IBCM
PUBLIC INTERNATIONAL BUSINESS COLLEGE MITROVICA

IBCM Entrance Exam

Informatics & Mathematics Section

Student Name and Last Name:

_____

Student's Personal Number:

_____

Student's Application Code:

_____

Date of the exam:

_____

Score:

_____ / 100 points

Instructions

Welcome to the Informatics & Mathematics section of the IBCM Entrance Exam. This section is designed to test your numerical reasoning, logic, problem-solving and basic Informatics skills. You do not need a calculator or advanced knowledge to complete this part of the test.

Please read and follow the instructions below carefully:

1. You have 1.5 hours (90 minutes) to complete this section.
2. Do not use calculators, mobile phones, smartwatches, or any other electronic devices.
3. Do not access the internet, notes, or any external sources during the exam.
4. Only blue-ink pens are allowed on your desk, along with this test paper and your personal ID.
5. Answer the questions directly on the exam sheets provided below. Ensure to properly circle any multiple-choice answer. Multiple circles on the same question will be considered incorrect.
6. Taking pictures or copies of this exam are not allowed, and any attempt to do so, or distribute such materials will result in disqualification of the candidate.
7. If you need clarification, raise your hand — an exam supervisor will assist you. No talking with other candidates is allowed.
8. Use your time wisely. If you're unsure about a question, move on and return to it later if time allows.
9. Cheating or attempting to use unauthorized materials will result in disqualification.

By continuing with this exam, you confirm that you understand and agree to follow these rules.

Good luck!

Part I: Informatics (10 questions – 50 points)

1. (5 points)
   What does CPU stand for?

   A) Central Processing Unit
   B) Computer Personal Unit
   C) Central Peripheral Unit
   D) Central Process Utility

2. (5 points)
   Which of these is an operating system?

   A) Python
   B) Microsoft Excel
   C) Linux
   D) HTML

3. (5 points)
   What is Artificial Intelligence (AI)?

   A) A type of robot hardware
   B) A program that only stores large data
   C) The simulation of human intelligence by machines
   D) A coding language used to design websites

4. (5 points)
   What is the binary equivalent of the decimal number 5?

   A) 110
   B) 101
   C) 1001
   D) 111

5. (5 points)
   What number does the binary 1101 represent in decimal?

   A) 11
   B) 12
   C) 13
   D) 14

6. (5 points)
Which language is commonly used for web development?

A) C++
B) Python
C) HTML
D) Java

7. (5 points)
Order the following units of data from smallest to largest: KB, GB, B, TB, MB, PB

A) B, KB, MB, GB, TB, PB
B) KB, MB, B, GB, TB, PB
C) PB, TB, GB, MB, KB, B
D) B, MB, KB, GB, TB, PB

8. (5 points)
Which file format is often used for pictures on websites?

A. JPG
B. DOCX
C. MP3
D. PDF

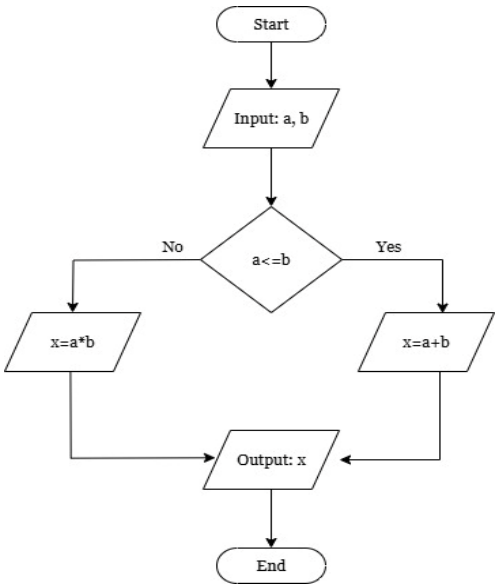
9. (5 points)
What is an algorithm?

A) A physical component in a computer
B) A step-by-step set of instructions to solve a problem
C) A programming language
D) A type of software virus

10. (5 points)

Following the algorithm, for the input data **a = 5** and **b = 4**, find the result **x**.

A) 9
B) 5
C) 4
D) 20



Part II: Mathematics (10 questions – 50 points)

11. (5 points)
Complete the sequence of the numbers: 3, 5, 9, 17, 33, ___

A) 63
B) 67
C) 65
D) 61

12. (5 points)
Find the solution of the following expression $\frac{10}{240} : \left(\frac{5}{12} \cdot \frac{6}{15}\right)$

A. 0.5
B. 0.25
C. 1
D. 0.75

13. (5 points)
Find the solution of the following expression $\frac{12}{4} + \frac{5}{6} - \frac{7}{3}$

A) 3/2
B) 5/2
C) 7/4
D) 4/3

14. (5 points)
A shirt is discounted by 30%, and then the discounted price is reduced by an additional 20%. What is the overall percentage discount?

A) 50%
B) 56%
C) 44%
D) 61%

15. (5 points)
A box contains 5 red balls, 3 green balls, and 2 blue balls. You randomly pick one ball. What is the probability of picking a green or blue ball?

A) 3/10
B) 2/10
C) 2/5

D) 1/2

16. (5 points)
A cube has a side of 5 cm. What is its volume?

A) 25 cm^3
B) 75 cm^3
C) 100 cm^3
D) 150 cm^3

17. (5 points)
Solve the following expression $\begin{cases} 2a + b = 5 \\ a - b = 1 \end{cases}$

A) a=2 and b=3
B) a=3 and b=1
C) a=4 and b=-1
D) a=2 and b=1

18. (5 points)
Solve the following expression $x^2 - 5x + 6 = 0$

A) x=2 and x=3
B) x=-2 and x=-3
C) x=1 and x=6
D) x=-1 and x=-6

19. (5 points)
Find the derivative of the function $f(x) = x^4 - 3x^2 + 2$

A) $4x$-$6x$+2
B) $3x^6$+2
C) $4x^3$-$6x$
D) $3x^2$

20. (5 points)
Evaluate the definite integral $\int_0^2 (6x^2 + 2x)dx$

A) 16
B) 20
C) 18
D) 22