Undergraduate Admissions Assessment March 2017
TEST 2 - (Sections A, B2 and C). Three Hour Assessment.

The UG Admissions Assessment (UGAA) gives Admissions Tutors the opportunity to see a sample of the applicant's original work, produced under examination conditions, and seeks to assess applicants from a variety of backgrounds in a fair and equitable manner.

The assessment has three sections: comprehension exercises (**Section A**); essay questions (**Section B**); and mathematical problems (**Section C** *or* **D**). The purpose is to assess the applicant's English language and mathematics abilities. *It is not an assessment of general knowledge.* The following criteria are of particular importance:

- Clarity and precision of language
- Sophisticated vocabulary
- Logical structure and argument
- Mathematical accuracy, techniques and conceptual understanding

Before beginning the assessment, please read the following guidance and instructions carefully.

TEST 2

Depending on the course to which you have applied, you have been entered for Test 1 or 2. Before beginning the assessment please check that you have received the correct paper. A list of courses and corresponding papers can be found overleaf.

The assessment lasts three hours and **all three sections must be completed**. The marks for each section are weighted according to the paper. More time should be spent completing the sections with more marks attached. However, please note that to pass the UGAA a minimum grade in *all three sections* is required, as well as a good grade overall.

Test 1: Section A **(25%)**, Section B1 **(25%)**, Section D **(50%)**
Test 2: Section A **(25%)**, Section B2 **(50%)**, Section C **(25%)**

Answer Booklets

You must use the **BLUE** booklet for Sections A and B (English Sections) and the **CREAM** booklet for Sections C or D (Maths Sections).

When answering the maths questions, you must show your working out, as well as your final answer.

- Dictionaries may **NOT** be used
- Hand-held calculators **MAY** be used.

If a calculator is used please indicate on the answer booklet the type used (e.g. TI.500)

Test Papers

TEST 1

BSc Actuarial Science (N321)
BSc Business Mathematics and Statistics (G0N0)
BSc Economics (L101)
BSc Economics with Economic History (L1V3)
BSc Econometrics and Mathematical Economics (L140)
BSc Economic History with Economics (VL31)
BSc Economics and Economic History (V3L1)
BSc Environmental Policy with Economics (F9L1)
BSc Finance (N300)
BSc Financial Mathematics and Statistics (GN13)
BSc Government and Economics (LL12)
BSc Geography with Economics (L7L1)
BSc Management (N200)
BSc Mathematics and Economics (GL11)
BSc Mathematics with Economics (G1L1)
BSc Philosophy and Economics (LV15)
BSc Philosophy, Politics and Economics (L0V0)
BSc Social Policy and Economics (LLK1)
BSc Statistics with Finance (G3N3)

TEST 2

BSc Accounting and Finance (NN34)
BA Anthropology and Law (ML16)
BSc Economic History (V300)
BSc Environment and Development (FK84)
BA Geography (L702)
BSc Government (L230)
BSc Government and History (LV21)
BA History (V146)
BSc International Relations (L250)
BSc International Relations and History (VL12)
LLB Law (M100)
BSc Philosophy, Logic, and Scientific Method (V503)
BSc Politics and Philosophy (LV25)
BSc Politics and International Relations (L290)
BA Social Anthropology (L601)
BSc Social Anthropology (L603)
BSc Social Policy (L400)
BSc Social Policy with Government (LL42)
BSc Social Policy and Sociology (LL34)
BSc Sociology (L301)

Please check you have received the correct paper. If you think you have received the wrong paper please notify the invigilator immediately.

The Undergraduate Admissions Assessment

TEST 2

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Section A

- **All** candidates should complete this section.
- This section has **one** question only.
- The marks achieved in this section account for **25%** of your final exam result.

Instructions:

Write a summary (précis) of the following passage, **in not more than 150 of your own words**. You must write a summary, not a discussion of the passage. No credit will be given for answers made up of sentences extracted from the original passage.

Rupert Murdoch has written to the Guardian to deny he ever claimed that Downing Street does his bidding, as a bid by his US film and television group to acquire Sky is due to be formally notified to ministers.

The media mogul, who is chairman of 21st Century Fox, wrote: "I have made it a principle all my life never to ask for anything from any prime minister."

In a rare move to write directly to a newspaper, Murdoch disputed a quote attributed to him in the Guardian and elsewhere in which he reportedly said: "When I go into Downing Street, they do what I say; when I go to Brussels, they take no notice."

In his response, Murdoch added: "There is much fake news published about me, but let me make clear that I have never uttered those words."

The intervention comes at a highly sensitive moment for Murdoch's business interests, with Fox's proposed £11.2bn takeover of the 61% of Sky he does not already own expected to be notified to the UK government for approval.

The culture secretary, Karen Bradley, has 10 working days from being notified to tell the regulator Ofcom whether a public interest investigation into the proposed takeover should be launched.

The former Labour leader Ed Miliband and former business secretary Vince Cable have called for the takeover to be blocked and referred to the regulator.

A previous attempt by a Murdoch company to acquire the remaining part of Sky was withdrawn in the summer of 2011 at the height of the phone-hacking scandal, which was exposed by the Guardian and led to the closure of the News of the World.

However, Fox, the company bidding on this occasion, does not own the newspapers; they are published by a separate business, News Corporation. The newspapers were hived off in the wake of the hacking scandal.

Robert Booth, 'Rupert Murdoch: "I've Never Asked Any Prime Minister for Anything,"
The Guardian, 19 December 2016.

Please turn over to Section B.

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Section B2

- Complete Section B2 **ONLY** if you are completing Maths Section C.
- The marks achieved in this section account for **50%** of your final exam result.

Instructions:
Write **ONE** essay from the following three choices:

1. What makes a country a 'great power' in contemporary international politics?

2. To what extent, and why, has a new cold war erupted between Russia and the West?

3. Why is right-wing populism on the rise?

Please turn over for Section C.

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Section C

- The marks achieved in this section account for **25%** of your final exam result.
- All answers must be given to 3 significant figures unless stated otherwise in the question.
- All working out must be clearly shown.

Instructions:
This section has **four** questions, with a total of **100 marks**. Answer **all** questions in this section.

Question 1

In this question give each answer to 2 decimal places

A credit card company charges 1.5% interest each month and requires a minimum repayment of 2.5% of the balance owing each month.

a) If you borrow £1000 in January;
   i) How much interest will be added at the end of January?
   ii) What is the balance owed at the end of January?
   iii) What is the minimum repayment required at the end of January?
   iv) How much money do you still owe at the end of January after making the minimum repayment?
   v) Making the minimum repayment each month how much money will you owe at the end of April?
   vi) How much interest will you have paid in total by the end of April?
   vii) If instead of making the minimum repayment you repay £50 each month how much will you still owe at the end of April?

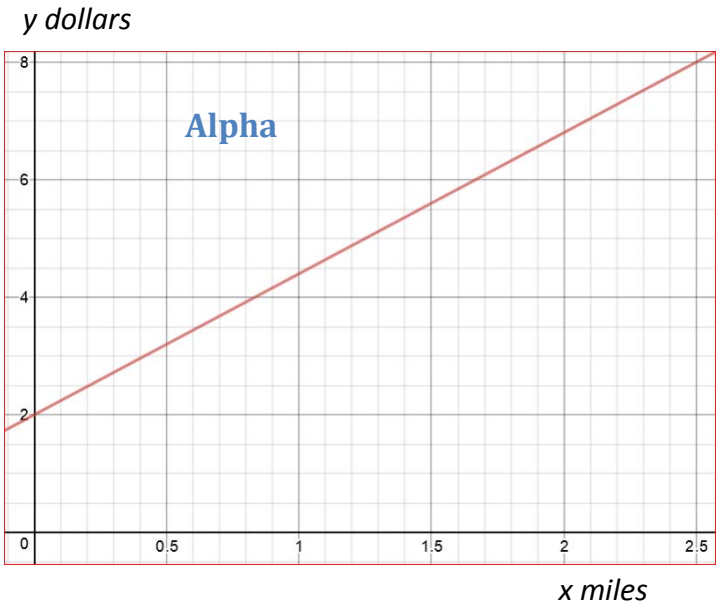
(17 marks)

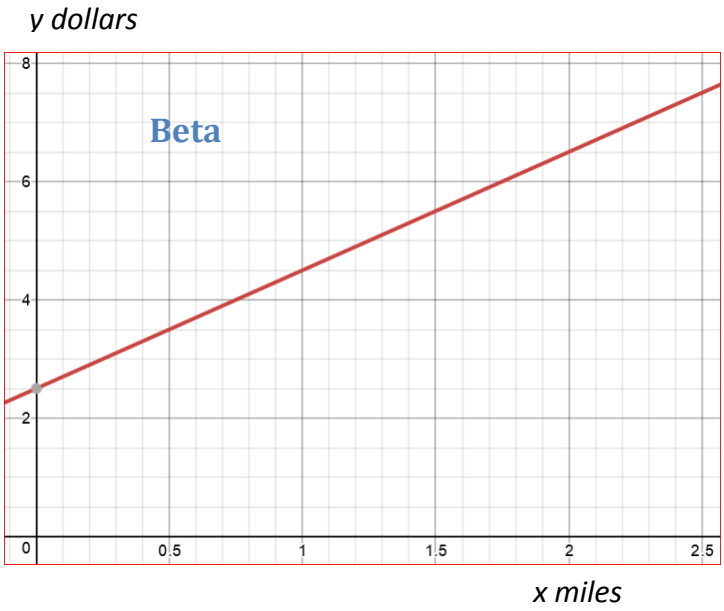
b) The credit card company has a special deal where you are not charged interest in the first month. After that the interest rate will be 1.67% (instead of 1.5%).
It still requires a minimum repayment of 2.5% each month.

If you borrow £1000 in January and make the minimum repayment each month how much money will you still owe at the end of April?

(4 marks)
Total 21 marks

Question 2





The graphs show the charges for two taxi firms, **Alpha** and **Beta**, in dollars ($) for distances in miles.

The charge consists of two parts; the fixed cost and then the price per mile.

a) For each firm write down the fixed cost and calculate the price per mile. ***(4 marks)***

b) Write down the equation of each line in the form $y = mx + c$ where x is the number of miles and y is the cost in dollars ***(3 marks)***

c) Use an algebraic approach to find the distance when the charge would be the same. ***(3 marks)***

d) A third firm, **Charlie Cabs**, charges $2.10 fixed cost and $2.20 per mile. Use an algebraic approach to find the distance at which this firm would charge the same as firm **Beta**. ***(4 marks)***

e) Firm **Beta** charges $0.20 for a 5 minute wait and the other two charge $0.40 for a 5 minute wait.

Compare the costs of the 3 firms for a 5 mile journey with a 5 minute wait using appropriate calculations. Which firm is cheapest? ***(5 marks)***

(Total 19 marks)

Question 3

The table below shows some data about passenger railway journeys in 2014, 2015 and 2016 in 3 different countries: **A**, **B** and **C.**

	Number of Journeys in **A**	Distance travelled in **A**	Distance travelled in **B**	Distance travelled in **C**
2014	1.65 billion	62.4 billion km		
2015	1.69 billion	64.4 billion km	89.5 billion km	91.0 billion km
2016 first quarter	425.1 million	16.6 billion km		

a) For the number of journeys in country **A:**

i) How many million more were there in 2015 than in 2014?

ii) What was the percentage increase from 2014 to 2015?

iii) Using the data for the first quarter in 2016 how many billion journeys would you expect in 2016? ***Give this answer to 4 significant figures.***

iv) If instead the percentage increase for 2015 to 2016 was the same as for 2014 to 2015, how many journeys would you expect in 2016? ***Give this answer to 4 significant figures.***

v) The real percentage increase was 1.776% - how many journeys were there in 2016? ***Give this answer to 4 significant figures.***

vi) The number of journeys in 2015 had increased by 129.8% since 1994. How many million journeys were there in 1994?

(16 marks)

b) For country **A:**

i) Which of the three time periods shown in the table had the greatest distance travelled per journey?

ii) What is the percentage increase in distance travelled per journey between 2015 and the first quarter of 2016?

iii) If this percentage increase continued for each of the second, third and fourth quarters of 2016 what would be the distance travelled per journey in the last quarter of 2016?

(9 marks)

c) For the distance travelled:

i) How many times further do the passengers in country **B** travel than those in country **A**?

ii) How many times further do the passengers in country **C** travel than those in country **B**?

iii) What percentage of the total for all three countries is travelled by those in **A**?

iv) Use your answers to i) and ii) to estimate the distance travelled in countries **B** and **C** in the first quarter of 2016.

v) Confirm with a suitable calculation whether your answer gives the same percentage of the total distance for country **A**.

(12 marks)

Total 37 marks

Question 4

Doughnut buns come in different shapes.

a) Sphere shaped doughnuts are roughly 6cm in diameter.
The formula for the volume of a sphere is $V = \frac{4}{3}\pi x^3$ where *x* is the radius.

i) Find the volume of a sphere shaped doughnut.

ii) Inside the doughnut is 15ml of jam filling (a spoonful). How much dough is there?

iii) What percentage of the whole doughnut is filling?

(6 marks)

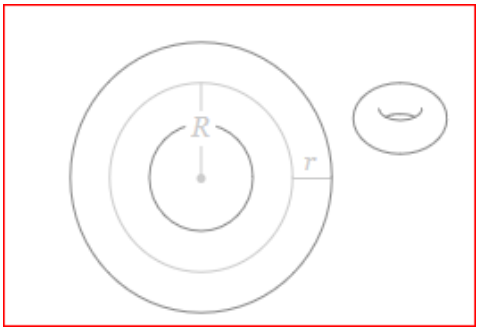
b) Ring doughnuts have an outer circle of 10 cm in diameter and a 4cm diameter hole in the centre.
The formula for the volume of a ring doughnut is

$$V = 2\pi^2 R r^2$$

Where:

R is the average (mean) radius of the inner and outer circle.

r is the difference between the radius of the outer circle and *R*



Find:

i) R

ii) r

iii) The volume of the ring doughnut.

(4 marks)

c) Find the radius x of a spherical doughnut that has the same volume of dough as the ring doughnut.

(4 marks)

d) Thinking of the hole in the centre of the ring doughnut as roughly a cylinder of height $2r$ and radius 2cm, work out the maximum number of complete spoonfuls of jam filling you could fit into this hole.

(5 marks)

e) Using your answer to a) ii), find suitable dimensions of a ring doughnut that uses the same volume of dough as the spherical doughnut. Give the outer and inner diameter.

(4 marks)

Total 23 marks

End of Test