



FINAL EXAMINATION

Semester	:	SEPTEMBER 2024 SEMESTER
Programme Name	:	FOUNDATION IN ART
Course Code & Name	:	FA1134 MATHEMATICS
Duration	:	3 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Please read the instructions given in the question paper **CAREFULLY**.
2. The question paper consists of **FOUR (4)** questions.
3. Answer **ALL** questions in the question paper.
4. Answers to the questions are to be written into the examination booklet.
5. Electronic dictionaries, lecture notes, files or any unauthorised materials except writing equipment are strictly prohibited.

This question paper must be submitted along with all used and/or unused rough papers and/ or graph papers (if any). Candidates are **NOT ALLOWED** to take any examination paper(s) used or unused out of the examination hall.

WARNING:

The Examination Board of Peninsula College Georgetown regards cheating as a very serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from Peninsula College Georgetown.

(This booklet contains 3 printed pages including this page)

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ALLOWED TO DO SO

Answer **ALL** questions on the separate sheet provided.

[100 marks]

1. a) A progression is given as 5 15 25.
- i) Identify the progression. (3 marks)
 - ii) Compute T_{25} and S_{18} . (10 marks)
- b) Solve the quadratic equation $3x^2 + 7x - 60 = 0$ by using quadratic formula. (6 marks)
- c) Find the value of $2\log_2 12 + 3\log_2 5 - \log_2 15 - \log_2 150$ (6 marks)
- Total: [25 marks]

2. a) Given that $y = (3x^2 - 9)(4x^2 + 5)$, find $\frac{dy}{dx}$ (6 marks)
- b) Find the gradient of the tangent to the curve $y = 3x^3 - 8x^2 - 4x + 2$ when $x = 3$ (6 marks)
- c) Given $f(x) = \frac{5x^2 - 1}{5x + 2}$, find $f'(x)$. (7 marks)
- d) Given that $y = 7(3x^2 - 7)^6$, find $\frac{dy}{dx}$ (6 marks)
- Total: [25 marks]

3. a) Find the indefinite integral for the following integration.
- $$\int \frac{(3x^2 - 2x^4)}{x^7} dx$$
- (5 marks)
- b) Find the indefinite integral for each of the following using substitution method.
- i) $\int 5(5x + 8)^4 dx$ (5 marks)
 - ii) $\int \frac{18}{(9x + 1)^3} dx$ (5 marks)

3. c) Sketch the region bounded by $y = 2x^2 + x + 3$, $x = -2$, $x = 3$ and the x - axis, and find the area of the region.

(10 marks)
Total: [25 marks]

4. a) The following data shows the number of 12-minute duration calls received per day by the customer service representative in a period of 12 working days.

25	30	40	43	24	19
10	32	49	30	20	35

Calculate the mean and median.

(4 marks)

- b) Using the following data set:

30,32,34,36,38

- i) Find the mean, \bar{x} . (4 marks)
- ii) Calculate the standard deviation. (13 marks)

- c) James takes part in three marathon runs. He can either finish or not finish the marathon runs. Determine the sample space. (4 marks)

Total: [25 marks]

- END OF QUESTIONS -