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COMMERCIAL STUDIES

7101/21

Paper 2 Arithmetic

October/November 2014

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces provided above.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer **all** questions in **Section A** and any **two** questions from **Section B**.

All working must be clearly shown in the space provided and should be done on the same sheet as the rest of the answer.

The businesses described in this Question Paper are entirely fictitious.

You may use a calculator in this examination.

N.B. £1 = 100p.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of **20** printed pages.

Section A (76 marks)Answer **all** questions in this section.**1** Calculate

(a) $7 + 3 \times 6 - 8$,

Answer (a)[3]

(b) $37.8 + 7.23 \div 3$,

Answer (b)[2]

(c) $\frac{\left(\frac{2}{3} - \frac{3}{8}\right)}{\left(\frac{3}{4} \div \frac{6}{7}\right)}$ Give your answer as a fraction in its simplest form.

Answer (c)[4]

2 Calculate

(a) $\frac{1}{12}$ of 3.2 giving your answer to 3 decimal places,

Answer (a)[2]

(b) 8000×12.60 giving your answer to 3 significant figures,

Answer (b)[2]

(c) the total weight of 300 boxes each weighing 85 kg.

Give your answer in tonnes.

Answer (c) tonnes [3]

- 3 (a) A car retailer sells 3 models of a car, the L, the GL and the GLS.

Sales figures for a 3 month period for these cars are shown in the table.

Model	L	GL	GLS
Number Sold	70	26	48

The retailer wants to draw a pie chart to represent the sales.

Calculate the angle of each sector of the pie chart.

Answer (a) (L).....° (GL).....° (GLS).....° [7]

(b) A customer decides to buy a used car costing \$7800. He has \$3500 available and has to borrow the remainder. He is charged 11.2% simple interest over 2 years.

How much, in total, does the car cost him?

Answer (b) \$[6]

- 4 The 5 directors of a company are paid the following annual salaries.

Director	A	B	C	D	E
Salary (\$)	160 000	155 000	190 000	140 000	170 000

- (a) Calculate the mean salary of the directors.

Answer (a) \$ [3]

- (b) In 2012 the company had 420 employees. The average annual salary of the employees was \$24 700.

Calculate the company's annual employee salary costs.

Answer (b) \$ [2]

- (c) The employees' salaries are increased annually in line with the Retail Price Index (RPI).

In 2012 the RPI was 150. Calculate the average salary of the employees in 2013 when the RPI was 156.

Answer (c) \$ [2]

- 5 A grower is testing a new variety of seed. He plants seeds from 10 packets. The resulting number of successful plants grown from each packet is shown in the table below.

Packet	1	2	3	4	5	6	7	8	9	10
Number of successful plants	16	14	14	19	20	9	13	12	17	20

- (a) What is the median number of successful plants?

Answer (a)[4]

- (b) In 2012 the grower sold boxes of seeds, each containing 100 packets, to a wholesaler for \$180 per box. Increasing production costs meant that in 2013 the price had to rise by 11%.

- (i) What was the 2013 price for a box of 100 packets of seeds?

Answer (b)(i) \$[3]

- (ii) In 2012 the wholesaler sold 4 boxes of 100 packets of seeds to a retailer for \$220 per box.

Calculate his profit.

Answer (b)(ii) \$ [3]

- (iii) The retailer then sold these packets of seeds for \$2.53 each.

What was his percentage profit?

Answer (b)(iii) % [3]

6 A homeowner wishes to insure her house and contents and obtains the following quote:

House	£1.60 per £1000 of value
Contents	0.12% of value.

The house is valued at £290 000 and the contents are valued at £30 000.

As a customer of the insurance company she will get a 4% discount on the premium.

(a) Calculate the annual premium.

Answer (a) £[7]

(b) However, she wishes to pay by monthly instalments and this will incur a 6.5% surcharge.

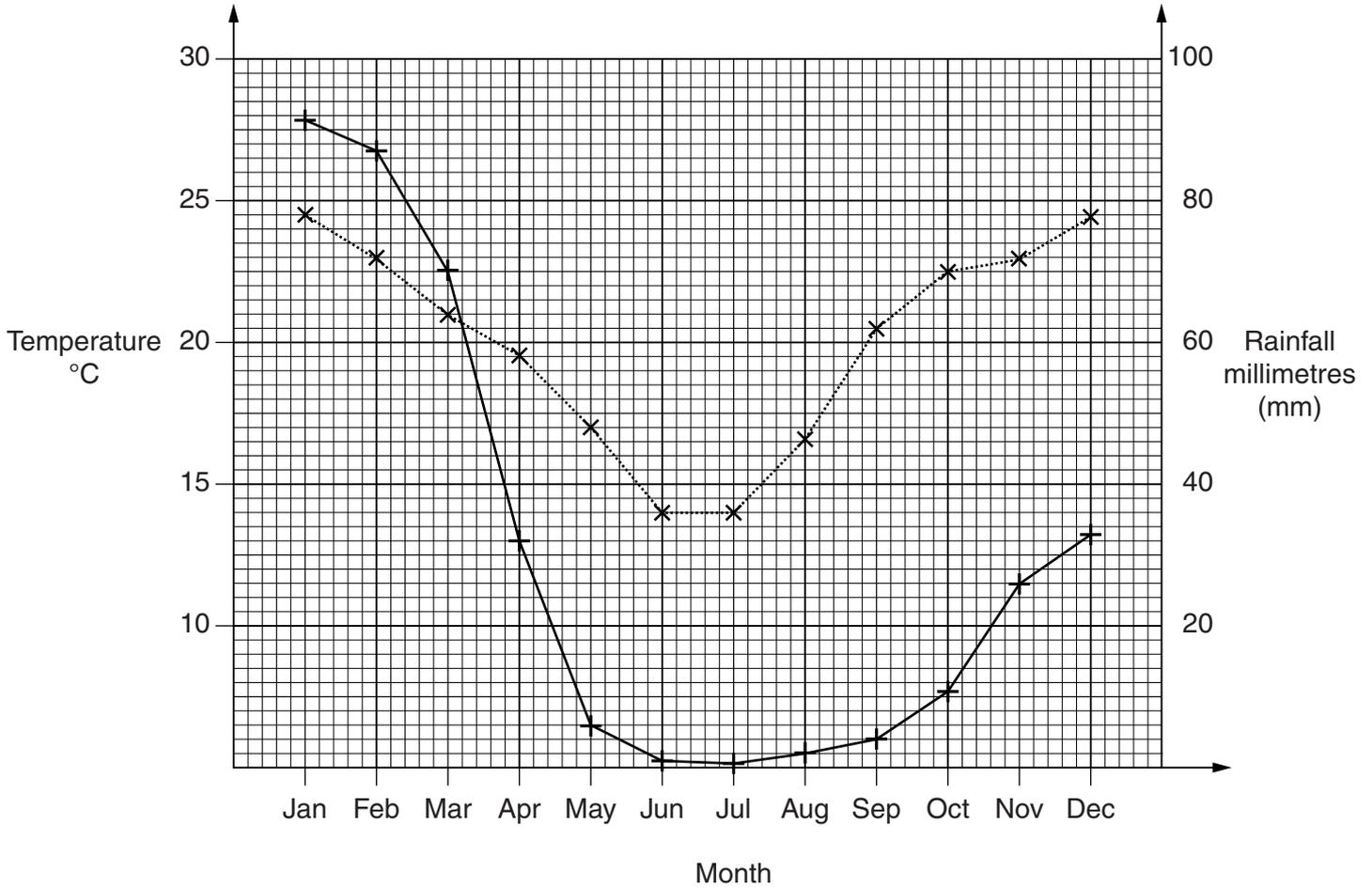
Calculate the monthly instalment.

Answer (b) £[4]

- 7 (a) Sylvia is producing a brochure for a safari holiday in Namibia. She has been studying data about the weather in Namibia so that she can include the information in her brochure.

The graph shows the average monthly temperatures (dotted line) and the recorded rainfall (solid line) at Windhoek, Namibia, during a year.

Temperature and rainfall data for Windhoek, Namibia



Use the graph to answer the following questions.

- (i) What was the highest average monthly temperature during the year?

Answer (a)(i)°C [1]

- (ii) In which 2 months was the average monthly temperature 23°C?

Answer (a)(ii) [2]

(iii) How many millimetres of rainfall were recorded in November?

Answer (a)(iii)mm [1]

(iv) During which 2 months was the recorded rainfall greater than 70 mm?

Answer (a)(iv)[2]

(v) What was the range of the temperatures during the year?

Answer (a)(v) °C [2]

(b) Sylvia orders office equipment costing \$6500 from a wholesaler.

She is given a trade discount of 23%. In addition to this trade discount, she may get a cash discount of 5%, 7 days or 2%, 30 days.

If she settles her account within 5 days, how much will she pay?

Answer (b) \$ [4]

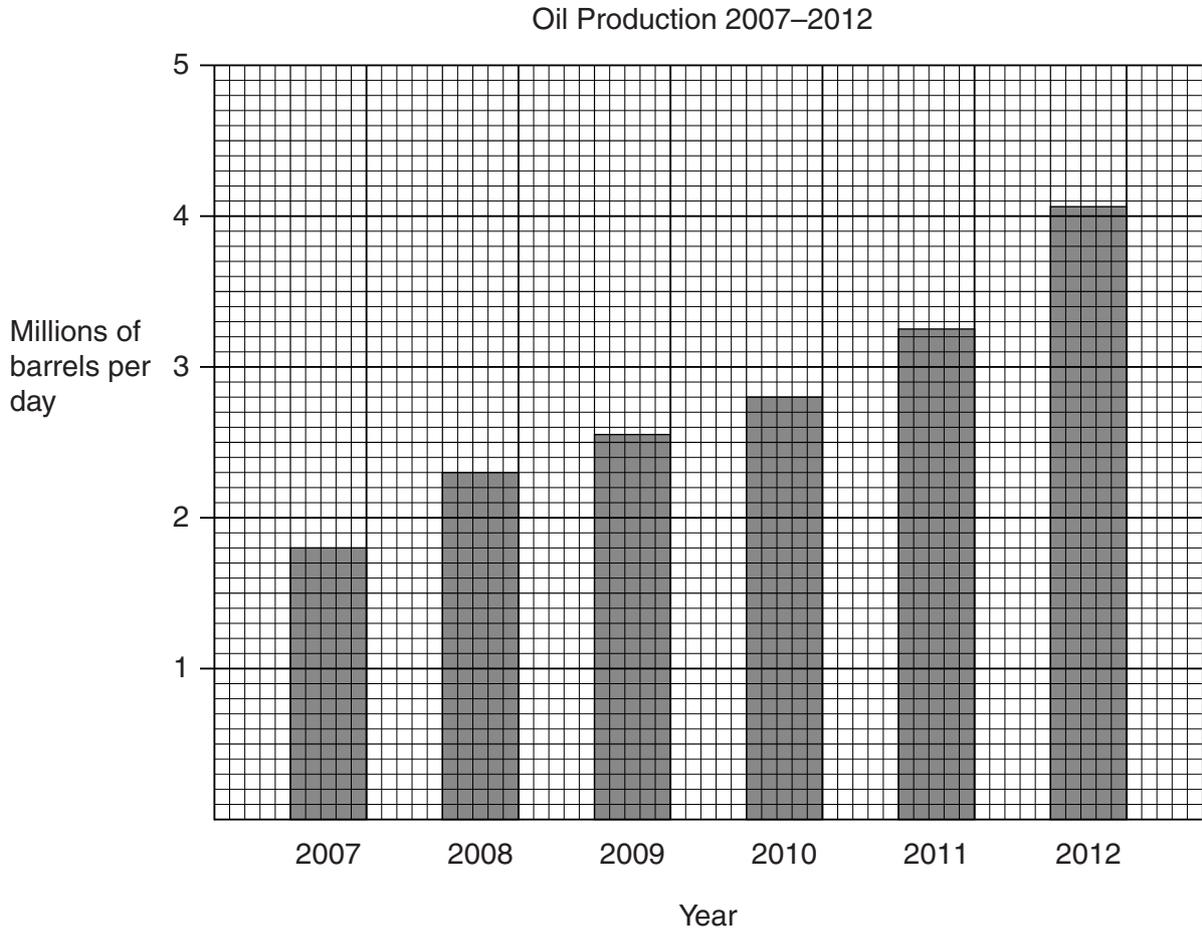
- (c) Sylvia has to drive from Windhoek to a meeting at Walvis Bay, a distance of 322 km. If she leaves at 0900 and has to arrive at Walvis Bay by 1445, what must be her minimum average speed? Answer in km/hr.

Answer (c)km/hr [4]

Section B (24 marks)

Answer any **two** questions from this section.

- 8 (a)** The bar chart shows a country's oil production from 2007 to 2012.



Use the bar chart to complete the table.

Year	2007	2008	2009	2010	2011	2012
Production (millions of barrels per day)	1.8				3.25	4.05

[3]

- (b)** Calculate the percentage increase in production from 2007 to 2012.

Answer (b) % [3]

(c) From 2006 to 2007 production increased by 12.5%. Calculate the 2006 production figure.

Answer (c)millions of barrels per day [2]

(d) 1 barrel is equivalent to 158.984 litres.

What was the production in litres/day in 2011?

Answer (d) litres/day [2]

(e) A dealer sold oil at \$83.20 per barrel. If he received \$499 200, how many barrels were sold?

Answer (e) barrels [2]

- 9 An art dealer travels from Mauritius to London to attend an art auction. She transfers 844 000 Rupees (Rs) to the UK where they are exchanged for pounds at a rate of Rs 42.2 = £1.
- (a) (i) Calculate the number of pounds the art dealer received.

Answer (a)(i) £[2]

- (ii) The art dealer uses the money to buy three items priced at £3000, £6500 and £8200. The balance of the money is transferred to her Mauritius account where it is exchanged for Rupees at a rate of Rs 39.9 = £1.

How many Rupees are transferred to her Mauritius account?

Answer (a)(ii) Rs[4]

- (b) The works of art have to be insured for their journey to Mauritius. The insurance rate is 97p per £100 of value.

How much does the insurance cost?

Answer (b) £[2]

- (c) The art dealer's return flight departs from London at 2030. The flight time is 11 hours and 50 minutes. Mauritius time is 4 hours ahead of London time.

When would she arrive, in local Mauritius time?

Answer (c)[4]

10 Adam, Beth and Charlie decide to set up a partnership growing and selling fruit trees. They invest capital of £110 000, £154 000 and £176 000 respectively. Any profits after tax from the business will be shared in the ratio of their investments.

(a) For his investment Adam had to borrow £75 000. For this loan he had to pay compound interest of 3.8% per annum over 3 years.

Calculate the total amount he had to repay. Give your answer to the nearest pound.

Answer (a) £[5]

(b) In the fourth year of their partnership the gross profit was £86 000 and expenses were £20 100. Tax on the remainder had to be paid at 20%.

(i) What was their profit after tax?

Answer (b)(i) £[3]

(ii) How much of the after tax profit did Charlie receive?

Answer (b)(ii) £[3]

(c) The number of different types of tree sold in their first year is shown in the table.

Tree Type	Apple	Pear	Plum	Mulberry	Quince
Number Sold	140	110	130	80	40

Write down the mode.

Answer (c)[1]

- 11 (a) A salesman is paid an annual basic salary of \$25 000. In addition he is paid a commission on sales of 3.8%.

If his annual sales total is \$116 000, what is his gross annual income?

Answer (a) \$[4]

QUESTION 11 CONTINUES ON THE NEXT PAGE

(b) The first \$12 000 of the salesman's income is tax free. The remainder is taxed as follows:

- 5% on the next \$8000
- 20% on the remainder.

Calculate his net annual income.

Answer (b) \$[8]

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