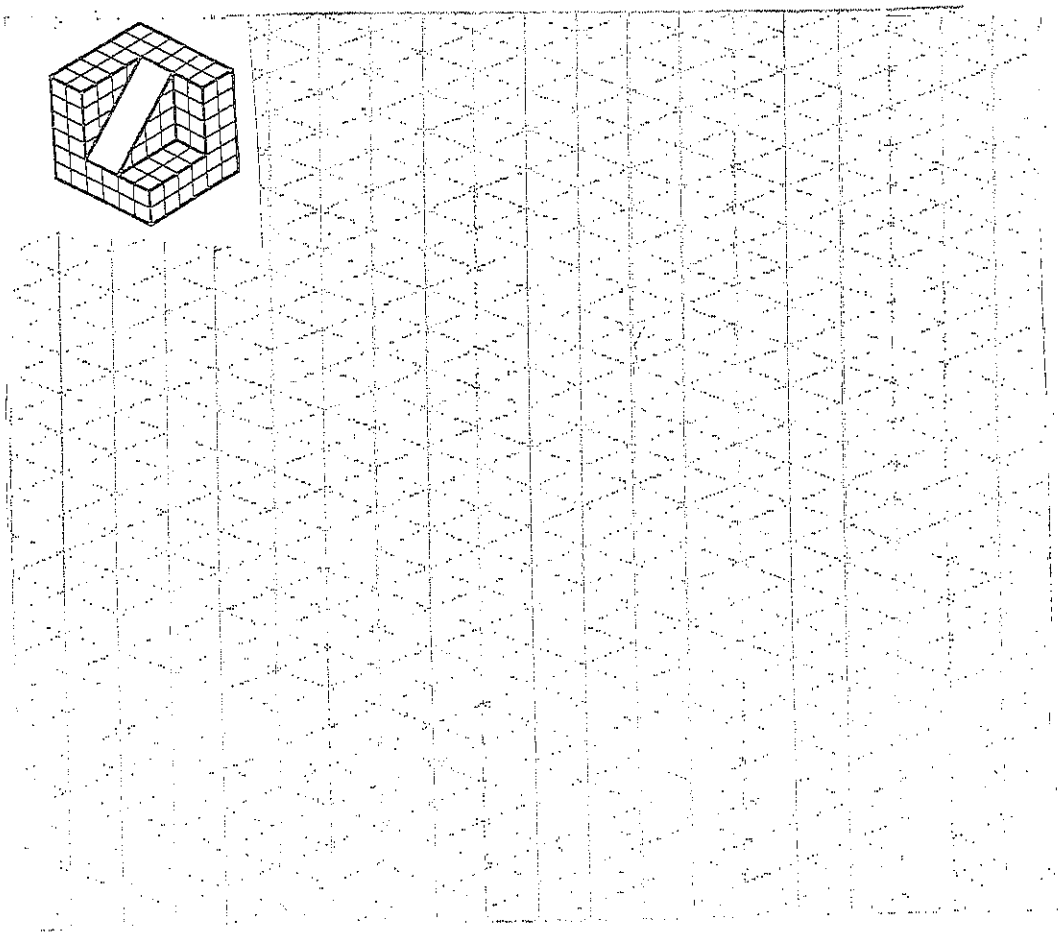
FIGURE C

8.1.1 Classify figures A,B and C as either input, output or controlled devices. (3)
8.1.2 Which figure is dependant on the other? Give a reason for your answer. (3)
8.1.3 Use the given components to design a series circuit in your answer book. (4)

8.2 Given the following components, design circuit diagrams.
8.2.1 An ammeter.
2 light bulbs in series.
A 40V battery. (6)
8.2.2 3 light bulbs, 2 in series and 1 in parallel.
A closed swtich.
Voltmeter across the battery. (8)
4 cells, each with a potential difference of 10V.
[24]

Question Nine: Copy the following isometric drawing below: HAND IN ISOMETRIC DRAWING ALONG WITH ANSWER BOOKLET.

NAME:_____ GRADE:____



[20]

TOTAL : 120 MARKS.