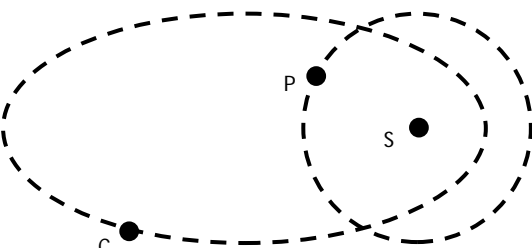
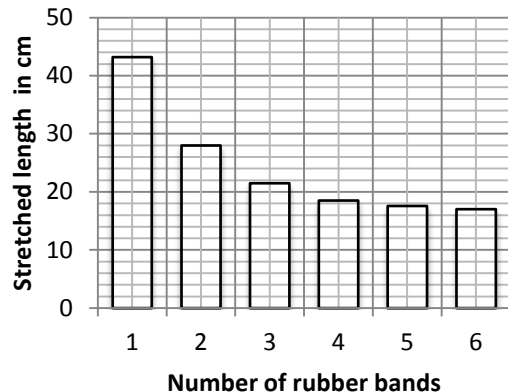


Question number	Answer	Notes	Marks
1 (a)	C (132 000 V);		1
(b)	B (efficiency of transmission);		1
(c)	C (transformer);		1

**Total 3 marks**

Question number	Answer	Notes	Marks
2 (a)	Gravitational (force)	Allow (force of) gravity Gravitational pull Centripetal (force)	1
(b) (i)	All three labels correct; 	C Comet P Planet S Sun	1
(ii)	Any two of - MP1 Idea that orbits cross/meet/intersect;  MP2 Idea that comet and planet can be (at the same place) at the same time;  MP3 Idea that orbit time periods are different;	Allow at the same place orbits overlap   idea of orbiting at different speeds	2

**Total 4 marks**

Question number	Answer	Notes	Marks													
4 (c)	(i) Discrete/discontinuous; OR Independent;	Allow non-continuous, categoric	1													
	(ii) Axes labelled - quantities and distance unit; Suitable scale chosen - longest bar occupies at least half the grid; All 5 bars for given data correctly plotted;;	Ignore orientation  Ignore the 4 band value Bar length plotted to nearest small square. Deduct one mark for each plotting error (max -2) Data plotted correctly, but only as floating "x's" gets maximum of one mark for plotting Reject both plotting marks if a line graph is drawn (only scale and axes marks are available in this case)	4													
	<div></div> <table><thead><tr><th>Number of rubber bands</th><th>Stretched length in cm</th></tr></thead><tbody><tr><td>1</td><td>43.2</td></tr><tr><td>2</td><td>28.0</td></tr><tr><td>3</td><td>21.5</td></tr><tr><td>4</td><td>(Ignore)</td></tr><tr><td>5</td><td>17.6</td></tr><tr><td>6</td><td>17.0</td></tr></tbody></table>	Number of rubber bands	Stretched length in cm	1	43.2	2	28.0	3	21.5	4	(Ignore)	5	17.6	6	17.0	
Number of rubber bands	Stretched length in cm															
1	43.2															
2	28.0															
3	21.5															
4	(Ignore)															
5	17.6															
6	17.0															
(iii)	MP1 Idea of inverse relationship;  MP2 Idea of non linearity;	Allow: pattern statements negative correlation  Accept ecf "curved line"	2													

**Total 11 marks**

Question number	Answer	Notes	Marks
6 (a) (i)	Work done = force x distance moved;	Allow $W = F \times d$ and rearrangements	1
(ii)	Substitution into correct equation;  Calculation; e.g. $13 \times 110$ 1430 (J)	Correct answer without working scores 2 marks	2
(iii)	Same response as for 3(a)(ii)	1430 (J) or ecf	1
(b)	Any two of - MP1 Idea that GPE depends on height OR Statement that $GPE = mgh$ ;  MP2 Idea that $h$ is reduced;  MP3 Idea that centre of gravity (is now) lower;	Allow centre of mass for centre of gravity	2
(c) (i)	Moment = force x (perpendicular) distance (from the pivot);	Allow moment = $F \times d$ and rearrangements	1
(ii)	Calculate given moment; Equate moments; Calculation;  e.g. $(150 \times 0.32) = 48$ for one mark $150 \times 0.32 = F \times 0.87$ for two marks $F (= 150 \times 0.32 / 0.87) = 55 \text{ (N)}$ for three marks	If no other mark gained, allow a statement that "clockwise moment = anticlockwise moment" for one mark  55.172 (N)	3

**Total 10 marks**