

**ECONOMICS  
ADMISSIONS ASSESSMENT****D563/11****Wednesday 31 October 2018****80 minutes****SECTION 1****INSTRUCTIONS TO CANDIDATES**

**Please read these instructions carefully, but do not open this question paper until you are told that you may do so.** This paper is Section 1 of 2.

A separate answer sheet is provided for this paper. Please check you have one. You also require a soft pencil and an eraser.

Please complete the answer sheet with your candidate number, centre number, date of birth, and name.

At the end of 80 minutes, your supervisor will collect this question paper and answer sheet before giving out Section 2.

This paper contains two parts, **A** and **B**.

**Part A**                      Problem Solving (20 questions)  
**Part B**                      Advanced Mathematics (16 questions)

You should attempt **both** parts and you are **strongly** advised to divide your time equally between the two parts: 40 minutes on **Part A** and 40 minutes on **Part B**.

This paper contains 36 multiple-choice questions. There are no penalties for incorrect responses, only marks for correct answers, so you should attempt **all** 36 questions. Each question is worth one mark.

For each question, choose the **one** option you consider correct and record your choice on the separate answer sheet. If you make a mistake, erase thoroughly and try again.

You **must** complete the answer sheet within the time limit.

You can use the question paper for rough working, but **no extra paper** is allowed. Only your responses on the answer sheet will be marked.

Dictionaries and calculators may NOT be used.

**Please wait to be told you may begin before turning this page.**

This question paper consists of 35 printed pages and 1 blank page.

PV2



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## **PART A Problem Solving**

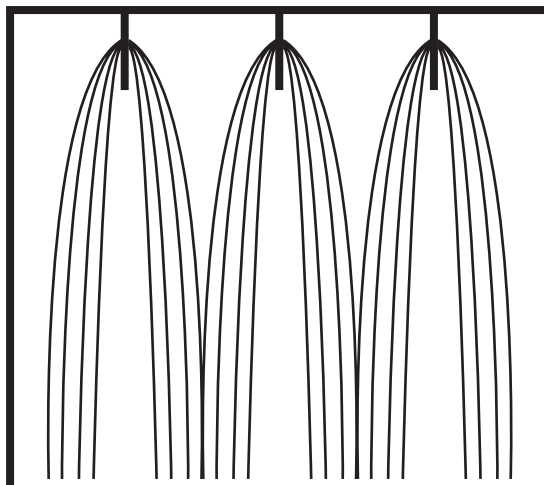
- 1 I am redecorating my house and need to buy wallpaper for one of the rooms. I need to buy 54 m of wallpaper in total and want to pay the lowest price. The table below shows the details of the five types of wallpaper I want to choose between.

<i>wallpaper type</i>	<i>roll length</i>	<i>cost per roll</i>	<i>special offers</i>
<i>woodchip</i>	2 m	£25	every fifth roll is free
<i>vymura</i>	3 m	£35	10% discount for orders over £500
<i>anaglypta</i>	3 m	£40	20% discount for orders over £500
<i>embossed</i>	4 m	£50	25% discount on all orders
<i>fabric effect</i>	5 m	£100	buy one, get one free

Which type of wallpaper should I choose?

- A woodchip
- B vymura
- C anaglypta
- D embossed
- E fabric effect

- 2 The diagram below shows the method of construction of a book with four folded sheets in each block, and three blocks in total. Page one is the first page of the first block of four sheets. At the centre of each block, you can see the stitching that binds the book together.



A book is to be made using the same technique but with eight sheets of paper in each of the three blocks.

Which of the following pairs of pages could be in the centre of a block (that is, if opened there, the stitching would be visible)?

- A 46 and 47
  - B 47 and 48
  - C 48 and 49
  - D 63 and 64
  - E 64 and 65
- 3 Jake has a 500 ml bottle of orange squash that he has made according to the instructions on the bottle of concentrate. The instructions dictate that he should add 4 parts water to 1 part concentrate. He accidentally spills his squash, and now there is only 400 ml in the bottle. He then tops up the remainder with concentrate.

What percentage of the squash in his 500 ml bottle is now concentrate?

- A 18%
- B 20%
- C 28%
- D 36%
- E 40%

- 4 Below is a table showing the value of Lucy's shares. They started at £3.00 in 2011 and in 2016 they were worth £22.68.

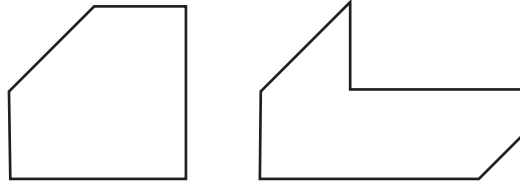
<i>year</i>	<i>share value</i>
2011	£3.00
2012	£4.20
2013	£6.30
2014	£9.45
2015	£15.12
2016	£22.68

When did Lucy's shares have the biggest percentage increase?

- A 2011–2012
- B 2012–2013
- C 2013–2014
- D 2014–2015
- E 2015–2016

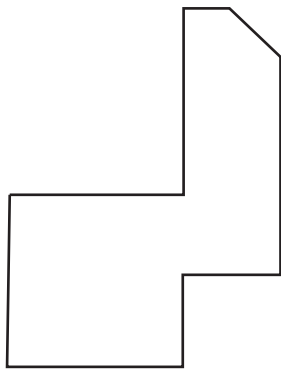
5 Connem Ltd. has recently adopted a new company logo.

A large plastic version of the logo has just been delivered to the office, to be attached to the outside of the building. Unfortunately, in transit, the plastic has broken into two pieces, as shown below:

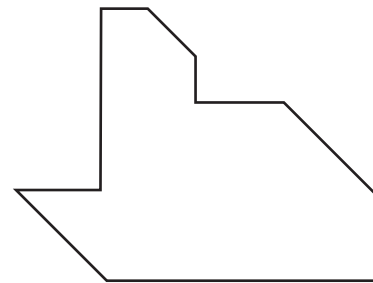


Which one of the following could **not** be Connem's new logo?

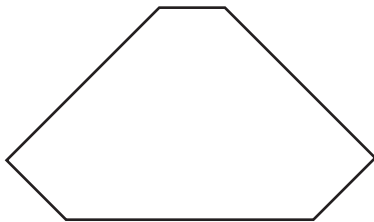
A



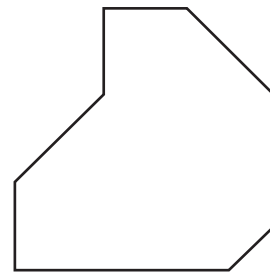
B



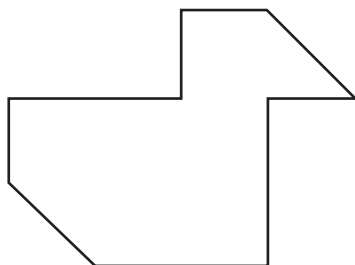
C



D



E



- 6 A Youth Centre runs a number of football teams for boys of different ages. Each season, one prize is awarded to the player who has given the best all-round performance. Five players have been nominated as possible recipients of this year's prize. The manager has decided not to reward any player who has missed two consecutive training sessions more than twice, and the manager will also exclude anyone who has failed to score a goal from a penalty kick more than twice. After these criteria have been applied, the prize will go to the player who has scored the highest number of goals.

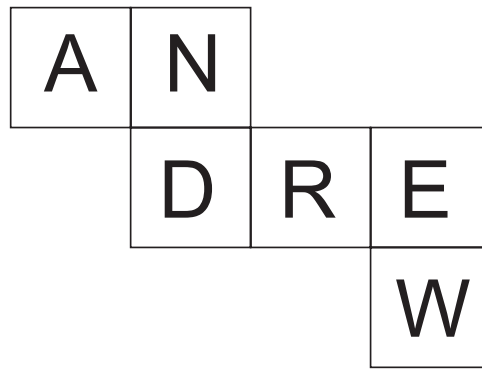
<i>player</i>	<i>no. of years in a team</i>	<i>no. of times late for training</i>	<i>no. of times missed two consecutive training sessions</i>	<i>no. of penalty kicks taken</i>	<i>no. of penalties scoring a goal</i>	<i>total no. of goals scored</i>
David	2	3	2	16	13	32
John	3	2	1	10	9	26
Colin	2	4	1	13	9	30
Mike	1	2	2	12	10	29
Graham	2	0	3	8	7	36

Which player will receive the best all-round performance prize?

- A David
- B John
- C Colin
- D Mike
- E Graham



7 The diagram below shows the net of a cube.



The following diagrams show five suggested views of the cube once it has been assembled.



1



2



3



4



5

Which two of the above are possible views of the cube?

- A 1 and 2
- B 2 and 3
- C 3 and 4
- D 1 and 4
- E 4 and 5

- 8 Five girls are collecting shells on a beach. They are putting them in buckets that each hold 24 shells. At the end of the collecting time, they are going to ensure that they all have the same number of shells. Four of them are only two short of filling their bucket, but the youngest one is lagging behind with her total. Each of the others give her three shells from their buckets in order to equalise the numbers collected.

How many shells did the youngest girl collect for herself?

- A 4
  - B 7
  - C 10
  - D 12
  - E 19
- 9 I have a digital clock that works in 24-hour format (that is, after 23:59, it goes to 00:00). The patterns for each number are made up of segments, as shown below:



What is the maximum number of segments that can be displayed at once, while still showing a valid time?

- A 20
- B 23
- C 24
- D 26
- E 28

- 10** There is an automatic photograph booth in my local shopping centre. It takes exactly 2 minutes from the time that the money is inserted for the photographs to be taken, then the developed photographs appear 4 minutes later.

Money may only be inserted when the green light is on. This light goes out immediately after money is inserted, and comes back on again exactly 3 minutes later.

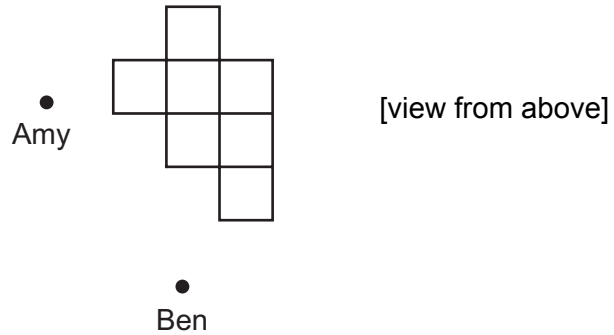
This morning, I arrived at the booth just as it was being switched on, and I was sixth in the queue. The first person inserted their money immediately, and the rest of us all inserted our money as soon as we were allowed to.

How long after I arrived at the booth did I insert my money?

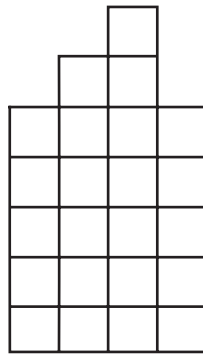
- A** 15 minutes
- B** 18 minutes
- C** 21 minutes
- D** 25 minutes
- E** 30 minutes

- 11 A number of identical boxes are piled up, waiting to be loaded into a delivery van. Amy and Ben are about to load them into the van.

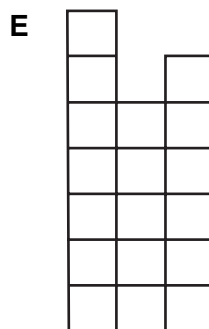
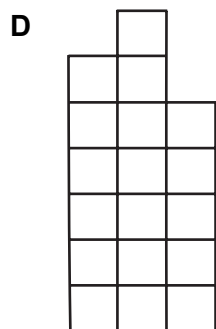
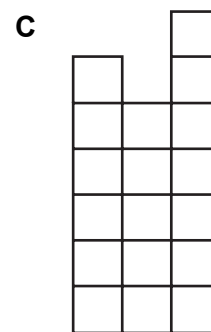
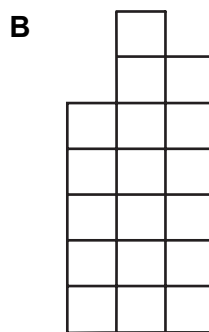
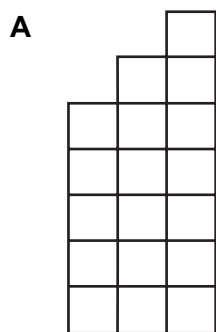
The appearance of the pile of boxes and the positions of Amy and Ben at present are shown below:



Amy's view of the pile is:



Which one of the following could **not** be Ben's view of the pile?



- 12 Recently, packets of Amblers crisps have had ‘money-off’ coupons inside them. Some coupons are worth 9p, some are worth 14p and some are worth 20p.

George has been collecting these coupons. He has more 14p coupons than 9p coupons, and more 9p coupons than 20p coupons. The total value of all of his coupons is exactly £1.50.

How many coupons has George collected?

- A 9
  - B 10
  - C 11
  - D 12
  - E 13
- 13 Joanne is studying the period 1900–1950 and has decided to buy a new book to help with her studies. There are five different books available at her local bookshop, the details of which are summarised below:

<i>title</i>	<i>period covered</i>	<i>hardback?</i>	<i>illustrated?</i>	<i>price</i>
<i>History of the 20<sup>th</sup> Century</i>	1900–2000	yes	no	£45
<i>The Illustrated Guide to History</i>	1750–2000	no	yes	£50
<i>Beginner’s Guide to History</i>	1700–1850	no	no	£40
<i>History for All</i>	1750–1950	yes	yes	£60
<i>All About History</i>	1800–1900	yes	no	£55

On Tuesday, Joanne chose to buy the cheapest book that would satisfy her requirements, and went away to get the exact amount of money needed to buy it. When she returned the following day to buy her chosen book she found that there was a sale and all of the books had been reduced by 20%. She then decided instead to buy the most expensive book that she could with the money she had, and which still satisfied her requirements.

How much money did Joanne have left over once she had bought the book?

- A £0
- B £1
- C £2
- D £3
- E £5

- 14 At the start of the school year, a village shop stocks and sells a range of stationery items. The table below shows details of the wholesale costs and retail prices for a number of the items sold.

<i>items</i>	<i>wholesale cost per pack of 12</i>	<i>retail selling price per 1 item</i>	<i>number sold in one week</i>
<i>crayons</i>	48p	10p	180
<i>felt tips</i>	72p	12p	150
<i>pencils</i>	24p	6p	200
<i>pens</i>	36p	15p	150
<i>rulers</i>	60p	30p	40

Of the five items sold, which two together made the most profit for the shop owner?

- A crayons and pencils
  - B crayons and pens
  - C felt tips and pencils
  - D felt tips and rulers
  - E pens and rulers
- 15 In the main draw of a lottery, six of the balls (which are numbered from 1 to 49) are selected at random, then the numbers chosen are rearranged and displayed in ascending numerical order.

For instance: 3 17 20 29 34 45

In one draw recently, I noticed that the six numbers were made up of a total of ten digits, all different. The lowest number on this occasion was 1 and the highest number was 49, so the range of the six numbers was 48, the greatest possible range for the lottery main draw.

What is the smallest possible range when the six numbers in the main draw of the lottery have a total of ten digits, all different?

- A 21
- B 23
- C 27
- D 31
- E 32

- 16** Car parking charges are shown in the table below. Brian wants to park his car for a period of 7.5 hours, whilst he is at work. He buys a ticket in the morning when he arrives at the car park. Due to the close proximity of the car park to his place of work, he is able to return to his car to buy a new ticket as many times as needed.

<i>up to</i>	<i>car parking charges</i>
1 hour	£0.80
2 hours	£1.20
3 hours	£1.70
4 hours	£2.40
5 hours	£3.50
6 hours	£4.20
7 hours	£5.20
8 hours	£6.20
over 8 hours	£8.20

What is the most Brian can save by returning to the car to buy new tickets compared to buying one 8-hour ticket?

- A** £1.10
  - B** £1.40
  - C** £1.60
  - D** £2.10
  - E** £3.60
- 17** A car journey begins with a 15 km drive at an average speed of 60 km/hour, then 5 hours on the motorway, including two 15-minute rest stops, travelling at an average driving speed of 80 km/hour, and finally a 20 km drive at an average speed of 40 km/hour from the motorway to the destination.

If the destination is reached at 12:00 midday, at what time did the journey begin?

- A** 5:18 am
- B** 5:25 am
- C** 5:45 am
- D** 6:15 am
- E** 6:45 am

- 18 Fiona is going to put some shelves up in her living room. The shelves must each be 1.80 m long and have a depth of at least 40 cm. There will be five shelves in total. The different prices for wood are shown in the table below.

<i>length</i>	<i>depth</i>		
	<i>30 cm</i>	<i>45 cm</i>	<i>60 cm</i>
0.50 m	\$0.90	\$1.35	\$1.50
1.00 m	\$1.70	\$2.55	\$2.80
1.50 m	\$2.50	\$3.75	\$4.20
2.00 m	\$3.30	\$4.95	\$5.50
3.00 m	\$4.80	\$7.20	\$8.00
4.00 m	\$6.20	\$9.30	\$10.00

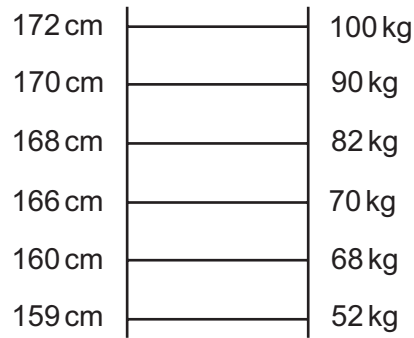
Fiona can cut pieces of wood to make more than one piece of the correct size, but she wants each of the shelves to be made of one complete piece of wood.

What is the cheapest total cost for which Fiona can make her shelves?

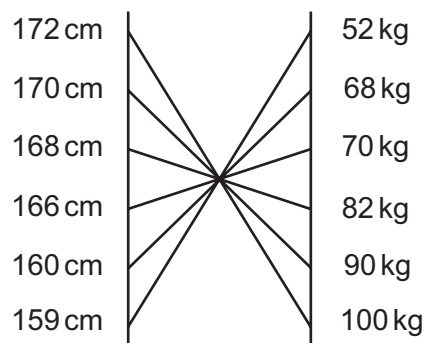
- A \$21.15
- B \$23.25
- C \$23.55
- D \$24.75
- E \$25.50



- 19 Keith likes to draw 'bump charts' to look at relationships. For instance, if 6 individuals were ordered by height, and it happened that the order was the same by weight, the bump chart would look like this:

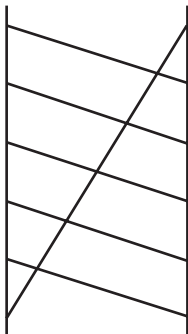


Or if height was maintained for order on the left hand but lightness rather than heaviness on the right hand, the bump chart would be this:

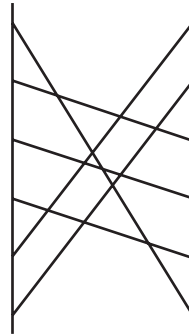


If one axis is reversed in order (as in heaviness goes to lightness), which one of the following bump charts would **not** be symmetrical about a vertical line midway between the axes?

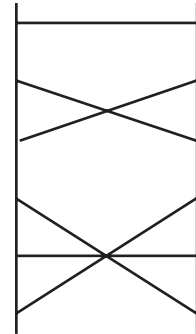
A



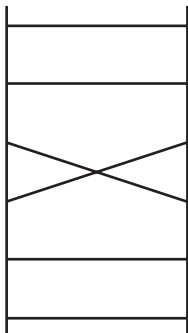
B



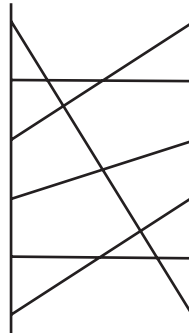
C



D



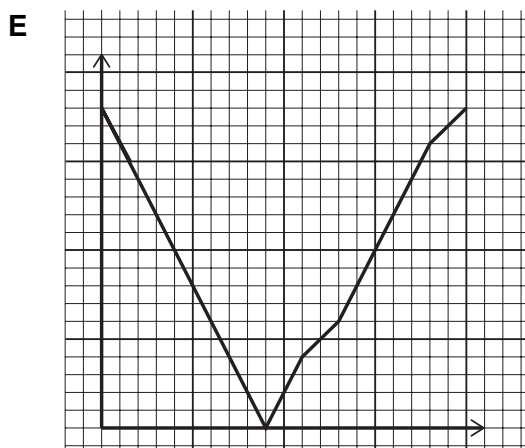
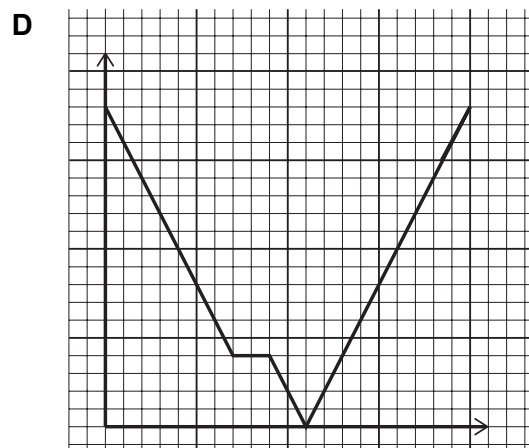
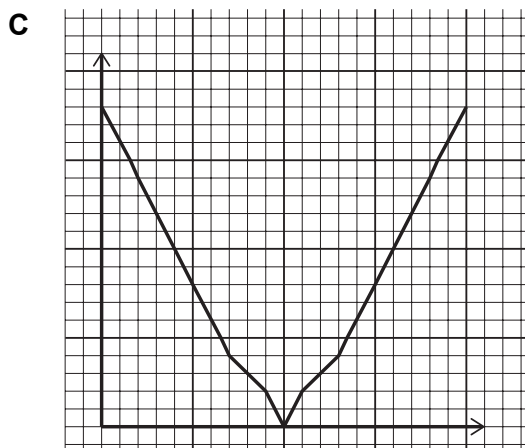
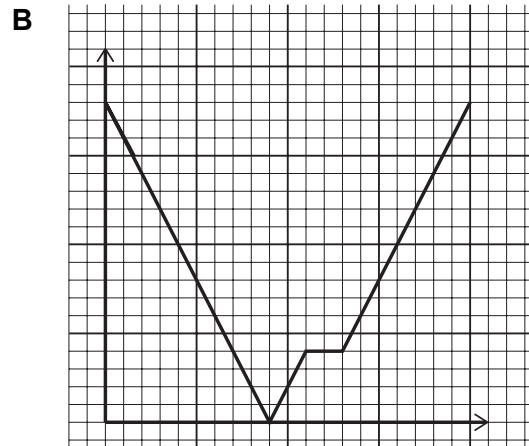
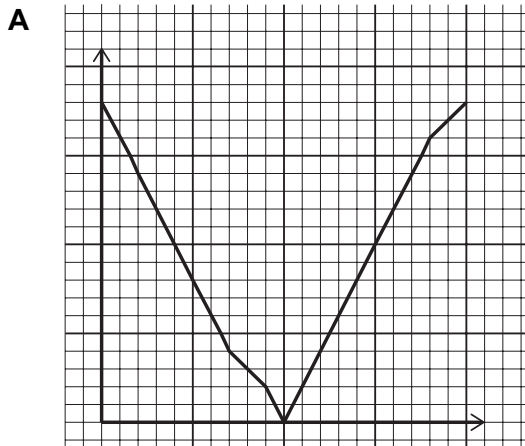
E



- 20** A frequent train service runs between Weskham and Eashon, a distance of 18 miles. Most trains stop once during the journey, for 2 minutes at Orthorp, 7 miles from Eashon. When in motion, all trains travel the route at a steady speed of 60 mph.

At 2:45 pm, trains leave Weskham and Eashon simultaneously. The train from Weskham stops at Orthorp, but the train from Eashon does not.

Which one of the following graphs, suitably labelled, shows how far apart the two trains are from each other, beginning with the time of departure and ending when they have both reached their final destination?



## **PART B Advanced Mathematics**

21 Given that

$$5^{x+1} \times 25^{3x} = 125^{19}$$

what is the value of  $x$ ?

A 3

B  $\frac{9}{2}$

C 8

D 9

E  $\frac{19}{4}$

**22** The 1<sup>st</sup> term of an arithmetic progression is non-zero.

The 5<sup>th</sup> term of this arithmetic progression is the square of the 1<sup>st</sup> term.

The 33<sup>rd</sup> term of this arithmetic progression is 10 times the 3<sup>rd</sup> term.

What is the 10<sup>th</sup> term?

- A** 31
- B** 34
- C** 39
- D** 248
- E** 496

**23** In the binomial expansion of  $(a + 2x)^6$ , where  $a$  is positive, the coefficient of  $x^4$  is 1200

What is the value of  $a$ ?

**A**  $\frac{\sqrt{2}}{2}$

**B**  $\frac{\sqrt{10}}{2}$

**C**  $\frac{\sqrt{15}}{2}$

**D**  $\sqrt{5}$

**E**  $2\sqrt{10}$

**24**  $ax - 1$  is a factor of  $3ax^3 + (6a + 1)x^2 - 4$

$a$  is a non-zero real number.

What are the possible values of  $a$ ?

**A**  $-1$  or  $-\frac{1}{2}$

**B**  $+\frac{1}{2}$  or  $+1$

**C**  $-2$  or  $+\frac{1}{2}$

**D**  $-\frac{1}{2}$  or  $+2$

**E**  $-\frac{1}{3} - \frac{\sqrt{7}}{3}$  or  $-\frac{1}{3} + \frac{\sqrt{7}}{3}$

**F**  $+\frac{1}{3} - \frac{\sqrt{7}}{3}$  or  $+\frac{1}{3} + \frac{\sqrt{7}}{3}$

**25** Two fair six-sided dice are identical except for their colour.

Each of the dice has its faces numbered from 1 to 6, with one number on each face.

One of the dice is red and the other is blue.

The two dice are rolled.

The number shown on the red dice is divided by the number shown on the blue dice to give the score.

What is the probability of a score of 0.5?

**A** 0

**B**  $\frac{1}{36}$

**C**  $\frac{1}{18}$

**D**  $\frac{1}{12}$

**E**  $\frac{1}{6}$



**26** The positive real numbers  $a$  and  $b$  satisfy the simultaneous equations:

$$\log_2 4a - \log_2 b = 4$$

$$\log_2 a + \log_2 2b = 3$$

What is the value of  $a - 2b$ ?

**A** 0

**B**  $\frac{8}{9}$

**C** 2

**D**  $\frac{8}{3}$

**E** 4

**F** 6

27 A train arriving at Edinburgh has 12 passengers.

The passengers got on the train at three different stations:

5 at Peterborough

4 at Newark

3 at York

The passengers leave the train one at a time in a random order.

What is the probability that the first three to leave did **not** all get on the train at the same station?

- A  $\frac{3}{11}$
- B  $\frac{41}{44}$
- C  $\frac{103}{110}$
- D  $\frac{19}{20}$
- E  $\frac{21}{22}$
- F  $\frac{43}{44}$
- G  $\frac{54}{55}$
- H  $\frac{219}{220}$

**28** Find the set of values of  $x$  such that both  $x^2 + x - 6 \geq 0$  and  $4 + 3x - x^2 \leq 0$

**A**  $2 \leq x \leq 4$

**B**  $-3 \leq x \leq -1$

**C**  $x \leq -3$  or  $-1 \leq x \leq 4$

**D**  $-3 \leq x \leq -1$  or  $2 \leq x \leq 4$

**E**  $x \leq -1$  or  $x \geq 2$

**F**  $x \leq -3$  or  $x \geq 4$

**29** The line with equation

$$(1 + \sqrt{3})y = px + 5$$

is perpendicular to the line with equation

$$y = (2 - \sqrt{3})x + 8$$

What is the value of  $p$ ?

**A**  $-5 - 3\sqrt{3}$

**B**  $-5 + 3\sqrt{3}$

**C**  $5 - 3\sqrt{3}$

**D**  $5 + 3\sqrt{3}$

**30** S is a geometric progression:  $u_1, u_2, u_3, u_4, u_5, u_6, \dots$

All of the terms in S are positive.

S is split to form two new geometric progressions, O and E.

The terms of O are:  $u_1, u_3, u_5, \dots$

The terms of E are:  $u_2, u_4, u_6, \dots$

The sum to infinity of O is  $\frac{8}{9}$ , and  $u_1 = \frac{2}{3}$

What is the sum to infinity of E?

**A**  $\frac{4}{9}$

**B**  $\frac{5}{9}$

**C**  $\frac{2}{3}$

**D**  $\frac{5}{6}$

**E**  $\frac{8}{9}$

**F**  $\frac{4}{3}$

- 31** A class of 20 students took a maths test, and their mean mark was 70. The range of these marks was 18.

Five new students joined the class and took the same maths test. When their marks were included, the new mean for the 25 students was 68.

Given only this information, which of the following statements **must** be true?

- 1** All of the five new students scored 68 marks or less for this test.
  - 2** The mean of the marks for just the five new students was 60.
  - 3** When the marks for the five new students were included, the range of the marks for the class was unchanged.
- A** none of them
- B** 1 only
- C** 2 only
- D** 3 only
- E** 1 and 2 only
- F** 1 and 3 only
- G** 2 and 3 only
- H** 1, 2 and 3

- 32 The tangents to the curve  $y = x^2 - 9$  are drawn at the points where the curve meets the  $x$ -axis.  
What is the area of the closed region bounded by the curve and the two tangents?
- A 9
  - B 18
  - C 54
  - D 72
  - E 90

**33**  $p$  is the greatest solution and  $q$  is the least solution of the equation

$$y^4 - 15y^2 + 36 = 0$$

What is the value of  $2p - q$ ?

**A**  $3\sqrt{3}$

**B**  $6\sqrt{3}$

**C**  $\sqrt{6}$

**D**  $3\sqrt{6}$

**E** 6

**F** 21



**34** Consider the statement:

$$f(x) > x \text{ for all real values of } x > 1$$

Which one of the following is a negation of this statement?

- A**  $f(x) \leq x$  for all real values of  $x \leq 1$
- B**  $f(x) \leq x$  for all real values of  $x > 1$
- C**  $f(x) \leq x$  for at least one real value of  $x \leq 1$
- D**  $f(x) \leq x$  for at least one real value of  $x > 1$
- E**  $f(x) > x$  for at least one real value of  $x \leq 1$
- F**  $f(x) > x$  for at least one real value of  $x > 1$
- G**  $f(x) > x$  for no real values of  $x \leq 1$
- H**  $f(x) \leq x$  for no real values of  $x > 1$

35 A cubic polynomial is given by  $f(x) = x^3 + bx^2 + cx + d$  where  $b$ ,  $c$  and  $d$  are constants.

Two of its factors are  $(x - 1)$  and  $(x + 1)$

Which of the following statements, taken independently, is/are **necessarily** true?

1 If  $f(0) = k$  then  $f(k) = 0$

2  $f(x) = x^3 - x$

3 The graph of  $f(x)$  is symmetrical in the  $y$ -axis.

A none of them

B 1 only

C 2 only

D 3 only

E 1 and 2 only

F 1 and 3 only

G 2 and 3 only

H 1, 2 and 3

**36** In this question,  $x$  and  $y$  are non-zero real numbers.

Consider the three statements:

**1**  $x > y$  **if**  $\frac{x}{y} > 1$

**2**  $\frac{x}{y} > 1$  **if and only if**  $\frac{y}{x} < 1$

**3** **if**  $xy < 1$  **then** both  $x < 1$  and  $y < 1$

Which of these statements, taken independently, is/are true?

- A** none of them
- B** 1 only
- C** 2 only
- D** 3 only
- E** 1 and 2 only
- F** 1 and 3 only
- G** 2 and 3 only
- H** 1, 2 and 3

**END OF TEST**



Economics Admissions Assessment – Section 1 2018

D563/11

Candidate number

K

Centre number

Date of birth (DD MM YYYY)

First name(s)

Surname / Family name

Fill in the appropriate circle for your chosen answer e.g.

A B C D E  
○ ● ○ ○ ○

Use a soft pencil. If you make a mistake, erase thoroughly and try again.

\* 0 4 5 5 6 0 2 5 5 5 \*

Part A: Problem Solving

- |    |           |    |           |
|----|-----------|----|-----------|
| 1  | A B C D E | 11 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 2  | A B C D E | 12 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 3  | A B C D E | 13 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 4  | A B C D E | 14 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 5  | A B C D E | 15 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 6  | A B C D E | 16 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 7  | A B C D E | 17 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 8  | A B C D E | 18 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 9  | A B C D E | 19 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |
| 10 | A B C D E | 20 | A B C D E |
|    | ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ |

Part B: Advanced Mathematics

- |    |                 |    |                 |
|----|-----------------|----|-----------------|
| 21 | A B C D E       | 29 | A B C D         |
|    | ○ ○ ○ ○ ○       |    | ○ ○ ○ ○         |
| 22 | A B C D E       | 30 | A B C D E F     |
|    | ○ ○ ○ ○ ○       |    | ○ ○ ○ ○ ○ ○     |
| 23 | A B C D E       | 31 | A B C D E F G H |
|    | ○ ○ ○ ○ ○       |    | ○ ○ ○ ○ ○ ○ ○ ○ |
| 24 | A B C D E F     | 32 | A B C D E       |
|    | ○ ○ ○ ○ ○ ○     |    | ○ ○ ○ ○ ○       |
| 25 | A B C D E       | 33 | A B C D E F     |
|    | ○ ○ ○ ○ ○       |    | ○ ○ ○ ○ ○ ○     |
| 26 | A B C D E F     | 34 | A B C D E F G H |
|    | ○ ○ ○ ○ ○ ○     |    | ○ ○ ○ ○ ○ ○ ○ ○ |
| 27 | A B C D E F G H | 35 | A B C D E F G H |
|    | ○ ○ ○ ○ ○ ○ ○ ○ |    | ○ ○ ○ ○ ○ ○ ○ ○ |
| 28 | A B C D E F     | 36 | A B C D E F G H |
|    | ○ ○ ○ ○ ○ ○     |    | ○ ○ ○ ○ ○ ○ ○ ○ |



## Economics Admissions Assessment – Past paper 2018

### Section 1

#### Answer key

Question	Answer key
1	D
2	C
3	D
4	D
5	E
6	D
7	B
8	B
9	D
10	A
11	E
12	C
13	E
14	B
15	E
16	C
17	D
18	C
19	C
20	E
21	C
22	A
23	D
24	D
25	D
26	C
27	B
28	F
29	A
30	A
31	C
32	B
33	B
34	D
35	B
36	A

**ECONOMICS  
ADMISSIONS ASSESSMENT****D563/12****Wednesday 31 October 2018****40 minutes****SECTION 2**

Candidate number	K							Centre number					
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Date of birth													
	d	d		m	m		y	y	y	y			

First name(s)	
---------------	--

Surname / Family name	
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**INSTRUCTIONS TO CANDIDATES**

**Please read these instructions carefully, but do not open the question paper until you are told that you may do so.** This paper is Section 2 of 2.

This question paper requires you to read a single passage and complete a related task.

You should write your answer in the space provided in this question paper. Please complete this section in **black pen**.

You can use the blank inside front and back covers for rough working or notes, but no extra paper is allowed. Only answers in the space indicated in the paper will be marked.

Dictionaries may NOT be used.

**Please wait to be told you may begin before turning this page.**

This question paper consists of 10 printed pages and 2 blank pages.



**This page is intentionally left blank for your rough working or notes.**



Read the article 'Drain or gain?' taken from *The Economist* (May 26<sup>th</sup> 2011). Based on this text, complete the task below.

### TASK

- Set out two ways in which emigration of skilled workers can harm developing countries, and two ways in which such countries can benefit.
- How might you evaluate whether there was a net gain for a developing country from the emigration of skilled workers?

Your answer will be assessed taking into account your ability to construct a reasoned, insightful and logically consistent argument with clarity and precision.

### Drain or gain?

WHEN people in rich countries worry about migration, they tend to think of low-paid incomers who compete for jobs as construction workers, dishwashers or farmhands. When people in developing countries worry about migration, they are usually concerned at the prospect of their best and brightest decamping to Silicon Valley or to hospitals and universities in the developed world. These are the kind of workers that countries like Britain, Canada and Australia try to attract by using immigration rules that privilege college graduates.

Lots of studies have found that well-educated people from developing countries are particularly likely to emigrate. By some estimates, two-thirds of highly educated Cape Verdeans live outside the country. A big survey of Indian households carried out in 2004 asked about family members who had moved abroad. It found that nearly 40% of emigrants had more than a high-school education, compared with around 3.3% of all Indians over the age of 25. This "brain drain" has long bothered policymakers in poor countries. They fear that it hurts their economies, depriving them of much-needed skilled workers who could have taught at their universities, worked in their hospitals and come up with clever new products for their factories to make.

Many now take issue with this view. Several economists reckon that the brain-drain hypothesis fails to account for the effects of remittances, for the beneficial effects of returning migrants, and for the possibility that being able to migrate to greener pastures induces people to get more education. Some argue that once these factors are taken into account, an exodus of highly skilled people could turn out to be a net benefit to the countries they leave. Recent studies of migration from countries as far apart as Ghana, Fiji, India and Romania have found support for this "brain gain" idea.

The most obvious way in which migrants repay their homelands is through remittances. Workers from developing countries remitted a total of \$325 billion in 2010, according to the World Bank. In Lebanon, Lesotho, Nepal, Tajikistan and a few other places, remittances are more than 20% of GDP. A skilled migrant may earn several multiples of what his income would have been had he stayed at home. A study of Romanian migrants to America found that the average emigrant earned almost \$12,000 a year more in America than he would have done in his native land, a huge premium for someone from a country where income per person is around \$7,500 (at market exchange rates).

It is true that many skilled migrants have been educated and trained partly at the expense of their (often cash-strapped) governments. Some argue that poor countries should therefore rethink how much they spend on higher education. Indians, for example, often debate whether their government should continue to subsidise the Indian Institutes of Technology (IITs), its elite engineering schools, when large numbers of IIT graduates end up in Silicon Valley or on Wall Street. But a new study of remittances sent home by Ghanaian migrants suggests that on average they transfer enough over

their working lives to cover the amount spent on educating them several times over. The study finds that once remittances are taken into account, the cost of education would have to be 5.6 times the official figure to make it a losing proposition for Ghana.

There are more subtle ways in which the departure of some skilled people may aid poorer countries. Some emigrants would have been jobless had they stayed. Studies have found that unemployment rates among young people with college degrees in countries like Morocco and Tunisia are several multiples of those among the poorly educated, perhaps because graduates are more demanding. Migration may lead to a more productive pairing of people's skills and jobs. Some of the benefits of this improved match then flow back to the migrant's home country, most directly via remittances.

The possibility of emigration may even have beneficial effects on those who choose to stay, by giving people in poor countries an incentive to invest in education. A study of Cape Verdeans finds that an increase of ten percentage points in young people's perceived probability of emigrating raises the probability of their completing secondary school by around eight points. Another study looks at Fiji. A series of coups beginning in 1987 was seen by Fijians of Indian origin as permanently harming their prospects in the country by limiting their share of government jobs and political power. This set off a wave of emigration. Yet young Indians in Fiji became more likely to go to university even as the outlook at home dimmed, in part because Australia, Canada and New Zealand, three of the top destinations for Fijians, put more emphasis on attracting skilled migrants. Since some of those who got more education ended up staying, the skill levels of the resident Fijian population soared.

### **Passport to riches**

Migrants can also affect their home country directly. In a recent book about the Indian diaspora, Devesh Kapur of the University of Pennsylvania argues that Indians in Silicon Valley helped shape the regulatory structure for India's home-grown venture-capital industry. He also argues that these people helped Indian software companies break into the American market by vouching for their quality. Finally, migrants may return home, often with skills that would have been hard to pick up had they never gone abroad. The study of Romanian migrants found that returnees earned an average of 12-14% more than similar people who had stayed at home. Letting educated people go where they want looks like the brainy option.

Write your answer in the space below.

---

A series of horizontal dotted lines for writing an answer.

A series of 25 horizontal dotted lines spanning the width of the page, providing a template for handwriting practice.

A series of horizontal dotted lines for writing.

A series of horizontal dotted lines for writing, consisting of 28 lines.

**Extra space (if required)**

A series of horizontal dotted lines spanning the width of the page, providing extra space for writing.

A series of horizontal dotted lines for writing.



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**K**