WESTMINSTER

International University in Tashkent

An Accredited Institution of
the University of Westminster (UK)

Westminster International University in Tashkent

CPFS

ENTRANCE EXAMINATION
MATHEMATICS

Date: 06 August 2024

Time allowed: 1 hour 30 minutes

ANSWER ALL QUESTIONS IN DETAIL, SHOWING ALL YOUR WORK ON THE SAME PAGE AS THE QUESTION. THE ANSWERS PROVIDED IN THE DRAFT PAGE OR IN SEPARATE SHEETS WILL NOT BE CONSIDERED.

NO BOOKS, NOTES, CALCULATORS OR ANY SORT OF ASSISTING MATERIAL ARE ALLOWED.

ID number and name & surname:	
Signature:	
Do you have IELTS or CEFR certificate?	If YES, your score?

FOR OFFICE USE ONLY

PART: MATHEMATICS
10 questions by 10 marks. Total: 100 points

1	2	3	4	5	6	7	8	9	10	Total

Staff name and signature: _____

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Question 1.

Calculate:

a) [5m]

$$\left(1 + \frac{1}{2}\right)\left(1 + \frac{1}{3}\right)\left(1 + \frac{1}{4}\right)\left(1 + \frac{1}{5}\right)\left(1 + \frac{1}{6}\right) \cdot \ldots \cdot \left(1 + \frac{1}{100}\right)$$

b) [5m]

$$\frac{7 \cdot 0.125^6 \cdot 0.25^7 - 3 \cdot 0.0625^8}{6 \cdot 0.5^{30} - 5 \cdot 0.25^{15}}$$

Question 2. [10m]

A group of 8 machines that work at the same constant rate can complete 14 jobs in 7 hours. How many hours would it take 17 of these machines to complete 34 of these jobs?

Question 3. [10m]

There are 4 blue and 3 white marbles in a bag. Jasur will randomly pick two marbles out of the bag without replacing them. What is the probability that at least one of these marbles is white?

Question 4.

Evaluate:

a) [5m]

$$\frac{\left(\sqrt{15}-\sqrt{29}\right)\left(\sqrt{15}+\sqrt{29}\right)}{\sqrt{2.25}+\sqrt{30.25}}$$

b) [5m]

$$\frac{\left(\frac{1}{\sqrt{7+5\sqrt{2}}}+\frac{1}{\sqrt{5\sqrt{2}-7}}\right)^2}{5\sqrt{2}+1}$$

Question 5. [10m]

Solve the equation completely:

$$x + \frac{2x + 1}{2 + \dfrac{2x}{x + 1}} = 5$$

Question 6.

a)   [5m]

The measures of two supplementary angles are in the ratio of 4:5. Find the measure of both angles.

b)   [5m]

The perimeter of the rectangle is equal to 34cm and the area is equal to 60cm². Find the sides of the rectangle.

Question 7.

Solve the equation.   [10m]

$$\frac{2x-3}{3x-5} = -\frac{5x-9}{3x-7}$$

Question 8.

a) [5m]

If 16 times of a number is decreased by 41, the result will be the same as when 15 times the number is increased by 28. What is the number?

b) [5m]

The total price of 10 liter of regular gasoline and 15 liter of premium gasoline is $32.75. Premium costs $0.20 more per liter than regular. What is the cost of liter of each type of gasoline?

Question 9.

Simplify the expression.

a) [5m]

$$\left(\frac{a^4+a^3+a^2+1}{a^3+1} - a - 1\right) : \frac{a-1}{a^2-a+1} + \frac{1}{a+1}$$

b) [5m]

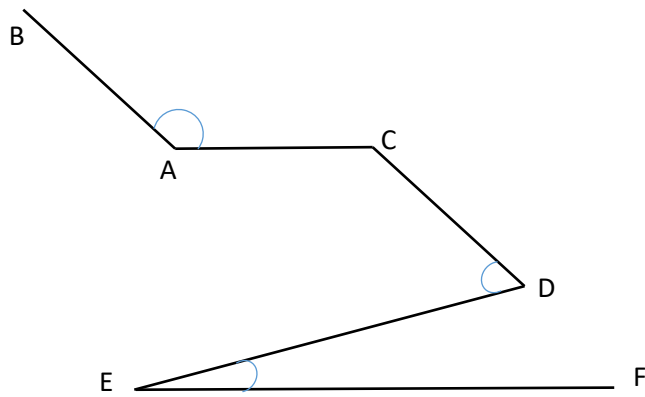$$\left(\frac{\sqrt{x}-1}{x\sqrt{x}+1} - \frac{1}{x-1}\right) : \frac{\sqrt{x}}{x-\sqrt{x}+1} + \frac{x}{x-1}$$

$\angle BAC = 160^o, \angle CDE = 50^o. AC \parallel EF, CD \parallel AB.$ Find $\angle DEF$.

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