



**Western Australian Certificate of Education
 Examination, 2015
 Question/Answer Booklet**

**INTEGRATED
 SCIENCE
 Stage 3**

Please place your student identification label in this box

Student Number: In figures

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In words _____

Time allowed for this paper
 Reading time before commencing work: ten minutes
 Working time for paper: three hours

Materials required/recommended for this paper

To be provided by the supervisor

- This Question/Answer Booklet
- Multiple-choice Answer Sheet
- Formulae and Data Sheet

Number of additional answer booklets used (if applicable):

To be provided by the candidate

- Standard items: pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters
- Special items: non-programmable calculators approved for use in the WACE examinations

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

Structure of this paper

Section	Number of questions available	Number of questions to be answered	Suggested working time (minutes)	Marks available	Percentage of exam
Section One: Multiple-choice	20	20	30	20	20
Section Two: Short response	6	6	90	111	50
Section Three: Extended response	2	2	60	58	30
Total					100

Instructions to candidates

1. The rules for the conduct of Western Australian external examinations are detailed in the *Year 12 Information Handbook 2015*. Sitting this examination implies that you agree to abide by these rules.

2. Answer the questions according to the following instructions.

Section One: Answer **all** questions on the separate Multiple-choice Answer Sheet provided. For each question, shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. If you make a mistake, place a cross through that square, then shade your new answer. Do not erase or use correction fluid/tape. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

Sections Two and Three: Write your answers in this Question/Answer Booklet.

3. You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.
4. Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.
 - Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
 - Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question that you are continuing to answer at the top of the page.
5. The Formulae and Data Sheet is **not** to be handed in with your Question/Answer Booklet.

Section One: Multiple-choice

20% (20 Marks)

This section has **20** questions. Answer **all** questions on the separate Multiple-choice Answer Sheet provided. For each question, shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. If you make a mistake, place a cross through that square, then shade your new answer. Do not erase or use correction fluid/tape. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

Suggested working time: 30 minutes.

1. If the price for a mineral falls then
 - (a) reserves may become resources and mining exploration will probably increase.
 - (b) reserves may become resources and mining exploration will probably decrease.
 - (c) resources may become reserves and mining exploration will probably increase.
 - (d) resources may become reserves and mining exploration will probably decrease.

2. Mineral deposits are considered non-renewable because the
 - (a) rate of formation exceeds the rate of extraction.
 - (b) rate of extraction exceeds the rate of formation.
 - (c) value of the mineral will rise as prices rise.
 - (d) life of the mine is dependent on the selling price of the ore.

3. Geophysical exploration techniques include
 - (a) magnetic surveys, seismic surveys and gravity surveys.
 - (b) geological mapping, satellite imagery and aerial photography.
 - (c) satellite imagery, aerial photography and magnetic surveys.
 - (d) seismic surveys, gravity surveys and soil sampling.

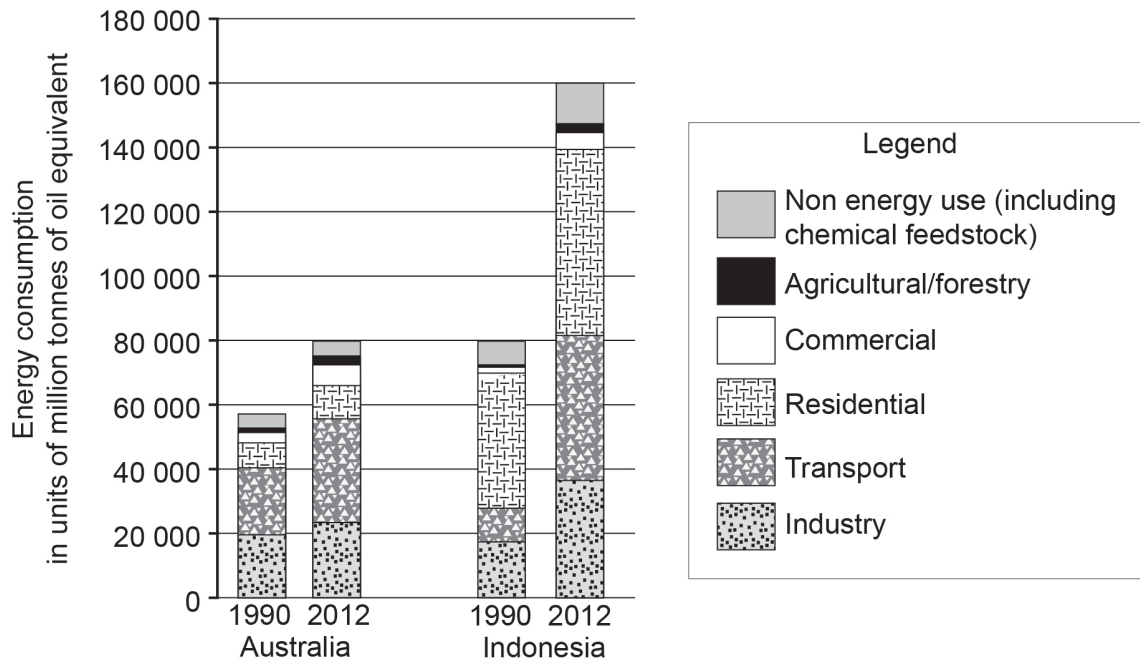
4. Which substances are added to coke and iron ore in the blast furnace during smelting to produce iron?
 - (a) limestone, oxygen
 - (b) limestone, air
 - (c) graphite, oxygen
 - (d) graphite, air

5. A mining company calculated the amount of iron present in the iron ore excavated from a mine as 221.40 kg per tonne. What is the percentage composition of iron by mass of the ore?
 - (a) 0.0002214%
 - (b) 0.2214%
 - (c) 2.214%
 - (d) 22.140%

See next page

Use the following graph of total energy consumption in Indonesia and Australia for 1990 and 2012 to answer Questions 6 and 7.

Total energy consumption in Australia and Indonesia (1990 and 2012)



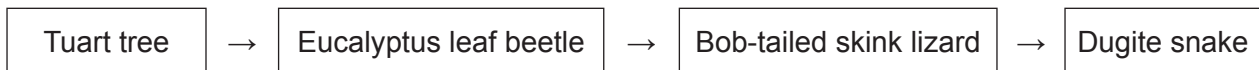
6. On the basis of the information in the graph, which one of the following statements is **true**?
- (a) Australia's energy consumption has grown by almost 40% and Indonesia's by almost 100%.
 - (b) Australia's energy consumption has doubled and Indonesia's consumption has tripled.
 - (c) In 2012, Australia and Indonesia used the same amount of energy as each other in the transport sector.
 - (d) Indonesia's industry and transport sectors accounted for half of all of the country's final energy consumption in both 1990 and 2012.
7. Which sector has experienced the **greatest** growth in energy consumption?
- (a) Australia's commercial sector
 - (b) Australia's transport sector
 - (c) Indonesia's commercial sector
 - (d) Indonesia's transport sector

Use the following table to answer Question 8.

	Australia		Indonesia	
	1990	2012	1990	2012
Total energy consumption (in million tonnes of oil equivalent)	56655	79355	79808	159664
Population (million)	17.2	23.3	178.6	246.9

8. Considering the information provided, which conclusion about the energy consumption per person is correct?
- In 2012, the energy consumption per person in Australia was more than five times that of Indonesia.
 - If Australia had the same population as Indonesia, our energy consumption would be the same.
 - The energy consumption per person in Australia in 2012 was equal to that of Indonesia in 1990.
 - The energy consumption per person for both Australia and Indonesia in 2012 was lower than in 1990.

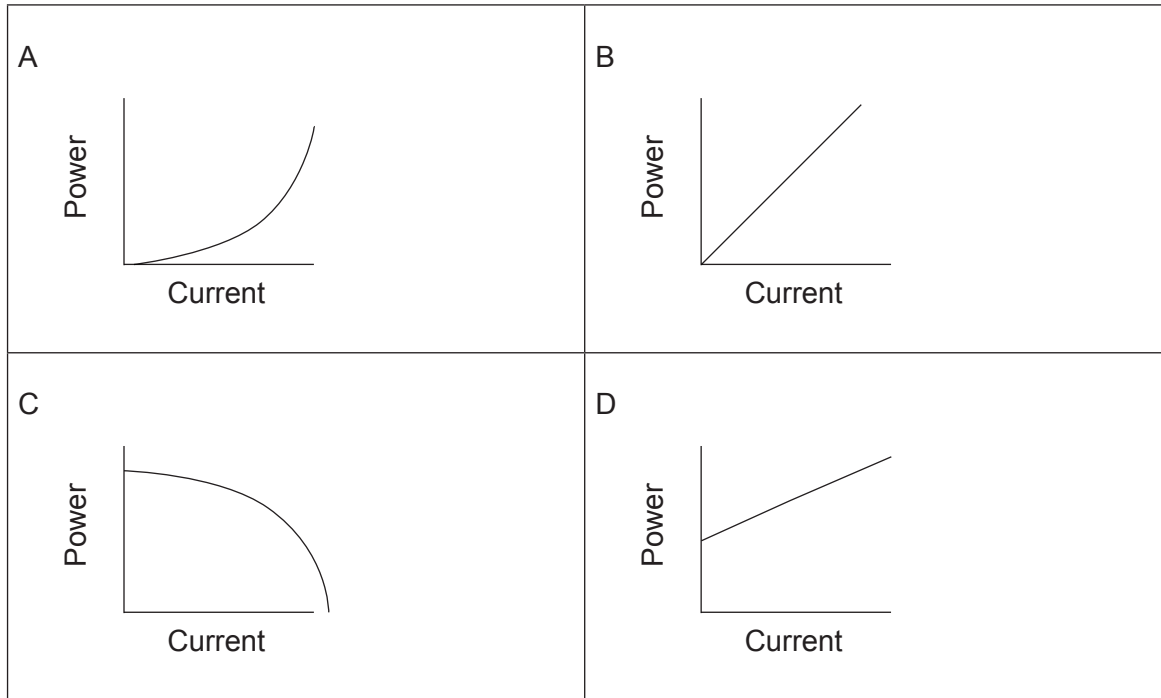
Questions 9 and 10 refer to the diagram below, which shows a food chain of a typical Western Australian forest.



9. About 10% of the energy available at one feeding level is transferred to the next. The **best** reason for this is that energy is
- lost as heat from the body surface and through movement.
 - used for respiration and lost as heat from the body surface.
 - used for respiration and lost as kinetic energy when the organism moves.
 - used for respiration, movement and lost as heat.
10. Tuart trees are producers in the forest ecosystem because they
- produce food for animals.
 - use light energy to produce carbohydrates and biomass.
 - produce energy for the animals that feed upon them.
 - produce nutrients through respiration that herbivores need to survive.

11. Synroc is used for the long-term storage of radioactive waste. An advantage of Synroc is that
- (a) radiation does not leak into the environment and affect animals and plants living where Synroc is stored.
 - (b) it sinks to the bottom of the ocean where the radiation won't affect humans on land.
 - (c) it reduces the amount of radiation emitted by the material it stores.
 - (d) it is highly stable and can incorporate nuclear waste in its crystals.
12. The energy source for many renewable and non-renewable energy resources is the Sun. **Exceptions** to this are
- (a) geothermal and wind.
 - (b) geothermal and nuclear.
 - (c) nuclear and coal.
 - (d) wind and coal.
13. Identify the correct sequence of energy transformations that occur when coal is burned to produce electricity.
- (a) thermal → chemical → kinetic → electrical
 - (b) light → chemical → kinetic → electrical
 - (c) chemical → thermal → kinetic → electrical
 - (d) chemical → kinetic → thermal → electrical
14. Energy efficiency is **best** described as the
- (a) relationship between energy input and how much energy is lost to the environment.
 - (b) ratio of all energy input to all energy output.
 - (c) total energy input into a system divided by the total energy output.
 - (d) percentage of energy input converted into the intended output form of energy.

15. Electrical power can be calculated by using the relationship, $P = I^2R$. Which of the following graphs **best** describes the relationship between power and current with a fixed resistance?



- (a) A
 (b) B
 (c) C
 (d) D
16. What quantity does 'peak oil' relate to?
- (a) discovery
 (b) production
 (c) consumption
 (d) price
17. In the Hall-Héroult process, alumina is dissolved in molten cryolite (Na_3AlF_6) and then the solution is electrolysed to obtain aluminium. The alumina is mixed with molten cryolite to
- (a) add extra aluminium to the mixture.
 (b) increase the conductivity of the mixture by adding sodium ions.
 (c) lower the melting point.
 (d) raise the yield of aluminium during electrolysis.

18. A student used a 20.000 g standard weight to check whether a digital balance was working correctly. He did three trials and obtained these readings: 19.020 g, 19.021 g, 19.019 g. It could be said that his results were
- (a) accurate and precise.
 - (b) not accurate but precise.
 - (c) accurate but not precise.
 - (d) neither accurate nor precise.
19. The remains of an ancient camp fire are analysed and the ash contains only 1/16th of the radioactive substance carbon-14 found in growing trees today. If the half-life of carbon-14 is 5730 years, approximately how long ago was the camp fire used?
- (a) 11 500 years
 - (b) 17 500 years
 - (c) 23 000 years
 - (d) 29 000 years
20. The introduced fish species European Carp is now found in the south west of Western Australia. Scientists can estimate the population of these fish by using a 'capture-recapture' technique. A fisheries researcher trapped 120 carp in a lake, tagged them and released them. A week later she caught 85 and 11 were tagged. The carp population of the lake is approximately
- (a) 120.
 - (b) 210.
 - (c) 900.
 - (d) 1300.

End of Section One

See next page

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Section Two: Short response

50% (111 Marks)

This section has **six (6)** questions. Answer **all** questions. Write your answers in the spaces provided.

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.

- Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
- Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question that you are continuing to answer at the top of the page.

Suggested working time: 90 minutes.

Question 21

(18 marks)

After 45 years of service, the Kwinana Power Station is scheduled to close in 2015. Originally designed to burn oil, the power station was converted to burn coal and later to burn natural gas.

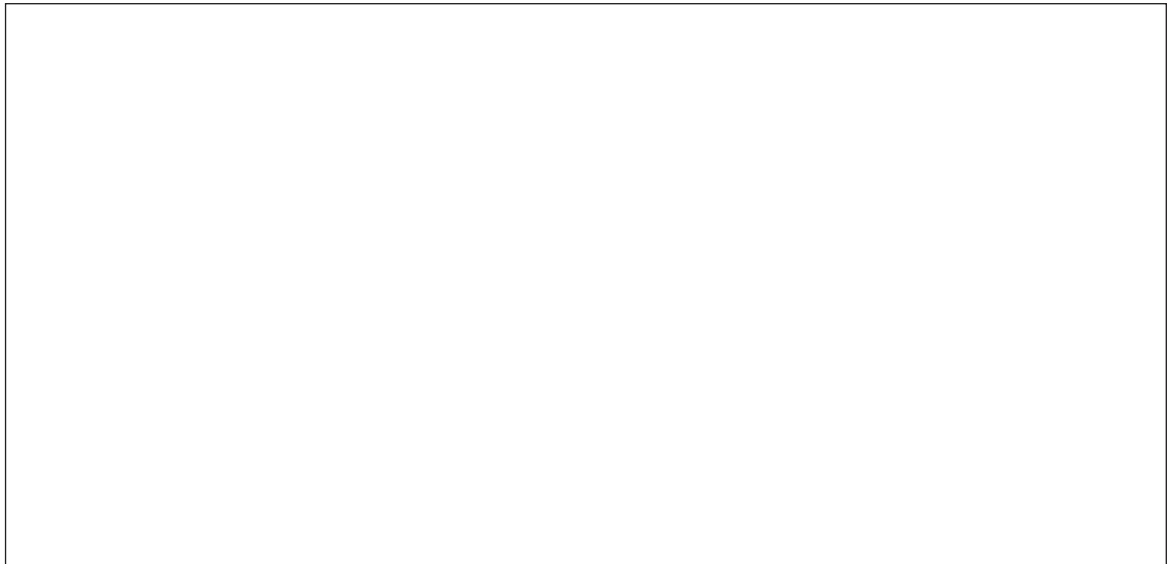
- (a) With the aid of a labelled energy flow diagram, describe how electricity is generated using natural gas. (6 marks)

- (b) Identify **one** major difference in the design of a gas-fired power station compared with one that burns coal. (1 mark)

The electricity produced at Kwinana Power Station was transmitted as part of the South West Interconnected System using a 330 kV power line, which was fed into lower voltage distribution lines and then local power lines that connected to homes.

- (c) Why do the electricity producers use 330 kV to transmit electricity when we only use 240 V in our homes? (2 marks)

- (d) In homes, schools and workplaces, electricity is transformed into other forms of energy. An electric kettle (electric jug) is a common electrical appliance that converts electricity into other forms of energy. Draw a flow diagram to show how electricity is used to boil water, identifying the energy transformations that occur at each stage. (6 marks)



- (e) An electric kettle is rated at 2000 W. The kettle is filled with cold water and takes five minutes to boil before it switches off automatically. If electricity costs 24.591 cents per unit (kilowatt-hour), how much does it cost to boil the kettle? Show **all** workings. (3 marks)

Question 22

(26 marks)

Beach sand mainly consists of grains of silicon dioxide. Mineral sands have silicon dioxide and concentrations of other important minerals.

- (a) Complete the table to identify **two** additional minerals that can be extracted from mineral sands and describe a commercial use for each component. (4 marks)

Mineral	Use
Rutile	To make paint

- (b) Strip mining is the usual method for obtaining mineral sands. Describe briefly how mineral sands are mined. (3 marks)

- (c) Mineral sands can be separated using magnetic, electrostatic and gravity separation techniques. Complete the table by explaining how separation of the mineral sand product is achieved. Identify the separation product. (6 marks)

Technique	Property of mineral that permits separation to be performed	Separation product
Magnetic separation		
Gravity separation		
Electrostatic separation		

- (d) Identify **one** geochemical technique that could be used in exploration for new mineral sands deposits and describe how minerals are identified using the technique. (4 marks)

- (e) Give **two** reasons why magnetic surveys are less useful in the exploration of mineral sands than for iron ore. (2 marks)

One: _____

Two: _____

- (f) List **three** reasons why a mining company might chose to mine an ore body using underground mining methods. (3 marks)

One: _____

Two: _____

Three: _____

Question 22 (continued)

- (g) Underground mining presents some hazards not found in open-cut mining.

One of the most important aspects of underground mining is ventilation. Ventilation is required to clear toxic fumes from blasting and removing exhaust fumes from diesel equipment. In deep, hot mines, ventilation is also required for cooling the workplace for miners.

- (i) Explain how underground mines are ventilated. (2 marks)

In order to maintain the stability of a mine that has been excavated during underground mining, means of preventing the roof and walls from collapsing are needed.

- (ii) Outline **one** method by which cave-ins are prevented by stabilising rock in underground mines. (2 marks)

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See next page

Question 23

(14 marks)

The world's largest copper mine is at Escondida in Chile. In the original mine, very high-grade ores (80% copper) were extracted but now the mine is processing ores that have less than 2% copper. To extract copper from the ore, the mine uses bioleaching. Copper containing ores such as chalcocite (Cu_2S) or covellite (CuS) are crushed, acidified with sulfuric acid and mixed in rotating drums to bind fine material to coarser material prior to bioleaching. This product is called 'agglomerate' and is composed of fragments around the size of one-centimetre diameter spheres.

During the year ending June 2006, the Escondida mine processed 87.7 million tonnes of sulfide ore containing only 1.61% copper. However, it produced 116 300 tonnes of copper metal.

- (a) Explain why the ore is finely crushed and then made into larger agglomerate pieces before being placed in the heap. (2 marks)

- (b) What is the function of bacteria in the process of bioleaching? (2 marks)

- (c) State how the physical properties of the copper compound changed during the process of heap bioleaching. (2 marks)

- (d) By using the bioleaching method, the Escondida mine is able to make a profit. Why is this so? (1 mark)

- (e) Explain how copper metal is produced from the leachate. (2 marks)

- (f) Write a balanced equation to represent the reaction that would occur at the cathode. (2 marks)

If a major storm passed over a mine site using bioleaching, it is possible that some of the bioleaching ponds could be washed away and pollute a nearby lake.

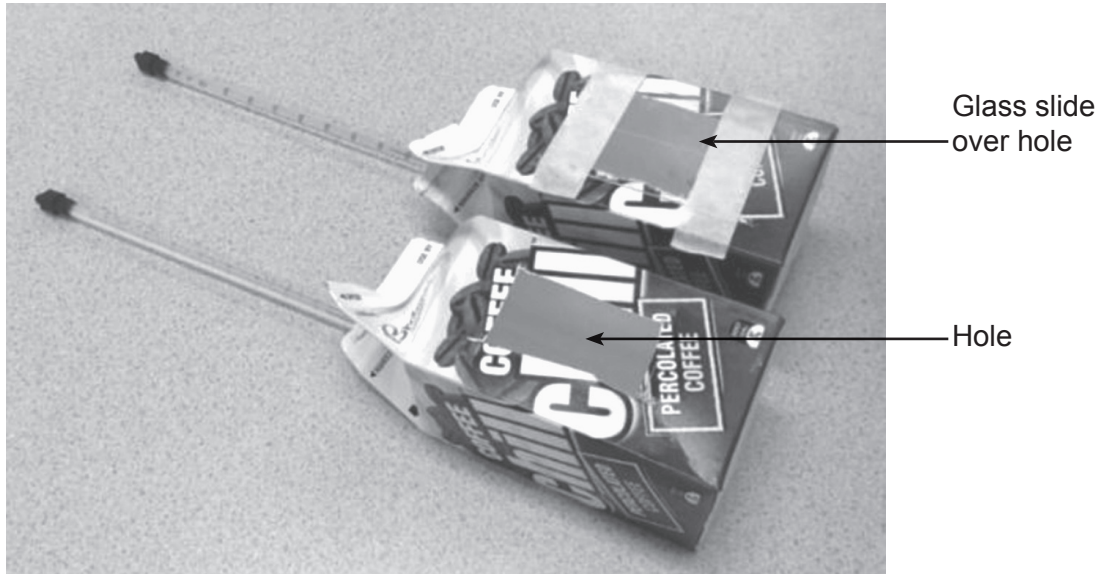
- (g) (i) Identify and describe **one** possible effect on the water within the lake. (2 marks)

- (ii) Give **one** effect this event might have on the health of people swimming in the lake. (1 mark)

Question 24

(27 marks)

Two students, Jenny and Katrina, wanted to see how taping a glass slide across a rectangular hole cut in the side of a milkshake carton affected the temperature inside when the boxes were placed outside in sunlight for 10 minutes. The control carton had the hole cut in the side but did not have a glass slide placed over the opening. The experiment was repeated three times and the average temperatures over varying times were calculated.



Milkshake cartons in sunlight

- (a) Identify the dependent variable. (1 mark)

- (b) Identify a variable that would need to be controlled. (1 mark)

- (c) Write an hypothesis for this experiment. (2 marks)

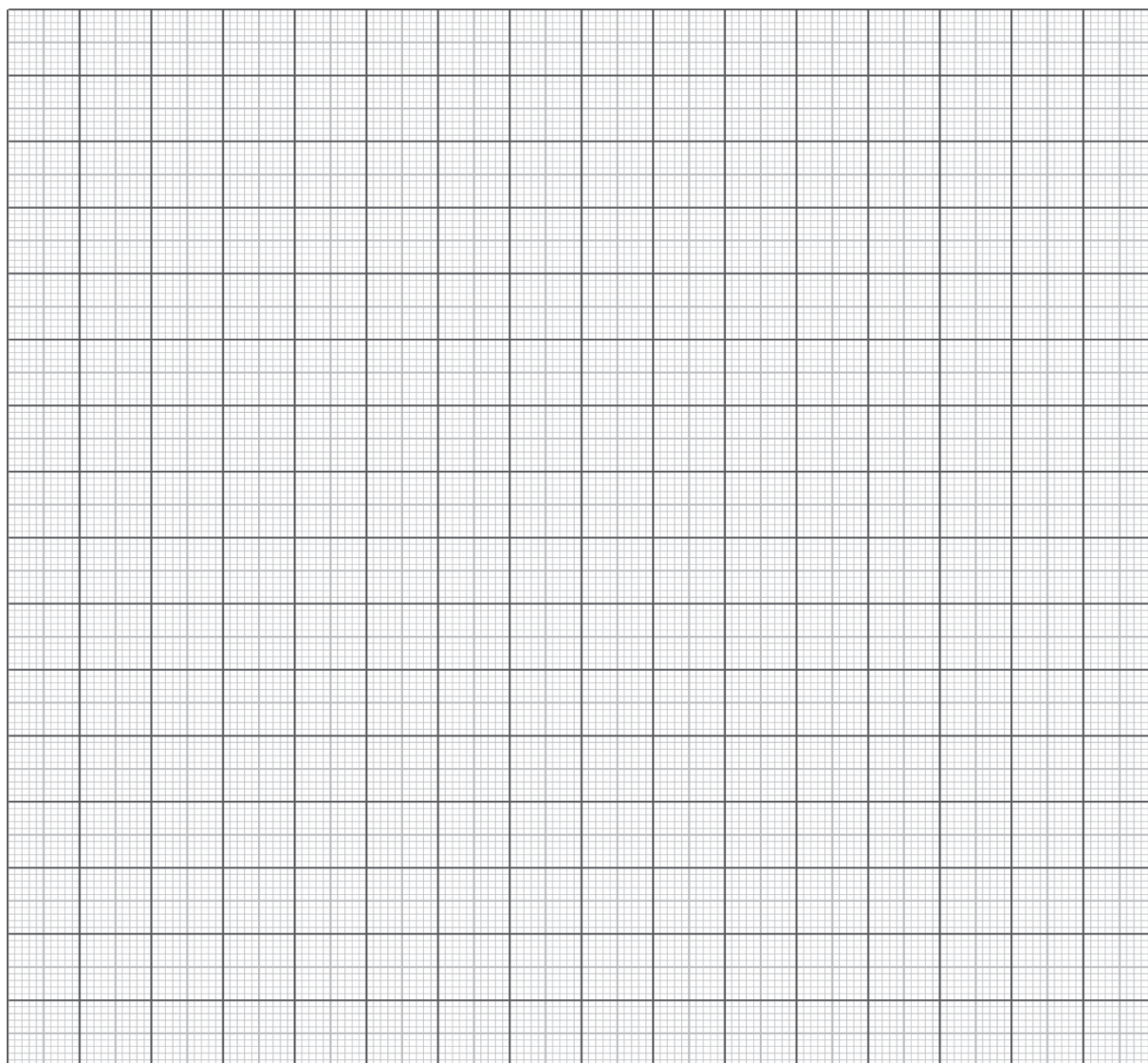
- (d) (i) Why was the experiment repeated? (1 mark)

- (ii) Why were the average temperatures calculated? (1 mark)

The average temperatures inside the milkshake cartons when placed in sunlight

Time (minutes)	Carton with glass slide (°C)	Carton without glass slide (°C)
0	21.0	20.0
1	22.5	21.5
2	25.0	22.5
3	27.5	23.0
4	30.0	24.0
5	32.0	24.5
7	35.0	24.0
9	36.0	24.5
10	35.0	24.0

- (e) Plot line graphs to display the average temperatures inside the **two** milkshake cartons over time. (6 marks)
 A spare grid is provided at the end of this Question/Answer Booklet. If you need to use it, cross out this attempt.



Question 24 (continued)

(f) Write a conclusion for this experiment. (3 marks)

(g) Explain the results of this experiment using your knowledge and understanding of how greenhouse gases in the atmosphere are thought to affect the temperature on Earth. (3 marks)

(h) What does the glass slide represent in this model? (1 mark)

(i) Identify and describe a limitation of the data from the experiment. (2 marks)

- (j) List **two** ways in which this experiment does not represent the enhanced greenhouse effect on Earth. (2 marks)

One: _____

Two: _____

- (k) Over recent decades, scientists have seen an acceleration in the increase in global temperatures. Explain how the greenhouse effect contributes to the heating of the Earth. (4 marks)

Question 25

(15 marks)

Alumina is purified from bauxite by the Bayer process, which was invented in 1887 by Carl Josef Bayer. A year earlier, the Hall-Héroult electrolytic aluminium process had been invented. Thus in just two years a metal that had been rare and expensive became commonplace.

- (a) Draw a labelled flow diagram of the Bayer process and explain the process stages. Use these terms as labels in your diagram: red mud, high pressure, alumina, bauxite, sodium hydroxide, calcination and precipitation. (8 marks)

(b) Explain why the disposal of red mud could be an environmental issue. (2 marks)

(c) The electrolysis of alumina to form aluminium is a redox reaction. Explain the meaning of the term 'redox reaction'. (2 marks)

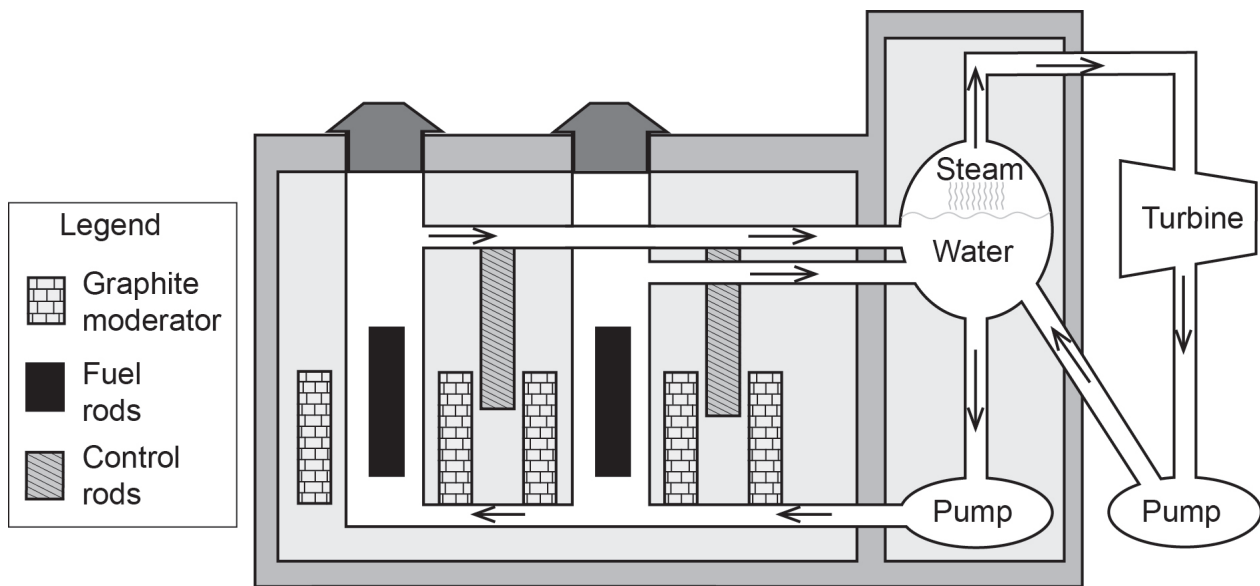
(d) Is the forming of aluminium by electrolysis an oxidation or reduction process? Explain your reasoning by including a chemical equation in your answer. (3 marks)

Question 26

(11 marks)

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Boiling water graphite moderated reactor



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- (a) Name a substance that is suitable for making control rods to use in a pressurised water reactor. (1 mark)

- (b) Explain how control rods control nuclear chain reactions in a pressurised water reactor. (3 marks)

Question 26 (continued)

- (c) Look carefully at the diagram on page 24, of the boiling water graphite moderator reactor and identify **four** key differences between the Chernobyl design and a pressurised water reactor you have studied this year. (4 marks)

One: _____

Two: _____

Three: _____

Four: _____

- (d) Identify **three** pieces of equipment that could be used to reduce a person's exposure to radiation when working in a nuclear power plant. (3 marks)

One: _____

Two: _____

Three: _____

End of Section Two

See next page

Section Three: Extended response

30% (58 Marks)

This section contains **two (2)** questions. You must answer **both** questions. Write your answers in the spaces provided.

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.

- **Planning:** If you use the spare pages for planning, indicate this clearly at the top of the page.
- **Continuing an answer:** If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question that you are continuing to answer at the top of the page.

Suggested working time: 60 minutes.

Question 27

(22 marks)

Before mining can take place in an area, ecologists carry out field surveys during the development of an Environmental Impact Statement (EIS). Ecologists use a range of sampling techniques to determine which species of plants and animals live in an area, the distribution of these species and the relative size of the populations.

- (a) Give **two** reasons why it is important to carry out pre-clearing surveys to determine which species are present and the relative sizes of their populations. (2 marks)

One: _____

Two: _____

- (b) Explain how an ecologist would determine the population density of plants in the area. (4 marks)

Question 27 (continued)

Edward conducted plant surveys of three areas (each 200 km²) around a mine site, including two areas (Area 1 and Area 2) where strip mining had ceased 15 months previously.

- Area 1 – only the top soil had been replaced following the completion of mining and the area was allowed to seed naturally.
- Area 2 – the topsoil had been replaced and the area was fully rehabilitated.
- Area 3 – was natural forest and had not been cleared for mining operations.

(c) What is meant by the term ‘rehabilitation’? (1 mark)

(d) What is the purpose of the Area 3 survey? (1 mark)

The number of living plants found in the three surveyed areas

Plant	Area 1	Area 2	Area 3
Banksia	2	45	50
Orchids	0	20	100
Balga (grass tree)	0	30	30
Marri	0	20	20
Zamia	1	20	40
Hibbertia (shrubs/climbing plants)	0	30	60
Jarrah	0	90	100
Wattle	2	6	5
Caltrop (introduced weed)	15	5	2

- (e) Complete the following table by calculating the population density of Banksia in Area 2. Show **all** workings. (2 marks)

	Population density calculations	
	Banksia	Caltrop
Area 1	0.01/km ²	0.075/km ²
Area 2		0.025/km ²
Area 3	0.25/km ²	0.01/km ²

Workings:

- (f) By comparing data from Areas 1, 2 and 3 for banksia and caltrop, evaluate the relative success of the two rehabilitation methods for a mine site. In your answer comment on specific populations in each area and the overall rehabilitation outcomes. (10 marks)

Question 27(f) (continued)

(g) When mining operations commence, animals often lose their habitat, which provides sources of food and shelter. List **two** ways, other than topsoil replacement and replanting, ecologists use to encourage the return of native animals to an area as part of the rehabilitation process once mining has been completed. (2 marks)

One: _____

Two: _____

Question 28

(36 marks)

Western Australia has many different types of electrical energy sources. The Perth Wave Energy Project (PWEF) uses fully-submerged generators to convert ocean wave energy into zero-emission electricity and desalinated water. The project is located in a position where it is not affected by storms and does not interfere with shipping.

The project will sell both electricity and freshwater to the Australian Department of Defence to supply Australia's largest naval base, HMAS Stirling, which is located at Garden Island. The first unit was installed off Garden Island in late 2014 and the project is expected to be producing power in 2015.

- (a) Describe how electricity is produced in any wave power generator you have studied. (4 marks)

- (b) Which source of energy from wave power, nuclear fuels and coal would be chosen to

- (i) reduce impact on air quality: _____ (2 marks)
Give **one** reason:

- (ii) produce electricity at low cost: _____ (2 marks)
Give **one** reason:

- (iii) have the least impact on local communities. _____ (2 marks)
Give **one** reason:

Question 28 (continued)

- (c) For solar, biomass and geothermal electrical energy sources, identify **two** aspects of each that limit their general application. (6 marks)

Limitations of solar energy:

One: _____

Two: _____

Limitations of biomass energy:

One: _____

Two: _____

Limitations of geothermal energy:

One: _____

Two: _____

The Wellington Dam, which is fed by the Collie River, was built in the early 1900s to supply water to rural towns in the south west of Western Australia. A hydroelectricity station was incorporated in the dam in the 1950s. The single water turbine has a capacity of two megawatts.

- (d) List **two** advantages and **two** disadvantages of hydroelectricity as an energy source. (4 marks)

	Advantage	Disadvantage
One:		
Two:		

- (e) In 2013, Wellington Dam was so full that water flowed over the top of the dam wall. If the dam wall has a height of 35 m, calculate how much energy 1.0 kg of water at the top of the dam had just before it overflowed. Show **all** workings. Note: $g = 9.8 \text{ m s}^{-2}$ (3 marks)

- (f) Explain **two** reasons why hydroelectricity is considered a more sustainable energy source than coal. (4 marks)

One: _____

Two: _____

Question 28 (continued)

Wind farms are used in Western Australia to convert the kinetic energy of wind into electricity.

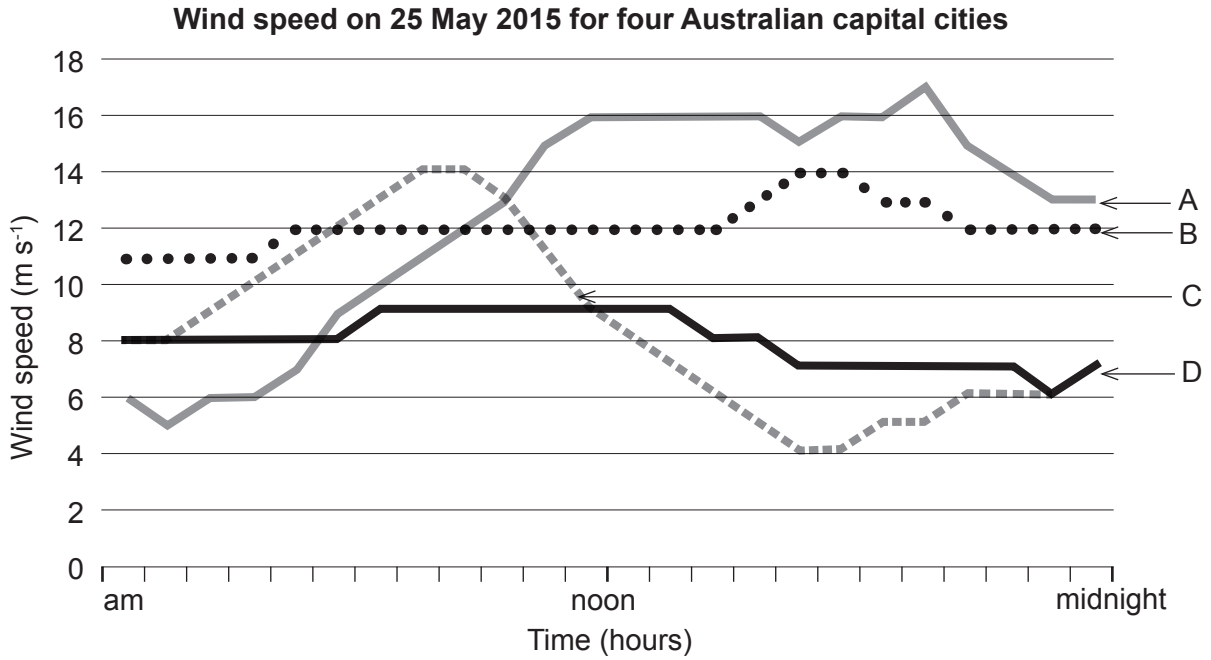
The kinetic energy can be approximated by $E_k = \frac{1}{2} mv^2$, where $m = 15\,000\text{ kg}$.

To determine a suitable location for a wind farm, two identical wind turbines were set up in different locations (A and B):

- Location A, with an average wind speed of 4 m s^{-1} for a period of 24 hours
- Location B, with an average wind speed of 2 m s^{-1} for a period of 12 hours and then the wind suddenly increased to an average 6 m s^{-1} for the next 12 hours.

(g) (i) Using the data calculate the kinetic energy for both locations and recommend which location would be the **most** suitable for a wind farm. Your answer needs to justify your recommendation as well as outline **two** limitations of the information collected. (7 marks)

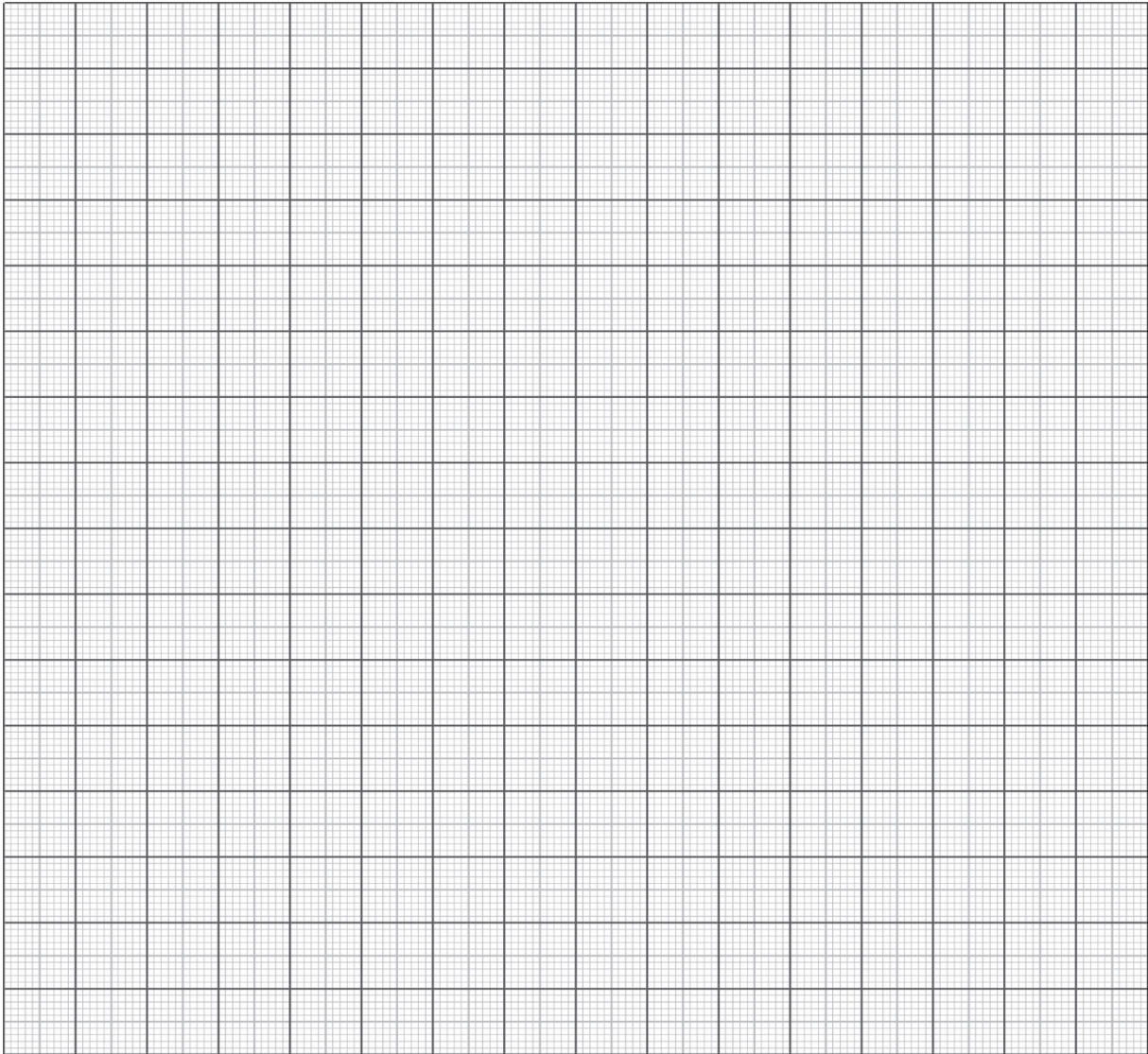
The following wind speed data are from four Australian capital cities recorded on 25 May 2015.



(ii) In choosing a city in which to build a wind-powered energy-generating facility, consider the four cities (A, B, C, D) and identify the location **most** likely to be successful. (1 mark)

(iii) If a wind farm was built near an Australian capital city, outline **one** negative effect this would have. (1 mark)

Spare grid.



ACKNOWLEDGEMENTS

Section One

Questions 6–7 Graph data sources:
International Energy Agency. (2015). *Indonesia: Balances for 2012*. Retrieved June, 2015, from www.iea.org/statistics/statisticssearch/report/?year=2012&country=INDONESIA&product=Balances
International Energy Agency. (2015). *Australia: Balances for 2012*. Retrieved June, 2015, from www.iea.org/statistics/statisticssearch/report/?country=AUSTRALI&product=balances&year=2012
Licence: IEA terms and conditions

Question 8 Table data sources:
International Energy Agency. (2015). *Indonesia: Balances for 2012*. Retrieved June, 2015, from www.iea.org/statistics/statisticssearch/report/?year=2012&country=INDONESIA&product=Balances
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Section Two

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Question 24 Image by courtesy member of examining panel.

Question 26 Text adapted from: Hoffman, D.E. (2009). *The dead hand: The untold story of the Cold War arms race and its dangerous legacy* (Ch. 11). New York: Anchor. Retrieved May, 2015, from https://archive.org/details/DavidEmanuelHoffmanTheDeadHandTheUntoldBo_201305
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Question 28(g)(ii) Wind speed data source: Bureau of Meteorology.

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