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Mark Scheme (Results)

October 2016

Pearson Edexcel International GCSE in Chemistry (WBI03) Paper 1

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Publications Code WBI03_01_1610_MS

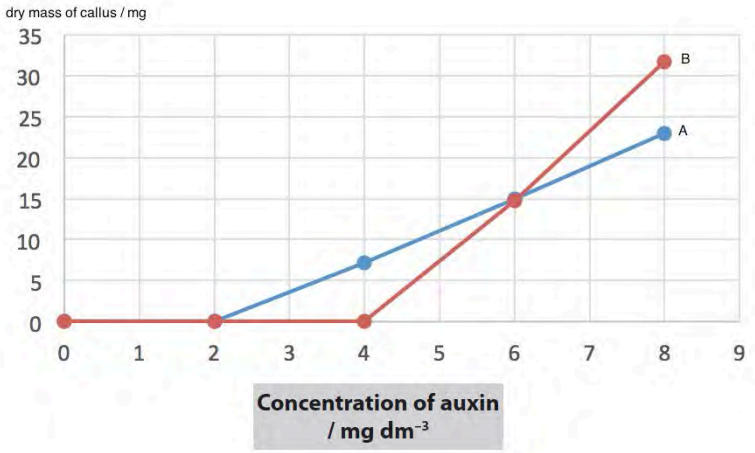
General Marking Guidance

- This mark scheme provides a list of acceptable answers for this paper. Candidates will receive credit for all correct responses but will be penalised if they give more than one answer where only one is required (e.g. putting an additional cross in a set of boxes). If a candidate produces more written answers than the required number (two instead of one, three instead of two etc), only the first answers will be accepted. Free responses are marked for the effective communication of the correct answer rather than for quality of language but it is possible that, on some occasions, the quality of English or poor presentation can impede communication and loose candidate marks. It is sometimes possible for a candidate to produce a written response that does not feature in the mark scheme but which is nevertheless correct. If this were to occur, an examiner would, of course, give full credit to that answer.
- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Acceptable Answers	Additional Guidance	Mark
1(a)(i)	concentration of auxin AND type of auxin		**grad (1)**

Question Number	Acceptable Answers	Additional Guidance	Mark
1(a)(ii)	1. heating in an oven / at suitable temperature (above 0 and not high enough to burn) ; 2. idea of repeating until no change in mass / described ; 3. balance qualified (sensible no. of places / milligram accuracy) ;	IGNORE Bunsen burner	**expert (3)**

Question Number	Acceptable Answers	Additional Guidance	Mark
1(a)(iii)	1. (weigh out) a known mass of sucrose ; 2. dissolve this in a known volume of {water/agar/solvent} ; OR 3. add same volume of ; 4. a stock solution / solution of known concentration (to each)		**grad (2)**

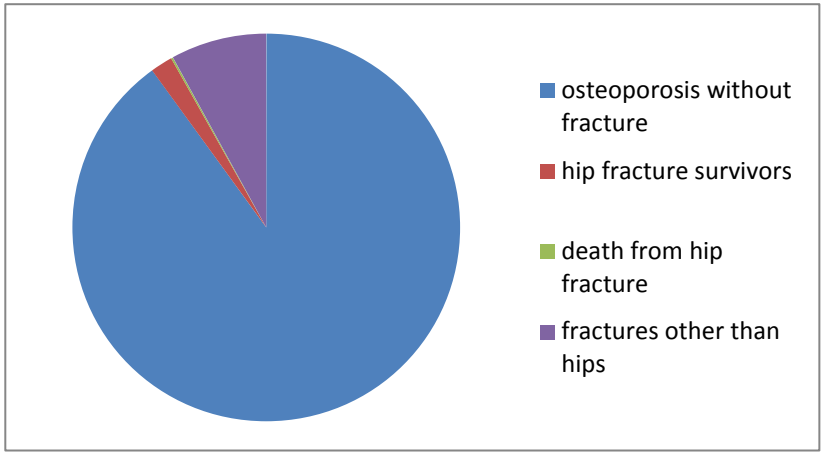
Question Number	Acceptable Answers	Additional Guidance	Mark
1(b)(i)	A- axes correct orientation with at least half the graph paper used ; L- correct labelling of axes with units (x- concentration of auxin / mg dm^{-3}, y dry mass of callus / mg) ; P- all points plotted correctly ; S– points joined correctly with straight lines ; K – key provided or lines labelled ;	BOD if there is a key, even if not clear due to use of colour  	EXP **(5)**

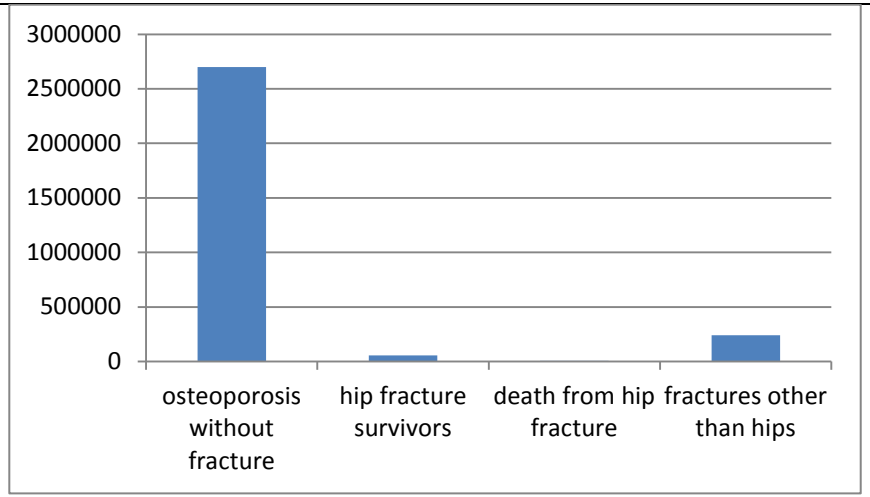
Question Number	Acceptable Answers	Additional Guidance	Mark
1(b)(ii)	1. no growth for both types of auxin at 0 or 2 mg dm-3 / same effect at 0 and 2 mg dm^{-3} / type A auxin has an effect at 4 mg dm^{-3} auxin, B does not ; 2. type B has a smaller effect than A / very little difference at 6 mg dm^{-3} / at 6.2 mg dm^{-3} they are the same ; 3. type B has a greater effect than A at 8 mg dm^{-3} ; 4. manipulation of data to support statements made ;	ALLOW type A has a greater effect at lower concentrations / up to 6 mg dm^{-3} , accept converse for type B	EXP **(3)**

Question Number	Acceptable Answers	Additional Guidance	Mark
1(b)(iii)	1. replication (at each auxin concentration for each auxin type needed) to calculate means ; 2. to calculate SD / error bars / range (bars); 3. idea of overlap (or not) of SD / error bars / range ;		EXP **(3)**

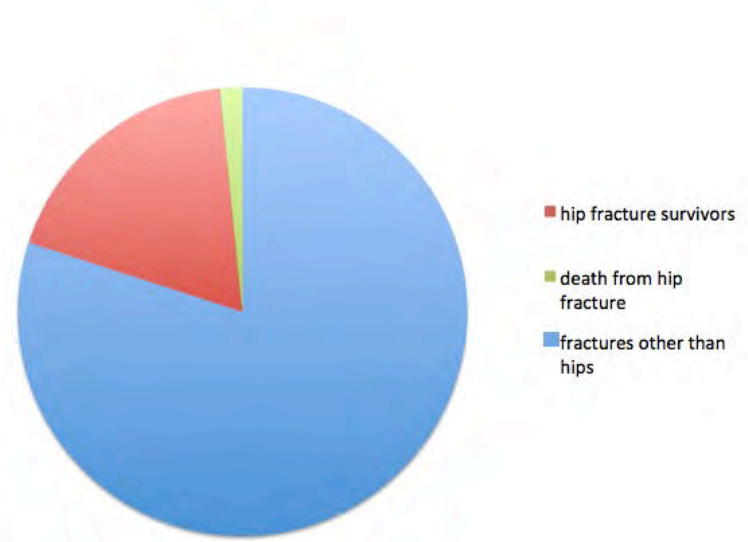
Question Number	Acceptable Answers	Additional Guidance	Mark
1(c)	1. mineral salts, sucrose; 2. 8 mg dm^{-3} of type B auxin ; 3. 2.5/3.0 / 3.1 au zeatin ;	IGNORE mention of kinetin	EXP **(3)**

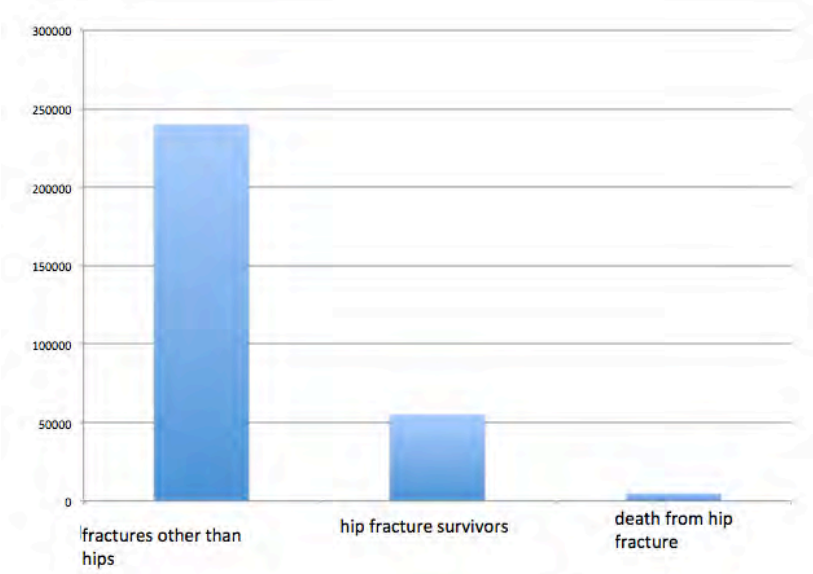
(Total for Question 1 = 20 marks)

Question Number	Acceptable Answers	Additional Guidance	Mark
2(a)(i)	1. appropriate visual e.g. pie chart / bar chart ; 2. 4 categories identified correctly if include total no. of cases of osteoporosis / 3 categories identified if do not include total no. of cases of osteoporosis; 3. approximately correct proportions (allow ecf) ;	This is the only possible MP for a table  	exp **(3)**


3000000
2500000
2000000
1500000
1000000
500000
0
osteoporosis without fracture
hip fracture survivors
death from hip fracture
fractures other than hips

OR


hip fracture survivors
death from hip fracture
fractures other than hips

		 300000 250000 200000 150000 100000 50000 0 fractures other than hips hip fracture survivors death from hip fracture	

Question Number	Answer	Mark
2(a)(ii)	8 / between 8 and 9 ;	clerical **(1)**

Question Number	Acceptable Answers	Additional Guidance	Mark
2(a)(iii)	1. teriparatide (always) better than bisphosphonates ; 2. biggest difference is spine / smallest difference is hip / both best for spine/ worst for hip ; 3. comparative manipulation;	T 5.7 % better than B for spine T 2.5 % better than B for hip T 3.1 % better than B for femur	exp **(3)**

Question Number	Acceptable Answers	Additional Guidance	Mark
2(b)	Any two points 1. the nations' health service saves money ; 2. due to increased independence of people ; 3. government saves money ; 4. due to reduced care home need ; 5. microchips can {fail / get lost in muscle} ; 6. replacing / repairing microchips is expensive ; 7. hips fracture ; 8. this costs £2bn per year ; 9. daily injections are expensive ; 10. microchip save on this ;	ACCEPT converse ACCEPT converse	exp **(4)**

Question Number	Acceptable Answers	Additional Guidance	Mark
2(c)(i)	1. ALL OF but ONLY authors (in any order), date, title, journal, volume, part, page present *in any order* ; 2. correct order of any 4 of the following 6 elements (author, date, title, journal, volume, part, page ; 3. authors cited as surname and initial(s) OR { Farra, R. (or other author but only one)} et al ;	1. This mark lost for any extra material. e.g. published in, Vol. Issue, February 16 or 22, anything duplicated (e.g. date , journal name. ALLOW FULL MARKS FOR Farra, R., Sheppard, N.F. Jr., McCabe , Laura,. Neer, R. M., Anderson ,J .M., Santini, J. T. Jr., Cima , M. J. and Langer, R. (2012) / Farra, R. et al, *First-in-Human Testing of a Wirelessly Controlled Drug Delivery Microchip,* Sci Transl Med, 4, 122, 122	exp **(3)**

Question Number	Acceptable Answers	Additional Guidance	Mark
2(c)(ii)	1. many (procedures / eq) needed so lots of different expertise ; 2. microchip development requiring one specific kind of science / drug development requiring one specific kind of science / surgery requiring one specific skill ;	IGNORE large number of patients	exp **(2)**

<table>
<tr><th>Question Number</th><th>Acceptable Answers</th><th>Additional Guidance</th><th>Mark</th></tr>
<tr><td>2(d)</td><td>
<table>
<tr><th>Drug</th><th>Benefit</th><th>Risk</th></tr>
<tr><td>bisphosphonates</td><td>increases BMD

stop bone from dissolving / demineralisation

stimulates bone formation

reduces risk of fracture ;</td><td>oesophageal cancer

skin rash

bone pain

eye inflammation

fever

osteomalacia ;</td></tr>
<tr><td>Teriparatide</td><td>increases BMD

stimulates bone formation

reduces risk of fracture ;</td><td>renal stones ;</td></tr>
</table>
</td><td></td><td>exp

(4)</td></tr>
</table>