Year 12 Chemistry
HSC ER Questions 9.3.B – Acid Identification

Module	9.3 – The Acidic Environment
Topic	9.3.B – Acid Identification
Name	**Date**

2011

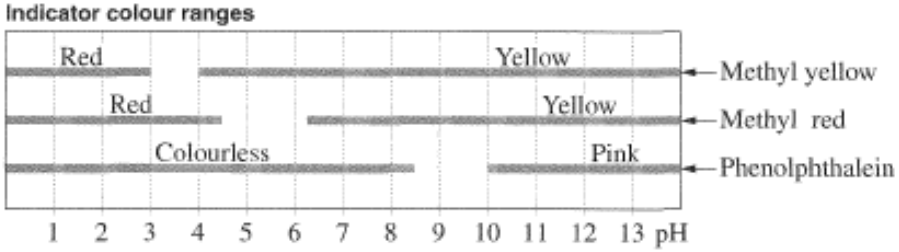
Question 32 (5 marks)

To determine the pH of garden soil, a sample was first saturated with distilled water in a petri dish. Barium sulfate powder was added to the surface of the sample, and drops of the three indicators listed below were added to separate parts of the sample. The colours observed are shown in the table.

Experimental results

Indicator	Methyl yellow	Methyl red	Phenolphthalein
Colour observed	Yellow	Red	Colourless

Indicator colour ranges



Plant response

Plant	*soil pH range for optimal growth*
Carrot	5.5 – 6.8
Chrysanthemum	6.0 – 6.3
Hydrangea Blue	4.0 – 5.0
Hydrangea White	6.5 – 8.0
Potato	5.0 – 5.7

(a) Why is barium sulfate powder added when testing soil pH? **1**

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(b) Using the information given, select the plant that will grow well at the current soil pH, and justify your selection. **2**

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(c) Outline the method you would use to test a natural indicator that has been prepared in the school laboratory. **2**

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Question 21 (5 marks)

Red cabbage indicator chart

Colour	red		violet		purple			blue		green		yellow		
pH	1	2	3	4	5	6	7	8	9	10	11	12	13	14

(a) State what colour the red cabbage indicator would be in a 0.005 mol L^{-1} solution of H_2SO_4. Show your working. **1**

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(b) Using the red cabbage indicator, what colour would the solution be if 10 mL of 0.005 mol L^{-1} H_2SO_4 was diluted to 100 mL? **1**

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(c) What volume of 0.005 mol L^{-1} KOH is required to neutralise 15 mL of the diluted solution of H_2SO_4? **3**

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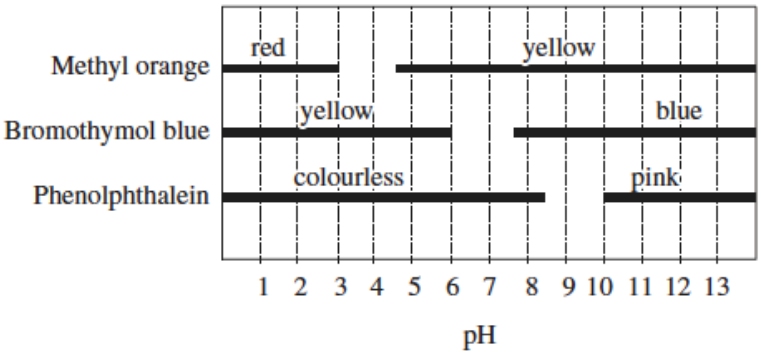
Question 23 (6 marks)

Correct swimming pool maintenance requires regular monitoring of the pH level of the water.

(a) Select the best indicator from the graph to check that the pH of swimming pool water lies within the correct range of 7.0 – 7.6. Justify your choice. **3**



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