Extended Response Assessment Name: …………………………….

**WATER and WATER TREATMENT**

**COMPREHENSION EXERCISE**

In preparation for this assessment, you should, at the very least, have read the following:

(i) Nelson Chemistry Units 1 & 2 (text): ‘The Universal Solvent’, pp 70-71

‘What is in your water?’ pp 74-76

‘Managing Water Quality’ pp 77-78

‘Water in Crisis?’ pp 78-80

(ii) Essential Chemistry Units 1 & 2 (Lucarelli): Sections 16.9 to 16.12, pp143-146

Bring both of these books to class on the designated day as the comprehension questions will be based on the content listed above.

**Questions based on Nelson text**

**Question 1 [2]**

Water is sometimes nicknamed ‘the universal solvent’. State two important aspects of this ‘quality’.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Question 2 [2]**

(a) Describe the effects or symptoms on humans of absorbing too much cadmium.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) Explain why pregnant mothers need to by particularly careful about cadmium absorption.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Question 3 [4]**

(a) List four chemical substances that, periodically, pose problems for the Great Barrier Reef.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) Explain why excessive concentrations of nitrate and phosphate ions are so damaging.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Questions based on Lucarelli**

**Question 4 [1]**

Water is the most abundant compound on the surface of the Earth yet only a few percent of this is potable. Account for this fact.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Question 5 [2]**

What is meant by **TDS** as it applies to drinking water and why isn’t there a specific **upper** limit for this quantity?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Question 6 [5]**

An increasing amount of drinking water used in WA is now being sourced from the ocean. A major part of the treatment process involves *reverse osmosis (RO).* Plants use a similar process (called osmosis) when they absorb water from the soil. They do this absorbing water into their root hair cells through *semi-permeable membranes.*

(a) Suggest why an increasing amount of drinking water in WA is being sourced from the ocean.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) What is a semi-permeable membrane? Explain how they work.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(c) State one similarity and one difference between the process of reverse osmosis as it is used in a desalination plant and the process of osmosis as used by plants when they absorb water from the soil.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Question 7 [1]**

What is ‘hard’ water?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………