H1 Physics P1

Qn	Ans Key	Discussions
1	D	**9702/ Nov 2008/q4.** random errors is pm 0.02 + systematic error is pm 0.02
2	B	**9702 / Nov 2011/ qp11/ q2**. estimate average speed. apply ½ mv^2.
3	B	**9701/ Nov 2013 qp11/q3**. *T*=/5sq x 2/1000. *f*=1/*T*
4	C	Fundamentals of physics by Halliday and Resnick. 9th edition. Page 61
5	C	Fundamentals of physics by Halliday and Resnick. 9th edition. Page 37. Qn 98. Solving $\frac{1}{2}gt^2 - \frac{1}{2}g(t-1)^2 = 10$ gives *t* = 1.52 s
6	C	Fundamentals of physics by Halliday and Resnick. 9th edition. Page 66
7	B	Physics, principles with application (6th) by Giancoli Pg 70 Qn 63. Solving $35 = \frac{1}{2}9.81t^2$ and $5 = vt$ gives *v* = 1.88 m s-1 (round up)
8	C	**ACJC 2014** Area under F-t graph gives change in momentum
9	D	**ACJC 2014** Note: The weight recorded by the balance is the force on the balance by the Man. A – only true if stationary or moving with constant velocity. B – true if accelerating downwards or decelerating upwards. C – True if accelerating upwards or decelerating downwards.
10	C	**ACJC 2014** Use Conservation of momentum to get ratio of speed.
11	B	**9702/N13/P13/Q14 modified** 3 forces in equilibrium must be concurrent
12	C	**9702/N13/P13/Q15** The additional clockwise moment of spring on board = additional anti-clockwise moments when man steps on board.
13	C	**Nov 2003 P1 Q7 modified** Power = $Fv = kv^3$
14	C	**Nov 2000 P1 Q6 modified** Efficiency = P_{output} / $P_{supplied}$
15	A	**N2009/P1/Q9** Alpha particles has mass of 4u and charge of +2, thus affected by gravitational, electric and magnetic field. Beta, gamma and positron all have very small mass thus have negligible

		gravitational effect.
16	C	1λ=2 cm, hence 2.5 cm is 1.25 λ; 0.25 x 2π = 0.5 π
17	B	**ACJC** Longitudinal Waves cannot be polarized.
18	A	**9702 1986 Nov pp1 qn 10** A double slit interference pattern is seen as shown on Figure A.
19	C	$y = \frac{m\lambda D}{a} = \frac{2 \times 600 \times 10^{-9} \times 1.5}{30 \times 10^{-6}} = 0.060\, m$
20	A	**ACJC** Path difference of 1 cm, destructive interference results.
21	D	**N2000/P1/Q10 modified** λ/4 = 14 + c 3λ/4 = 46 + c
22	**C**	**9702 2011 June pp11 qn31** $I = \frac{Q}{t} = \frac{Ne}{t} \Rightarrow \frac{N}{t} = \frac{I}{e} = \frac{10}{1.6 \times 10^{-19}}$
23	**C**	**9702 2012 Nov pp11 qn33** $R = \frac{\rho L}{A} \Rightarrow 0.050 = \frac{4\rho(10)}{\pi(2 \times 10^{-3})^2}$
24	**C**	**2010 GCE A LEVEL PP1QN 27** From the IV graphs determine R when current is 6.0A; R=1.2Ω When current is 5.0A; R= R_1 =1.6Ω Using equation E = I(R+r) ⇒ E=IR+Ir Substituting corresponding values of I and R Determine E and r OR E=IR+Ir = E=V+Ir Substituting corresponding values of V and I Determine E and r
25	**C**	**9702 2011 JUNE PP11QN36** Let the potential difference across the supply be V Before W is removed the potential drop across each resistor is the same Hence power dissipated in each is the same and is the current through each resistor is equal to $\frac{V}{2R}$ as the total resistance the circuit is R When W is removed, total resistance in circuit increases 1.5 R Hence the total current in the circuit is $\frac{2V}{3R}$ The current through X is $\frac{2V}{3R}$ and that through each of Y and Z is $\frac{V}{3R}$ Thus the potential drop across X increases and that across each of Y and Z decreases, hence the power dissipated in X will increase and that in each of Y and Z will decrease
26	C	**ACJC**

		$weight = F_B$ $mg = BIL$ $B = \frac{mg}{IL}$ $= \frac{0.030 \times 9.81}{1.2 \times 0.04}$ $= 6.1\,T$
27	D	Modified from Physics for scientists and engineer by Serway (6th ed) pg 1078
28	C	**8866/2011/P1/Q30.**
29	B	
30	C	As *v* increases, momentum and KE of electrons increases. Since $\lambda = \frac{h}{p}$, λ decreases, hence θ decreases.