Unified International Mathematics Olympiad

UIMO SAMPLE QUESTIONS

CLASS - 06

MATHEMATICS - 1

01. **If the area of the shaded part of the square is 16 sq.units, what is its perimeter ?**

(A) 8 units (B) 16 units

(C) 32 units (D) 64 units

02. **What is the hundreds digit of the product 1 2 3 4 6 7 8 9 5 × 9 8 7 6 5 4 3 1 2 ?**

(A) 2 (B) 5

(C) 9 (D) 4

03. **Which of the following is equal to the product 23 × 22 × 21 × .... × 3 × 2 × 1 ?**

(A) 27 × 26 × 25 × ..... × 10 × 9 × 8 (B) 26 × 25 × 24 × .... × 9 × 8 × 7

(C) 25 × 24 × 23 × .... × 8 × 7 × 6 (D) 24 × 23 × 22 × ..... × 7 × 6 × 5

04. **If 'x' is a prime number such that (x + 2) is also a prime number, which of the following is true of $x(x + 2) + 1$?**

(A) An odd integer (B) A prime number

(C) A perfect square (D) Not a perfect square

05. **Find the value of the number sequence given.**

1 + 2 – 3 – 4 + 5 + 6 – 7 – 8 + ... – 2012 + 2013

(A) 0 (B) 1

(C) –1 (D) 2013

MATHEMATICS - 2

01. Identify the false statement.

(A) (H.C.F. × L.C.M.) of a and b = a × b
(B) (H.C.F. + L.C.M.) of a and b = a + b
(C) (H.C.F. – L.C.M.) of a and b = a – b
(D) (H.C.F. ÷ L.C.M.) of a and b = a ÷ b

02. Each side of a square park measures 95 m. Find the distance covered by a person going round the park 6 times.

(A) 570 m
(B) 2280 m
(C) 6 × 4 × 95 m
(D) 6 × 95 m

03. Which of the following statements is false ?

(A) Through three collinear points, we can draw three lines
(B) Two intersecting lines in a plane determine a point
(C) Lines belonging to the same plane are called coplanar lines
(D) Plane is a part of a line

04. If $\frac{4}{7} < \frac{3}{4}$, then

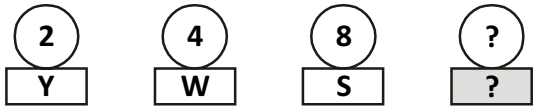
(A) $\frac{4}{7} < \frac{4+3}{7+4} < \frac{3}{4}$
(B) $\frac{4}{7} < \frac{7}{11} < \frac{3}{4}$
(C) $\frac{4}{7} < \frac{4-3}{7-4} < \frac{3}{4}$
(D) $\frac{4}{7} < \frac{4\times3}{7\times4} < \frac{3}{4}$

05. Name the geometrical figures which has atleast three line symmetries.

(A) A circle
(B) An equilateral triangle
(C) A regular pentagon
(D) A square

REASONING

01. Find the missing number and letter in the sequence.



(A) 12, N
(B) 16, K
(C) 23, E
(D) 13, O

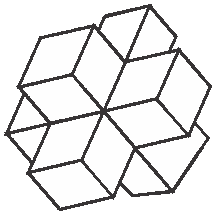
02. If in a certain code 67894 is written as HDFCK and 1235 as RSNL, which number will be written as FCNHR ?

(A) 35487
(B) 89361
(C) 89631
(D) 98613

03. How many letters are there in the word 'CREATIVE' which have as many letters between them in the word as in the alphabet ?

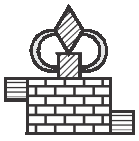
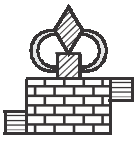
(A) 3
(B) 1
(C) 2
(D) 4

04. Count the number of small cubes in the given figure.



(A) 10 (B) 7 (C) 8 (D) 9

05. Which option is the mirror image of the given image ?

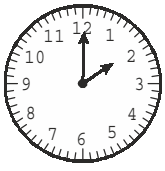
(A)  (B)  (C)  (D) 

CRITICAL THINKING

01. 16 adventurers arrived at a river bank. There was only one boat to bring them across the river. The maximum capacitiy of the boat was 4 people. How many trips were necessary to bring all the adventurers across the river ?

(A) 9 (B) 6 (C) 8 (D) 7

02. Which clock is the odd one out ?

(A)  (B)  (C)  (D) 

03. Here are some words translated from an artificial language.

krekinblaf means workforce

dritakrekin means groundwork

krekinalti means workplace

Which word could mean "someplace"?

(A) moropalti (B) krekindrita (C) altiblaf (D) dritaalti

04. Introducing Sonia, Aamir says, "She is the wife of only nephew of only brother of my mother". How Sonia is related to Aamir ?

(A) Wife (B) Sister (C) Sister-in-law (D) Data is inadequate

05. Among Anu, Kavitha and Mahi, one of them is a teacher. The other two are a doctor and a policeman. Mahi is older than the policeman. Anu and the doctor are not of the same age. The doctor is younger than Kavitha. Who is the teacher ?

(A) Mahi (B) Kavitha (C) Anu (D) None of these

KEY & SOLUTION

MATHEMATICS - 1

01. **(C)** Area of square = 4 × 16 sq. units = 64 units^2

side of square = $\sqrt{64 \text{ units}^2}$ = 8 units

Perimeter of the given square = 4 × side = 32 units

02. **(A)** 895 × 312 = 279240

03. **(D)** 23 × 22 × 21 × ... × 4 × 3 × 2 × 1 = 23 × 22 × 21 × ... × 7 × 6 × 5 × 24

= 24 × 23 × 22 × 21 × ... × 7 × 6 × 5

04. **(C)** x and $(x + 2)$ are always twin primes

$\therefore x\,(x + 2) + 1$ is always a perfect square (OR)

3 × 5 + 1 = 15 + 1 = 16 = 4^2 which is a perfect square

11 × 13 + 1 = 143 + 1 = 144 = 12^2 which is a perfect square

05. **(B)** LHS = $\underbrace{1 + 2 - 3 - 4}_{-4} + \underbrace{5 + 6 - 7 - 8}_{-4} + \ldots - 2012 + 2013$

(–4) + (–4) ..... + (–4) + 2013

⟵ 503 (–4's) ⟶

= – 2012 + 2013 = 1

MATHEMATICS - 2

01. **(B,C,D)** LCM × HCF of the given two numbers = product of those two numbers

(HCF + LCM) of a & b ≠ a + b

(HCF – LCM) of a & b ≠ a – b

(HCF ÷ LCM) of a & b ≠ a ÷ b

02. **(B,C)** Perimeter of park = 4s = 4 × 95 m = 380 m

Distance covered for one round = 4 × 95 m = 380 m

Distance covered for 6 rounds = 6 × 4 × 95 m = 2280 m

03. **(A,D)** Option A and D are false statements

04. **(A,B)** $\frac{4}{7} < \frac{4+3}{7+4} < \frac{3}{4}$ is true

$\frac{4}{7} < \frac{7}{11} < \frac{3}{4}$ is true

05. **(A,B,C,D)** A circle has infinite number of line symmetries. An equilateral triangle has 3 lines of symmetry. A regular pentagon has 5 lines of symmetry. A square has 4 lines of symmetry.

REASONING

01. **(B)** Z = 1; Y = 2; X = 3, W = 4, U = 5 ...

Similarly K = 16

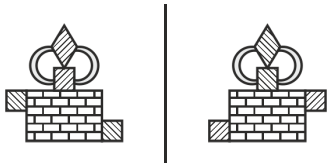
02. **(B)** H $\rightarrow$ 6; D $\rightarrow$ 7; F $\rightarrow$ 8; C $\rightarrow$ 9; K $\rightarrow$ 4

R $\rightarrow$ 1; S $\rightarrow$ 2; N $\rightarrow$ 3; L $\rightarrow$ 5

FCNHR $\rightarrow$ 89361

03. **(A)** C R E A T I V E

04. **(B)** There are 7 small cubes are there in the given figure.

05. **(B)** 

CRITICAL THINKING

01. **(A)** 9 trips were necessary to bring all the aventurers across the river.

$(12)\underset{1}{\overset{4}{\rightleftarrows}}(3)$ $(3)\underset{1}{\overset{3}{\rightleftarrows}}(12)$ $(9)\underset{1}{\overset{3}{\rightleftarrows}}(6)$ $(0)\xrightarrow{4}(16)$ $(6)\underset{1}{\overset{3}{\rightleftarrows}}(9)$

02. **(C)** 

03. **(A)** Krekin means work; blaf means force; drita means ground; and alti means place.

Drita means ground, so that rules out choices b and d. Choice c isn't correct because blaf means force. That leaves choice a as the only possible answer

04. **(A)** Brother of mother means maternal uncle. Hence only nephew of Aamir's maternal uncle means Aamir himself. Therefore Sonia is the wife of Aamir.

05. **(B)** Mahi, the docket is older than the policeman.

Since the doctor is younger than the Kavitha, Kavitha is not the policeman.

Hence Kavitha is the teacher.