Colliber correct moment seem: Use of principle of moments; Seen mathematically or in writing e.g. clockwise moment	Question number	Answer	Notes	Marks
e.g. W x 8 0R 0.1 x 12 W x 8 = 0.1 x 12 (W =) 0.15 (N) coll becomes an electromagnet / coll produces a magnetic field: coil (attracts / exerts a force on) magnet: increasing anti-clockwise moment; (c) (i) sensible linear scales on both axes that occupy 50% of the grid: both axes labelled correctly with quantity and unit: correct orientation; all 6 points correctly plotted: (d) allow o.2 (N) if supported by correct vorking reject if repulsion mentioned allow creating (additional) anti-clockwise moment allow symbols I for current and W for weight current on x-axis reject plotting mark if non-linear scale used in region of plots Countries (A) (ii) straight line of best fit avoiding anomalous reading: (iii) (repeat to) check accuracy / validity of reading obtained again	6 (a)	use of principle of moments;	writing e.g. 'clockwise moment	3
(b) coll becomes an electromagnet / coil produces a magnetic field; coil (attracts / exerts a force on) magnet; increasing anti-clockwise moment; allow creating (additional) anti-clockwise moment (c) (i) sensible linear scales on both axes that occupy >50% of the grid; both axes labelled correctly with quantity and unit; correct orientation; all 6 points correctly plotted; allow symbols I for current and W for weight current on x-axis reject plotting mark if non-linear scale used in region of plots (ii) straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; allow idea of checking to see if same reading obtained again			answer of 0.25 (N) gets 2 marks	
a magnetic field: coil {attracts / exerts a force on} magnet: increasing anti-clockwise moment: (c) (i) sensible linear scales on both axes that occupy >50% of the grid: both axes labelled correctly with quantity and unit; correct orientation; all 6 points correctly plotted; (ii) straight line of best fit avoiding anomalous reading: (iii) (repeat to) check accuracy / validity of reading: a magnetic field: coil {attracts / exerts a force on} magnet; reject if repulsion mentioned allow creating (additional) anti-clockwise moment reject if repulsion mentioned allow creating (additional) anti-clockwise moment allow symbols I for current and W for weight current on x-axis reject plotting mark if non-linear scale used in region of plots Current in N 0.0 0.1 0.1 0.5 0.5 2.1 0.7 2.5 0.9 3.7 1.1 4.5		W x 8 OR 0.1 x 12 W x 8 = 0.1 x 12		
>50% of the grid: both axes labelled correctly with quantity and unit: correct orientation: all 6 points correctly plotted; allow symbols I for current and W for weight current on x-axis reject plotting mark if non-linear scale used in region of plots Current I Total weight added in A In N 0.0 0.1 0.1 0.5 0.5 2.1 0.7 2.5 0.9 3.7 1.1 4.5 (ii) straight line of best fit avoiding anomalous reading: (iii) (repeat to) check accuracy / validity of reading: allow symbols I for current and W for weight current on x-axis reject plotting mark if non-linear scale used in region of plots Current I Total weight added in A In N 0.0 0.1 0.1 0.5 0.5 2.1 0.7 2.5 0.9 3.7 1.1 4.5	(b)	a magnetic field; coil {attracts / exerts a force on} magnet;	reject if repulsion mentioned allow creating (additional) anti-	3
Current Total weight added in A 0.0 0.1 0.1 0.5 0.5 2.1 0.7 2.5 0.9 3.7 1.1 4.5 (ii) straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; allow idea of checking to see if same reading obtained again	(c) (i)	>50% of the grid; both axes labelled correctly with quantity and unit; correct orientation;	W for weight current on x-axis reject plotting mark if non-linear scale used in region	4
(ii) Straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; and the straight line of best fit avoiding anomalous reading; allow idea of checking to see if same reading obtained again		6	Current Total weight added	
(ii) Straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; (iii) It is a straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; (iii) allow idea of checking to see if same reading obtained again		5	10.10	
(ii) straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; (iii) (repeat to) check accuracy / validity of reading;			0.1 0.5	
(ii) straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; (iii) adam 1			0.5 2.1	
(ii) straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; allow idea of checking to see if same reading obtained again			0.7 2.5	
(ii) straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; allow idea of checking to see if same reading obtained again			0.9 3.7	
(ii) straight line of best fit avoiding anomalous reading; (iii) (repeat to) check accuracy / validity of reading; allow idea of checking to see if same reading obtained again			1.1 4.5	
reading; (iii) (repeat to) check accuracy / validity of reading; allow idea of checking to see if same reading obtained again				
reading; same reading obtained again	(ii)			1
the trend / does not lie near the line of best fit	(iii)		same reading obtained again allow reading does not follow the trend / does not lie near	2

(iv)	pattern statement e.g. as current increases the force increases; suitable comment about linearity;	ignore references to weight allow (directly) proportional	2
(V)	relevant use of one set of data from graph or table; 8.1 (N);	exclude data from 0.7A reading allow ecf from line on graph allow answers that round to 8.1 (N)	2

Total for question 6 = 17 marks