



Education and Sport Development

Department of Education and Sport Development

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NORTH WEST PROVINCE

PROVINCIAL ASSESSMENT

GRADE 10

**TECHNICAL SCIENCES P1
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MEMORANDUM

MARKS: 100

This memorandum consists of 4 pages.



NW/JUNE/TEC-SCNE/ EMIS/6*****

QUESTION 1

- 1.1 A ✓✓ (2)
 1.2 D ✓✓ (2)
 1.3 C ✓✓ (2)
 1.4 A ✓✓ (2)
 1.5 A ✓✓ (2)
 1.6 D ✓✓ (2)
 1.7 B ✓✓ (2)
 1.8 C ✓✓ (2)
 1.9 B ✓✓ (2)
 1.10 B ✓✓ (2)
[20]

QUESTION 2

- 2.1
 2.1.2 $F = \frac{9}{5}C + 32$ ✓
 $= 1.8(83) + 32$
 $= 181.4^\circ \text{F}$ ✓ (3)
 2.1.2 $500/1000$ ✓ = 0.5 kg ✓ (2)
 2.1.3 65×60 ✓ = 3900 s ✓ (2)
 2.1.3 $0.00000165 \text{ m} = 1.65 \times 10^{-6} \text{ m}$ ✓✓ (2)
 2. $2 \text{ s} = \frac{\text{distance}}{\text{time}}$ ✓
 $2.52 \text{ s} = \frac{0.5 \times 1000}{\text{time}}$ ✓
 $\text{time} = 500/2.52$
 $\text{time} = 198.41 \text{ s}$ ✓ (4)
 2.3 $a = \frac{\text{change in velocity}}{\text{time}}$ ✓
 $a = \frac{V_f - V_i}{t}$
 $a = \frac{(85/3.6) - (60/3.6)}{0.02 \times 3600}$ ✓
 $a = 0.1 \text{ m/s}^2$ ✓ (5)
[18]

QUESTION 3

- 3.1 A substance which consists of one type of atoms or particles (that has chemical and physical properties that does not change). ✓✓ (2)
 3.2
 3.2.1 C ✓ (1)
 3.2.2 A ✓ and B ✓ (2)



3.3

3.3.1 Potassium✓, zinc✓, sodium✓ (3)

3.3.2 Fluorine✓, bromine✓, Sulphur ✓ (3)

3.3.3 Boron✓, silicon✓ (2)

3.4

3.4.1 Carbon chloride✓, CCl_4 ✓ (2)

3.4.2 Magnesium oxide✓, MgO ✓ (2)

3.4.3 Lead sulphide ✓, PbS ✓ (2)

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QUESTION 4

4.1 Gravitational potential energy is the energy of an object due to its position✓ above the surface of the earth✓ and kinetic energy is the energy an object due to its motion✓✓. (4)

4.2 Is the sum of gravitational potential energy and kinetic energy of an object. ✓✓ (2)

4.3

4.3.1 $E_p = mgh$ ✓
 $= (8.5)(9.8)(1)$ ✓
 $= 83.3 \text{ J}$ ✓ (3)

4.3.2 $E_p = mgh$ ✓
 $= (8.5)(9.8)(1.4)$ ✓
 $= 116.62 \text{ J}$ ✓ (3)

4.3.3 $E_k = \frac{1}{2}mv^2$ ✓
 $= 0.5(8.5)(2)^2$ ✓
 $= 17 \text{ J}$ ✓ (3)

4.3.4 $ME = E_p + E_k$ ✓ ANY ONE
 $= mgh + \frac{1}{2}mv^2$
 $= (8.5)(9.8)(0.9)$ ✓ + 17 ✓
 $= 91.97 \text{ J}$ ✓

(4)
[20]

QUESTION 5

5.1. It states that for a body in equilibrium the sum of the clockwise moments about a point must be equal to sum of the anticlockwise moments about a point. ✓✓ (2)

5.2.1 $\text{moment} = F \times d$ ✓
 $= 200 \times (2/100)$ ✓
 $= 40 \text{ N.m anticlockwise}$ ✓ (4)

5.2.2 It is going to up (clockwise) ✓

Moment = $F \times d$ ✓
 $= 300 \times 0.02$ ✓
 $= 6 \text{ N.m clockwise}$ ✓

The moment of this block is greater than the moment on the first block, the 200 N block will move up or clockwise as it has smaller moment. ✓ (5)

5.3 $M_{CW} = M_{ACW}$ ✓
 $400 \times 3 = F \times 2$ ✓
 $F = 1200/2$
 $F = 600 \text{ N}$ ✓ (4)

5.4 Mechanical advantage is the ratio of load to effort. ✓✓ (2)

5.5 $MA = \frac{e}{l}$ ✓
 $= \frac{0.8}{1.6}$ ✓
 $= 0.5$ ✓ (3)

5.6 $MA = \frac{L}{E}$ ✓
 $1.5 = 800/E$ ✓
 $E = 800/1.5$
 $E = 533.33 \text{ N}$ ✓ (3)

[23]

GRAND TOTAL: 100

