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COMMERCIAL STUDIES

7101/22

Paper 2 Arithmetic

October/November 2017

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
 Ruler

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 an HB 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 **16** printed pages.

Section A (76 marks)Answer **all** questions in this section.**1** Calculate**(a)** 143% of 650 Euros*Answer (a)* Euros [2]**(b)** $6 - 7 \times 3 \div \frac{1}{2}$ *Answer (b)* [2]**(c)** $\frac{3\frac{1}{2} - 1\frac{1}{4}}{\frac{3}{8} + \frac{4}{9}}$ Give your answer as a mixed number.*Answer (c)* [3]

- 2 (a) Jasmin, a homeowner, obtains the following quote for insurance.

House	0.2% of value
Contents	£14 per £1000 of value

Her house is valued at £285 000 and contents at £35 000.

She decides to buy both house and contents insurance and receives a 7% discount on the total premium.

Calculate how much she has to pay.

Answer (a) £ [7]

- (b) Jasmin also requires car insurance and obtains the following seven quotes.

£200, £290, £260, £310, £275, £280, £235

What is the median quote?

Answer (b) £ [3]

3 A retailer can buy his stock either from Wholesaler A or Wholesaler B.

Wholesaler A offers a trade discount of 22% and then a cash discount of 7%, 14 days or 4%, 30 days.

Wholesaler B offers a trade discount of 20% and then a cash discount of 12%, 10 days or 8%, 30 days.

The retailer buys stock costing \$800.

If he pays on day 12, which wholesaler would be cheaper and by how much?

Answer Wholesaler..... is cheaper by \$.....[9]

4 A car was bought new for \$21 000.

Its value depreciated by 20% in the first year and by 7.5% per year after that.

Calculate the car's value at the end of 3 years.

Answer \$[4]

- 5 (a) A specialist bookseller sells books about air transport, land transport and sea transport in the ratio 8 : 5 : 2 respectively.

If she sells 210 books in one week, how many would be about land transport?

Answer (a)[4]

- (b) The bookseller is normally open from 9 am until 4:30 pm, Monday to Saturday.
She decides to change the Friday closing time to 6:45 pm.

What is the percentage increase in total weekly opening hours?

Answer (b)% [6]

- (c) The bookseller's assistant normally earns \$12.40 per hour. The extra working time on Friday will be paid at an overtime rate of $1\frac{1}{2}$ times the normal rate.

How much extra will the assistant earn for working the additional opening hours?

Answer (c) \$ [3]

- (d) The bookseller's rent in 2016 was \$920 per week. The rent increases annually in line with the RPI. In 2016 the RPI was 184.

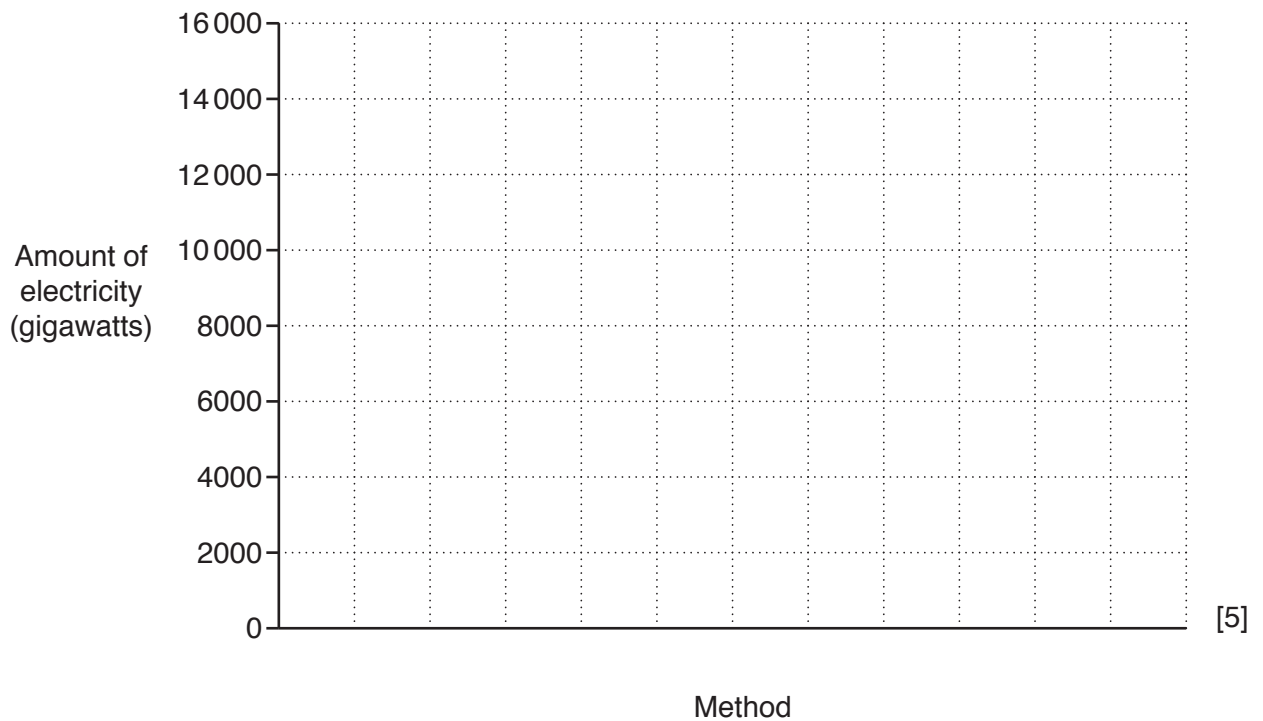
What was her rent in 2015 when the RPI was 176?

Answer (d) \$ [3]

- 6 A country generates 30 000 gigawatts of electricity in a year.
The table below shows the methods of electricity generation.

Method of electricity generation	Amount of electricity generated (gigawatts)
Nuclear	16 000
Geothermal	4 000
Hydro	6 000
Solar	1 000
Other	3 000

- (a) On the grid below, show this data as a bar chart.



- (b) What percentage of electricity is generated by Hydro?

Answer (b)% [3]

- 7 (a) Otto flies from Frankfurt to Montreal.
The flight departs at 16:10 local time and the flight takes 8 hours and 10 minutes.
Montreal local time is 6 hours behind Frankfurt local time.

What is the time in Montreal when Otto's flight arrives?

Answer (a) [4]

- (b) Otto exchanges 2800 Euros for Canadian dollars (CAD) at a rate of
1 Euro = 1.37 CAD.

How many Canadian dollars does he receive?

Answer (b) CAD [2]

- (c) On returning to Germany, Otto exchanges 1260 Canadian dollars for Euros at a rate of
1 Euro = 1.344 CAD.
Otto is charged a commission, in Euros, of 1.6% for this exchange.

How many Euros does Otto receive after he has paid this commission?

Answer (c) Euros [3]

8 Andrea buys 8200 shares in a company for £1.25 each.

- (a) The company declares a dividend of 14p per share before tax. Andrea receives £975.80.

At what rate was the dividend taxed?

Answer (a)% [5]

- (b) The company is taken over by a competitor and Andrea receives shares in the new company at a rate of 45 new shares for each 100 of her original shares.

How many shares in the new company did she receive?

Answer (b) [3]

- (c) Andrea sells all her new shares, making a profit of 18.8%.

How much did she receive for **each** new share?

Answer (c) £ [5]

Section B (24 marks)

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

- 9 The Sishen – Saldhana railway line in South Africa carries iron ore from the mines near Sishen to the port at Saldhana Bay, a distance of 861 kilometres.

- (a) The trains run at an average speed of 80 km/hr.

How long does the journey take? Give your answer in hours and minutes correct to the nearest minute.

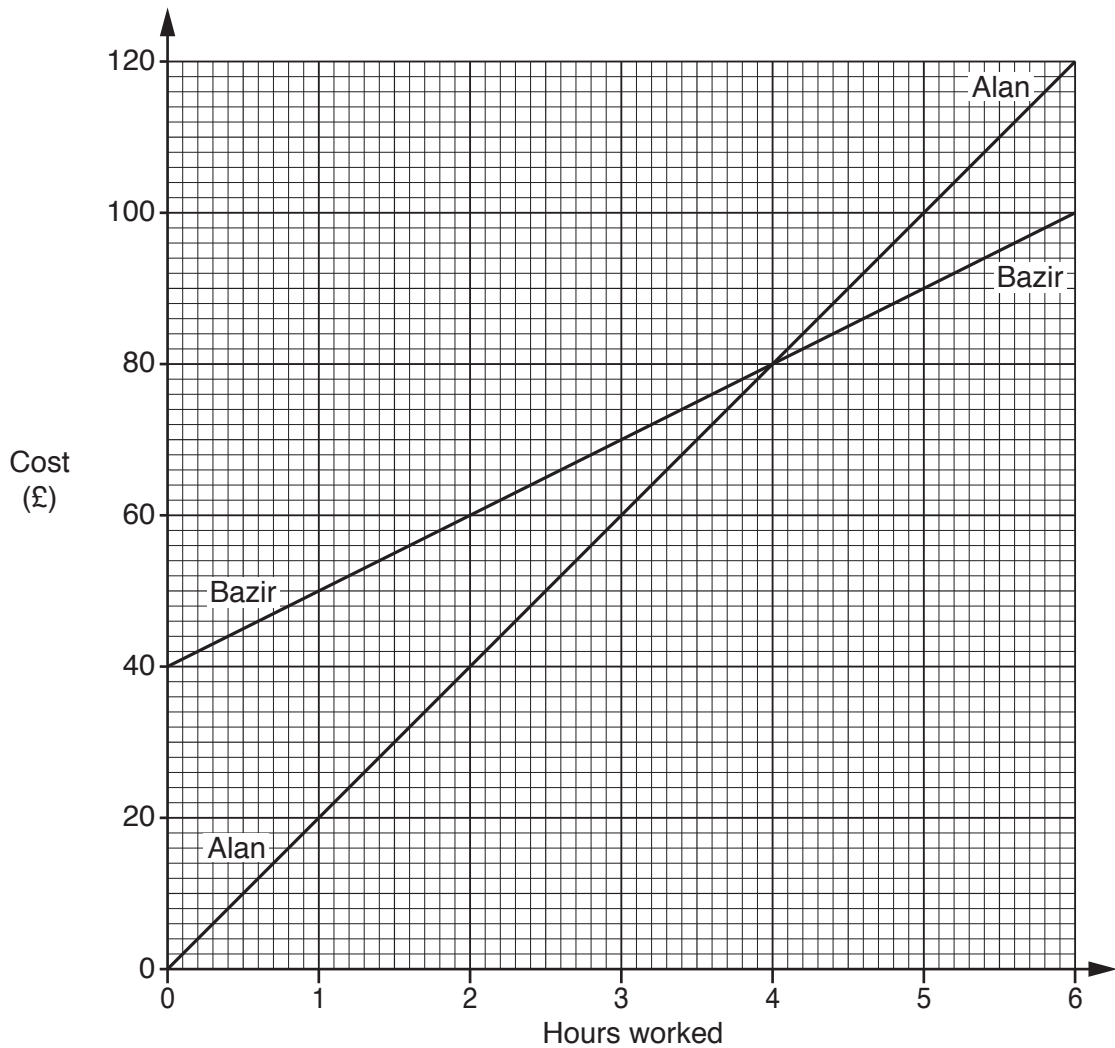
Answer (a)h min [5]

- (b) A typical train has 342 wagons each carrying 100 tonnes of iron ore.
8 locomotives, each weighing 173.25 tonnes, are needed to pull the train.
The total weight of the loaded train is 41 400 tonnes.

What is the weight of an empty wagon?

Answer (b)tonnes [7]

- 10 Alan and Bazir are both plumbers who respond to emergency work. The graph below shows how they charge for their work. Both charge a rate per hour for emergency work but Bazir also charges a call-out fee.



(a) Use the graph to help you answer the following questions.

- (i) What is Bazir's call-out fee?

Answer (a)(i) £[1]

- (ii) What is Alan's hourly rate?

Answer (a)(ii) £[1]

(iii) Both plumbers charge the same amount for a job.

How many hours did this job take?

Answer (a)(iii)hours [1]

(iv) How much more does Bazir charge than Alan for a job lasting 2 hours?

Answer (a)(iv) £[1]

(b) Another plumber, Conrad, charges £19 per hour with no call-out fee.

In 2016, Conrad worked a total of 1575 hours.

His earnings, after expenses of £8200 were deducted, were taxed as shown in the table.

Income	Tax Rate
First £11 400	Tax free
Next £5 000	10%
Remainder	20%

Calculate Conrad's net earnings for 2016.

Answer (b) £[8]

11 Adam, Beth and Cassie are the only directors of a private limited company.

In 2015 the company sales turnover was \$68 000.

Deductions for expenses, salaries and tax amounted to \$31 500.

Net profit was distributed to the directors in proportion to their initial investment.

Cassie's initial investment was \$70 000 and her share of net profits was \$12 775.

(a) Calculate the total initial investment of the three directors.

Answer (a) \$ [4]

(b) Adam and Beth's initial investment was in the ratio 8 : 5.

What was Adam's share of the net profit?

Answer (b) \$ [5]

(c) In 2016 the directors decided to employ a sales representative.

In that year, the sales representative earned \$27 200 commission on her sales.

Her commission rate was 8%.

What was the value of her sales?

Answer (c) \$ [3]

Question 12 is on the next page

12 A manufacturer has factories in two countries.

- (a) In Country A he has 105 employees whose mean salary is \$22 500.
In Country B he has 90 employees whose mean salary is \$18 700.

Calculate the mean salary of all the employees, giving your answer to the nearest cent.

Answer (a) \$[7]

- (b) The factory in Country A produces a toy in 5 colours. The number of toys produced in each colour in one month is shown in the table below.

Colour	Red	Blue	Green	Yellow	Purple
Number produced	680	550	430	510	350

- (i) Write down the modal colour.

Answer (b)(i)[1]

- (ii) The data is to be shown in a pie chart.

Calculate the sector angle for purple.

Answer (b)(ii) °[4]

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