Egypt-Japan University of Science and Technology *Entrance Exam (Undergraduate)*		
Faculty of CSIT + BAS + AnD + PharmD	**Subject: Mathematics**	
Academic Year: 2026/2027	**No. of Pages: 2**	
Exam Duration: 30 min	**Exam Version: 1**	
Student Name:	**Student ID:**	

Choose the correct answer

Question 1 If $f(x) = 3x - 2$ and $(f \circ g)(x) = 12x + 13$, then $g(x) =$ …….

A) $28x - 34$ B) $36x + 37$ C) $4x + 13$ D) $4x + 5$

Question 2 The domain of the function $f: f(x) = \log_{1+x} x$ is ……..

A) $]0, \infty[$ B) $[0, \infty[$ C) $\mathbb{R} - \{0\}$ D) $]-1, \infty[$

Question 3 If g is an even function and $g(2) = 5$, the point $(-2, 4k - 3)$ lies on the curve of the function g, then $k =$

A) -2 B) 2 C) $\frac{1}{2}$ D) 5

Question 4 If $\frac{A}{x+1} + \frac{B}{x-6} = \frac{x-2}{x^2-5x-6}$, then A, B equals

A) $\frac{3}{7}, \frac{-4}{7}$ B) $\frac{-3}{7}, \frac{4}{7}$ C) $\frac{-3}{7}, \frac{-4}{7}$ D) $\frac{3}{7}, \frac{4}{7}$

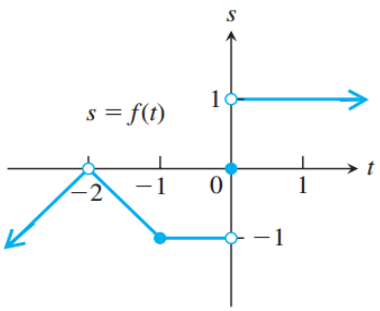
Question 5 In the opposite figure: $\lim_{t \to 0} f(t) =$ …… ……

A) 0

B) 1

C) -1

D) does not exist



Question 6 If $f(x) = \begin{cases} x^2 + ax - 2, & x > 2 \\ bx + a, & x \leq 2 \end{cases}$ is continuous at $x = 2$ and $f(2) = 10$ then $a \times b =$ …….

A) 4 B) 24 C) 12 D) 7

Question 7 In a triangle ABC, angle A is 30°, angle B is 45°, and side $a = 10$ cm. What is the length of side b?

A) 10 cm B) $10\sqrt{2}$ cm C) $10\sqrt{3}$ cm D) 20 cm

Question 8 A triangle has side lengths of 3, 5, and 7. What is the measure of the largest angle?

A) 90° B) 105° C) 120° D) 135°

Question 9 What is the 15th term of the arithmetic sequence: 4, 9, 14, 19, ...?

A) 74 B) 79 C) 84 D) 89

Question 10 What is the sum of the first 5 terms of the geometric series: 2 + 6 + 18 + ...?

A) 162 B) 242 C) 244 D) 486

Question 11 A restaurant offers 4 starters, 5 main dishes, and 3 desserts. How many different 3-course meals can be ordered?

A) 12 B) 20 C) 60 D) 120

Question 12 For $f(x) = \frac{1}{3}x^3 - 2x^2 + 5x - 4$, find the value(s) of x where the slope of the tangent equals to 2.

A) 1 and 3 B) 0.5 C) 4 and 6 D) 2

Question 13 If $y = (7x^3 - 12)^2$, then $\frac{dy}{dx}$ equals to

A) $2(7x^3 - 12)$ B) $21x^2(7x^3 - 12)$ C) $42x^2(7x^3 - 12)$ D) $6x^2(7x^3 - 12)$

Question 14 If $y = (2x + 1)^3 \sin(4x)$, then $\frac{dy}{dx}$ equals to

A) $(2x + 1)^3 \cos(4x) + 3(2x + 1)^2 \sin(4x)$ B) $4(2x + 1)^3 \cos(4x) + 6(2x + 1)^2 \sin(4x)$

C) $8(2x + 1)^2 \cos(4x) + 6(2x + 1)^2 \sin(4x)$ D) $4(2x + 1)^3 \cos(4x) + 3(2x + 1)^2 \sin(4x)$

Question 15 Evaluate the following integration $\int x^2 + \cos(x)\, dx$

A) $\frac{1}{3}x^3 + \sin(x) + c$ B) $\frac{1}{3}x^3 - \sin(x) + c$

C) $x^3 + \sin(x) + c$ D) $x^3 - \sin(x) + c$

Best Wishes for all