الجامعة الوطنية
National University
Science & Technology للعلوم والتكنولوجيا
كلية عمان البحرية الدولية
International Maritime College Oman

FINAL EXAM
FMTH003: BASIC MATHEMATICS - I
Fall-T2 2024-25

Points of attention:

- For each question, the maximum earned points are specified in the question.
- Write clearly! Answers that are not readable are not marked and don't earn marks!
- All answers should be written in English using **blue or black pens** only.
- Use the pencil only for diagrams and graphs.
- Show all the calculation steps in the given space.
- When finished, submit and sign the question paper to the invigilator.
- Any cheating/copying may result in an instant failing of the examination.

Exam Duration:	**2 hours**
Instructor's Name:	**Khaloud Al Ajmi**
Exam Date:	**09/02/2025**
Program:	**FND**

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Student Information

Name: ID:

Signature:

Invigilator

Initials: ☐ Student ID checked

Time received:

Question 1. Circle the correct option. **[10 Marks]**

Example. 85 is a _____ digit number.			
a 1	**b** 2	**c** 3	**d** 4
1. If $A = \{2,3,4\}$ and $B = \{3,6\}$. What is $A \cup B$?			
a. {2,4,6}	**b.** {2,3,4,6}	**c.** {3}	**d.** {1,5,7,8,9,10}
2. What percent of 200 is 50?			
a. 25%	**b.** 50%	**c.** 40%	**d.** 20%
3. $0.0091\ kg =$ _____ g			
a. 0.000091	**b.** 0.0091	**c.** 91	**d.** 9.1
4. $\frac{13}{3}$ is _____ number .			
a. a whole	**b.** a rational	**c.** a natural	**d.** an irrational
5. The degree of the polynomial $x^2 - 3x^4 + 9$ is _____.			
a. 9	**b.** 4	**c.** 3	**d.** 5
6. Choose the simplified form of the algebraic expression (y+4)(y-4) _____.			
a. $9y - 16$	**b.** $3y + 4$	**c.** $4y^2 - 16$	**d.** $y^2 - 16$
7. Choose the correct factors of trinomial $x^2 + 8x + 7$ _____.			
a. $(x + 3)(x + 4)$	**b.** $(x + 1)(x + 7)$	**c.** $(x - 1)(x - 7)$	**d.** $(x + 2)(x + 4)$
8. Evaluate the following expression $(\frac{5}{4} - \frac{1}{4})$ _____.			
a. $\frac{4}{8}$	**b.** $\frac{6}{4}$	**c.** $\frac{2}{8}$	**d.** 1
9. Solve the following equation $\frac{1}{2}x - 5 = 2$			
a. $x = 9$	**b.** $x = -8$	**c.** $x = 14$	**d.** $x = 16$
10. Evaluate the following expression $(27^{\frac{1}{3}})$.			
a. 6	**b.** 9	**c.** 3	**d.** 27

Question 2. Perform the addition or subtraction to simplify the following expressions.

[5 Marks]

a. $\frac{1}{x+3}+\frac{1}{x^2-9}$ **(3 marks)**

b. $\frac{x}{x-4}-\frac{3}{x+6}$ **(2 marks)**

Question 3. Solve the following equations. **[5 Marks]**

a. $|x - 6| = -1$ **(2 marks)**

b. $\frac{2x-1}{x+2} = \frac{4}{5}$ **(3 arks)**

Question 4. Find the quotient and remainder of the below expression using synthetic division. [4 Marks]

$P(x) = x^5 + 3x^3 - 6;\ x - 1$

Question 5. Simplify the following rational expression. **[4 Marks]**

$$\frac{x^2-3x-18}{2x^2+7x+3} \div \frac{1}{(2x+1)}$$

Question 6. Find the indicated set if $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{1, 2, 3, 4, 5\}$, $B = \{2, 3, 4, 6, 8\}$, $C = \{7, 9, 10\}$. **[4 Marks]**

a. $B' \cap C$ **(2 marks)**

b. $A' \cup B$ **(2 marks)**

Question 7. The volume of a water tank is 12000 cm^3. How many liters of water can the tank hold? [2 Marks]

Question 8. A recipe requires a total cooking time of 7 hours. So far, a chef has cooked for 90 minutes, 0.5 hours, and 1/6 of a day. How much more time does the chef need to cook? [3 Marks]

Question 9. Evaluate the following expression. **[3 Marks]**

$$\left(\frac{13}{4} \div \frac{12}{2}\right) + (9^{\frac{3}{2}} - 5^2)$$

Units Conversion Table

$1\ km = 1000\ m$	$1\ m = 100\ cm$
$1\ cm = 10\ mm$	$1\ kg = 1000\ g$
$1\ g = 1000\ mg$	$1\ l = 1000\ ml$
$1\ tonne = 1000kg$	$1\ cm^3 = 1\ ml$
$1\ foot = 12\ inches$	$1\ yard = 3\ feet$
$1\ mile = 1760\ yards$	$1\ gallon = 8\ pints$
$F = \frac{9}{5}\ C + 32$	$C = \frac{5}{9}(F - 32)$