UNIVERSITY OF WESTMINSTER

Entrance test for
Westminster International University in Tashkent

Mathematics

March 2014

- **Time allowed: One hour ten minutes**
- **Answer all questions.**
- **It is advised that you work quickly and that you leave behind questions that are taking you too long to answer.**
- **You should only bring in: pens, pencils, erasers, rulers, protractors.**
- **No calculators are allowed.**
- **All your working must be presented. Answers with no evidence of calculations will not score any marks.**
- **Write your answers in the spaces below the questions.**
- **Nothing should be removed from the exam room.**

Candidate Name: ……

All questions on this paper must be answered.

Write the answers in the space below each question.

Show **ALL** working for each question.

i. John is the owner of a carpet cleaning service.
He rents out his carpet cleaning equipment based on the following formula:

Number of days the equipment is rented multiplied by 15 then add 25

a) Write a formula to show how the cost would be calculated if a particular cleaner was rented out for 5 days.

……
(2)

b) Kaz would like to clean the carpet in his living room and he is prepared to spend 55 US Dollars on renting equipment.
How many days will he be able to rent the carpet cleaner for?

……days
(2)

c) To rent the carpet cleaner for ***n*** days costs ***T*** US Dollars.
Write a formula, using ***n***, for ***T***, the cost of renting the carpet cleaner.

……
(3)

(Total 7 marks)

ii. a) Write 72 as the product of its prime factors

……

(3)

b) Find the Highest Common Factor of 24 and 36

……

(2)

(Total 5 marks)

iii. A student was doing a survey on the number of people in his town who go to the cinema.
This was one of his questions on his questionnaire:

How often do you go to the cinema in town? (please tick one box)

☐ A lot ☐ A little bit

Give two reasons why this is not a good question for the survey.

……..

……..

……..

……..

(2)

Re-write the question so that it would be more suitable for the survey the student is doing.

……..

……..

(1)

(Total 3 marks)

iv. Amina, Byron and Celika are partners in a company.

They share their profits in the ratio 2:3:1

The profit for a whole year was 3,786 US Dollars.
How much did each partner get?

Give your answers rounded to the nearest US Dollar

.....

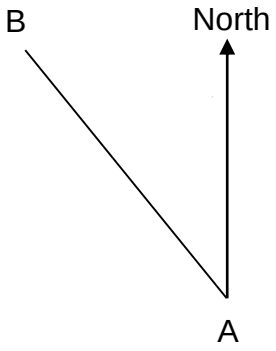
.....

.....

(4)

(Total 4 marks)

5. The diagram below is drawn to scale.



(a) Measure and write down the bearing of B from A

……

(1)

(b) On the diagram, draw a line on a bearing of 110º from A (1)

(Total 2 marks)

6 Work out:

(a) $2\frac{5}{8} + 3\frac{3}{4}$

.....

(2)

(b) $3\frac{4}{5} \div 1\frac{3}{4}$

.....

(2)

(Total 4 marks)

7. n is an integer.

$-3 < n \leq 4$

(a) Write down all the possible values of n.

……

(2)

(b) Solve:

$10 – 2x < 3 (x - 2)$

……

(2)

(Total 4 marks)

8. Simplify:

(a) $(2y^2z)^2 \times 3y^3z^2$

.....

(3)

(b) $\dfrac{a^2+2a}{3a^2+a} \times \dfrac{9a^2-1}{3a^2+7a+2}$

.....

(5)

(Total 8 marks)

9. Last year Ana spent the following:

30% of her salary on rent

$\frac{2}{5}$ of her salary on entertainment

$\frac{1}{4}$ of her salary on living expenses.

Ana spent 7200 US Dollars in total.

She saved the rest of her salary.
Work out how much money she saved.

.....

(5)

(Total 5 Marks)

10 (a) Factorise:

$x^2 - x - 56$

.....

(2)

(b) Solve:

$x^2 - x - 56 = 0$

.....

(2)

(Total 4 marks)

11 Jim's room is the shape of a rectangle. He wants to put carpet on the floor.

The length of the room is 11m and the width is 9m.
Both measurements are given to the nearest meter.

Find the lower bound of the area of the room

.....

(3)

(Total 3 marks)

12 a) Convert the following recurring decimal to a fraction:

$0.\dot{6}$

……
(2)

b) Express the recurring decimal $3.0\dot{9}$ as a fraction.

Write your answer in its simplest form.

……
(2)

(Total 4 marks)

13 Mr and Mrs Dilshod are planning a holiday at the Royal Hotel in London, UK

The table gives information about the prices of holidays to the Royal Hotel (in £GBP Pounds Sterling)

Royal Hotel, London, UK		
Departures	Price per adult	
	7 nights	14 nights
1 Jan - 8 Jan	£694	£825
9 Jan - 28 Jan	£679	£804
29 Jan - 5 Feb	£687	£815
6 Feb - 18 Feb	£769	£835
19 Feb - 8 Mar	£714	£817
9 Mar - 31 Mar	£685	£805
1 April - 9 April	£788	£862
10 April - 30 April	£748	£802
Price per child: 95% of adult price for 7 nights or 85% of adult price for 14 nights		

Mr and Mrs Dilshod are thinking about going on holiday either on:

20 February for 7 nights

Or 10 April for 14 nights

Mr and Mrs Dilshod have 2 children

Compare the costs of these two holidays for the Dilshod family

(Total 7 marks)

14 (a) Draw the curve of $x^2 + y^2 = 25$ (3)

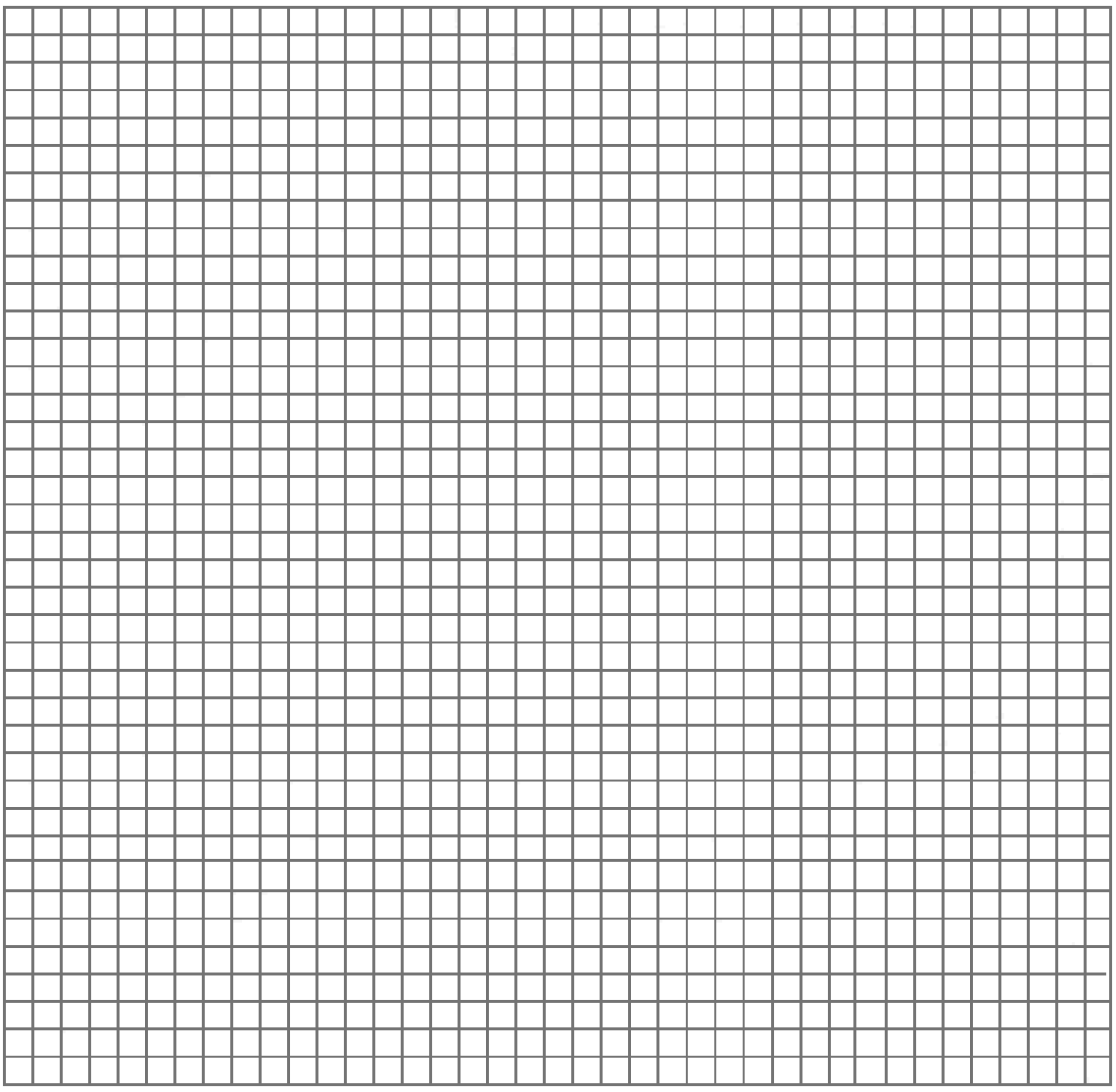
(b) Use the same axes and draw the line of $3x + 2y – 5 = 0$ (3)

(c) From the graph, find the values of x and y that satisfy the equations:

i. $x^2 + y^2 = 25$
ii. $3x + 2y – 5 = 0$

(i) x = …….. y = ……. (2)

(ii) x = …….. y = ……. (2)



(Total 10 marks)

END OF TEST