Gr 12 Science March Test Memo

1.1 B ✓✓

1.2 D ✓✓

1.3 D ✓✓

1.4 C ✓✓

1.5 C ✓✓

2.1.1 upwards✓

2.1.2 downwards✓

2.2 Q✓, gravitational force only force acting on rocket. ✓

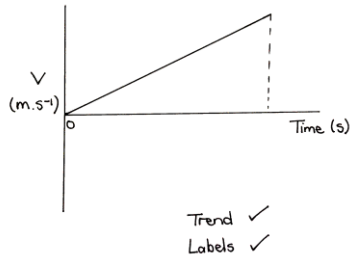
2.3 $\Delta y = v_i \Delta t + \frac{1}{2} a \Delta t^2$✓

225✓ $= -115$✓$\Delta t + \frac{1}{2}(9{,}8)$✓$\Delta t^2$

$\Delta t = 25.29\ s\ or\ \Delta t = -1.82\ s$✓

Total time = 25,29 + 5 ✓= 30,29 s✓

Down as positive



3.1 Momentum is the <u>product of the mass and velocity</u>. ✓

3.2 $\sum p_i = \sum p_f$ ✓

0 ✓ $= (0{,}025)(v_{bullet}) + (6)(1{,}2)$ ✓

$v_{bullet} = 288\ m.s^{-1}$ ✓

4.1 The <u>net work</u> (*or* the <u>work done by a net force</u>) ✓ on an object is <u>equal to the change in kinetic energy</u> ✓ of the object.

4.2.1 $E_p = E_k = \frac{1}{2}mv^2$ ✓

$245 = \frac{1}{2}(5)(v^2)$

$v = 9{,}90\ m.s^{-1}$ ✓

4.2.2 $W_{net} = \frac{1}{2}m\left(v_f^2 - v_i^2\right)$ ✓

$W_{net} = \frac{1}{2}(5)(0^2 - 9{,}9^2)$

$W_{net} = -245{,}025\ J$ ✓

$W_{net} = F_{net}\Delta x\cos(\theta)$ ✓

$-245{,}025 = (18 + 49\sin\theta)\left(\frac{2{,}42}{\sin\theta}\right)(\cos 180°)$ ✓

$245{,}025 = \frac{43{,}56}{\sin\theta} + 118{,}58$

$\frac{43{,}56}{126{,}445} = \sin\theta$

$\theta = 20{,}15°$ ✓

$F_{net} = f + F_{g\parallel}$

$F_{net} = 18 + (5)(9{,}8)\sin\theta$ ✓

$\sin\theta = \frac{2{,}42}{RS}$

$RS = \frac{2{,}42}{\sin\theta}$

5.1 $f_L = \frac{v \pm v_L}{v \pm v_S} . f_S$ √

√ √

$= \frac{(340 + 0)}{(340 - 12)} . 850$ √

$= 881{,}10$ Hz√

5.2 Lower√√ *llaer*

6.1 $E^{\theta}_{cell} = E^{\theta}_{cathode} - E^{\theta}_{anode}$ ✓

✓ ✓

$1{,}53 = E^{\theta} - (-1{,}66)$

$E^{\theta}_{M} = 1{,}53 - 1{,}66$

$= -0{,}13$ V ✓

Hence M = Pb

✓ ✓ ✓

6.2 $A\ell/A\ell^{3+}$ (1 mol.dm^{-3})//Pb^{2+}(1 mol.dm^{-3})/Pb

6.3 ANY ONE

The salt bridge completes the circuit✓✓

Maintains electrical neutrality of the cell

7.1 **ANY ONE/*ENIGE EEN:***

- The chemical process in which electrical energy is converted to chemical energy. ✓✓
  Die chemiese proses waarin elektriese energie omgeskakel word na chemiese energie.
- The use of electrical energy to produce a chemical change.
  Die gebruik van elektriese energie om 'n chemiese verandering te weeg te bring.
- Decomposition of an ionic compound by means of electrical energy.
  Ontbinding van 'n ioniese verbinding met behulp van elektriese energie.
- The process during which and electric current passes through a solution/ionic liquid/molten ionic compound.
  Die proses waardeur 'n elektriese stroom deur 'n oplossing/ioniese vloeistof/gesmelte ioniese verbinding beweeg. (2)

7.2 **ANY ONE/*ENIGE EEN:***

- To keep the polarity of the electrodes the same. ✓
  Om die polariteit van die elektrodes dieselfde te hou.
- To prevent the anode and cathode from swopping.
  Om te verhoed dat die anode en katode omruil.
- DC provides a one way flow of electrons ensuring that the same chemical reaction occurs all the time at the electrodes.
  GS verskaf *'n eenrigting vloei van elektrone en verseker dat dieselfde chemiese reaksie altyd by die elektrodes plaasvind.*
- If you use AC the polarity of the electrodes will keep changing.
  Wanneer jy WS gebruik word hou die polariteit van die elektrodes aan om te verander.
- Pure copper deposited on only one electrode.
  Suiwer koper slaan slegs op een elektrode neer. (1)

7.3 $Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$ ✓✓

Ignore phases. / *Ignoreer fases.*

Notes/*Aantekeninge*	
$Cu^{2+} + 2e^- \rightleftharpoons Cu$ $(\frac{1}{2})$	$Cu \leftarrow Cu^{2+} + 2e^-$ $(\frac{2}{2})$
$Cu \rightleftharpoons Cu^{2+} + 2e^-$ $(\frac{0}{2})$	$Cu^{2+} + 2e^- \leftarrow Cu$ $(\frac{0}{2})$

(2)

7.4

- Cu^{2+} is a stronger oxidising agent ✓ than Zn^{2+}. ✓
  Cu^{2+} is 'n sterker oksideermiddel as Zn^{2+}.
- Cu^{2+} will be reduced to Cu. / *Cu^{2+} sal gereduseer word na Cu.* ✓

OR/*OF*

- Zn is a stronger reducing agent than Cu.
  Zn is 'n sterker reduseermiddel as Cu.
- Cu^{2+} will be reduced to Cu. / *Cu^{2+} sal gereduseer word na Cu.*