



Province of the  
**EASTERN CAPE**  
EDUCATION

**SENIOR PHASE**

**GRADE 9**

**NOVEMBER 2013**

**TECHNOLOGY  
MEMORANDUM**

**MARKS: 100**

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This memorandum consists of 9 pages.

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**INSTRUCTIONS AND INFORMATION**

1. A learner must answer ALL the questions from SECTIONS A, B, C, D and E.
2. Sketches must be clear, neat and done in pencil.

**ALLOCATION OF MARKS**

SECTION A	MULTIPLE-CHOICE QUESTIONS	
	QUESTION 1	[15]
SECTION B	STRUCTURES	
	QUESTION 2	[20]
SECTION C	PROCESSING	
	QUESTION 3	[15]
SECTION D	SYSTEMS AND CONTROL (Mechanical Systems)	
	QUESTION 4	[25]
SECTION E	SYSTEMS AND CONTROL (Electrical Systems)	
	QUESTION 5	(18)
	QUESTION 6	(7)
		[25]

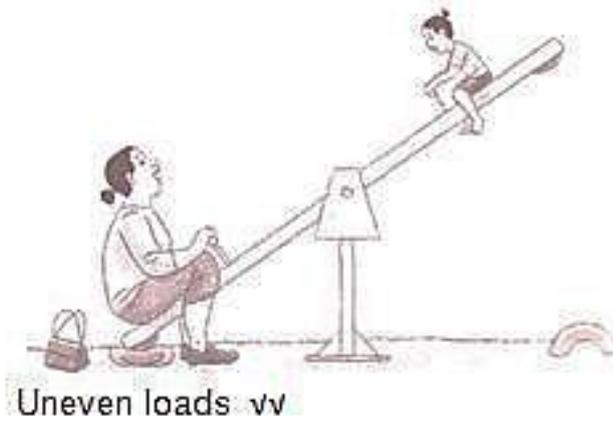
**SECTION A: MULTIPLE-CHOICE QUESTIONS****QUESTION 1**

- |     |        |   |     |
|-----|--------|---|-----|
| 1.1 | 1.1.1  | C ✓                                     | (1) |
|     | 1.1.2  | B ✓                                     | (1) |
|     | 1.1.3  | A ✓                                     | (1) |
|     | 1.1.4  | D ✓                                     | (1) |
|     | 1.1.5  | A ✓                                     | (1) |
|     | 1.1.6  | C ✓                                     | (1) |
|     | 1.1.7  | B ✓                                     | (1) |
|     | 1.1.8  | B ✓                                     | (1) |
|     | 1.1.9  | B ✓                                     | (1) |
|     | 1.1.10 | B ✓                                     | (1) |
| 1.2 | 1.2.1  | Drying ✓                                | (1) |
|     | 1.2.2  | dynamic ✓                               | (1) |
|     | 1.2.3  | Triangulation ✓                         | (1) |
|     | 1.2.4  | natural ✓ and synthetic (or man-made) ✓ | (2) |

**TOTAL SECTION A: 15****SECTION B: STRUCTURES****QUESTION 2**

- |     |       |  |     |
|-----|-------|--|-----|
| 2.1 | 2.1.1 | To span a gap ✓<br>To shorten the distance to be travelled<br>Providing access for vehicles<br>Saving time and money | (1) |
|     | 2.1.2 | Cables ✓ and wires ✓   | (2) |
|     | 2.1.3 | Cables – tensile ✓<br>Pillars – compressive ✓  | (2) |
|     | 2.1.4 | The natural environment is damaged through the construction of a bridge. ✓   | (1) |
| 2.2 | 2.2.1 | E ✓  | (1) |
|     | 2.2.2 | D ✓  | (1) |
|     | 2.2.3 | F ✓  | (1) |
|     | 2.2.4 | A ✓  | (1) |
|     | 2.2.5 | B ✓  | (1) |

2.3 2.3.1



(4)

2.3.2

STRUCTURAL COMPONENT		STIFF OR FLEXIBLE
A	Strut	Stiff ✓
B	Tie	Flexible ✓
C	Spring	Flexible ✓
D	Truss	Stiff ✓
E	Tent brace	Flexible ✓

(1)  
(1)  
(1)  
(1)  
(1)

**TOTAL SECTION B: 20**

**SECTION C: PROCESSING****QUESTION 3**

- 3.1 3.1.1 The armies who fought a long way from home needed to be fed. ✓ (1)
- 3.1.2 Heating food in sealed glass bottles. ✓  
Sealing the food in an airtight container. ✓ (2)
- 3.1.3 Heating food at high temperatures kills micro-organisms. ✓/  
Sealing the food in glass bottles removed air from around the food  
which prevents micro-organisms from growing on the food. (1)
- 3.1.4 He developed a method of sealing food in tins rather than glass  
bottles. ✓ (1)
- 3.1.5 Tins were lighter, unbreakable and easier to seal. ✓ (1)
- 3.1.6 The iron was coated with a fine layer of tin to stop it from rusting. ✓ (1)
- 3.2 3.2.1 E ✓ (1)
- 3.2.2 D ✓ (1)
- 3.2.3 A ✓ (1)
- 3.2.4 B ✓ (1)
- 3.2.5 F ✓ (1)
- 3.3 3.3.1 Electrolysis – Chemical decomposition produced by passing an  
electric current through a conducting liquid. ✓ (1)
- 3.3.2 It keeps water and air away from the surface of the metal. ✓  
Improves the appearance and lifespan of metal.  
Resistance to corrosion.  
(Any ONE of the above or any other acceptable answers.) (1)
- 3.3.3 The metal underneath will corrode. ✓ (1)

**TOTAL SECTION C: 15**



- 4.5 4.5.1 The load will drop to the ground and the crank handle will spin round in the wrong direction. ✓ (1)
- 4.5.2 By fitting in the ratchet and pawl mechanism to the crank. To jam the handle by tying it ✓ (1)
- 4.6 4.6.1 It is a compound gear system ✓ (1)
- 4.6.2 Gear Ratio =  $\frac{\text{Output gear B}}{\text{Input gear A}} \times \frac{\text{Output gear D}}{\text{Input gear C}}$   
 $= \frac{57}{19} \times \frac{57}{19} \checkmark$   
 $= 9 \checkmark$   
The gear ratio is 9 : 1 or 1 :  $\frac{1}{9}$  ✓ (3)
- 4.6.3 Shaft D will turn 9 times slower than Shaft A. ✓ (1)
- 4.7 4.7.1 The winch has a ratchet and pawl to prevent the cable unwinding from the drum when the handle is released. ✓ (1)
- 4.7.2 Pawl ✓ (1)
- 4.6.3 Ratchet and pawl ✓ (1)

**TOTAL SECTION D: 25**

## SECTION E: SYSTEMS AND CONTROL (ELECTRICAL SYSTEMS)

## QUESTION 5

5.1 5.1.1

Letter of component	Name of component
A	Battery ✓
B	Switch ✓
C	Resistor ✓
D	Capacitor ✓
E	Transistor ✓

(1)

(1)

(1)

(1)

(1)

5.1.2

Letter of component	Name of component	Input, Process, Output
A	Battery	Input ✓
B	Switch	Input ✓
C	Resistor	Process ✓
D	Capacitor	Process ✓
E	Transistor	Process ✓

(1)

(1)

(1)

(1)

(1)

5.1.3 The Light Emitting Diodes (LED's) will flash. ✓

(1)

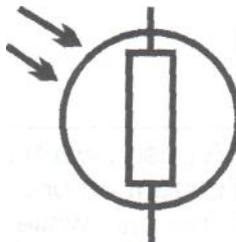
5.2 5.2.1 Light-Dependent Resistor (LDR) ✓

(1)

5.2.2 Its resistance increases. It has a high resistance when it is dark and a low resistance when the light shines. ✓

(1)

5.2.3



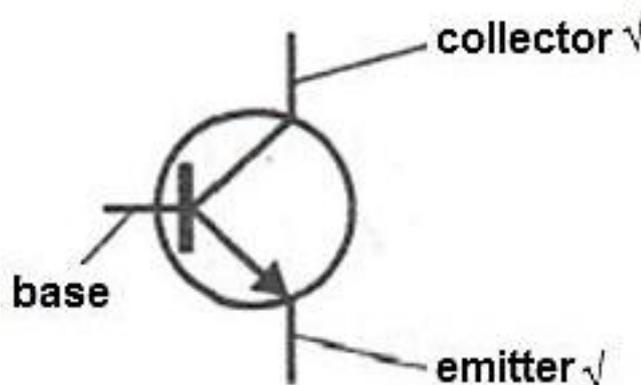
(2 marks for the drawing of the symbol)

(2)

5.3 5.3.1 A transistor amplifies electronic current. It turns currents on and off. ✓

(1)

5.3.2



(2)

[18]

**QUESTION 6**

- 6.1 6.1.1 Blue in the 1<sup>st</sup> band = 6 ✓  
Grey in the 2<sup>nd</sup> band = 8 ✓  
Red in the 3<sup>rd</sup> = 00 ✓  
= 6 800 Ω  
(one mark for 6, one mark for 8 and one mark for 000) (3)
- 6.1.2 Resistors ensure that there is a flow of current in an electronic circuit. They deliberately slow or stop the flow of current. ✓ (1)
- 6.2 6.2.1 1<sup>st</sup> band 5 = Green ✓  
2<sup>nd</sup> band 0 = Black ✓  
3<sup>rd</sup> band Nil = Black ✓ (3)

**[7]**

**TOTAL SECTION E: 25**  
**GRAND TOTAL: 100**