L-Università ta' Malta

MATSEC
Examinations Board

Examiners' Report

INTERMEDIATE APPLIED MATHEMATICS

First Session 2025

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A. STATISTICAL INFORMATION

The total number of candidates who registered to sit for Intermediate Applied Mathematics was **37**, which is **7** candidate more than in 2024.
Table 1 shows the distribution of grades for the Main 2024 Session of the examination

GRADE	A	B	C	D	E	F	ABS	TOTAL
PAPER	3	6	10	1	1	5	11	37
TOTAL	3	6	10	1	1	5	11	37
% OF TOTAL	8.1	16.2	27.0	2.7	2.7	13.5	29.7	100.0

Table 1: Distribution of grades for Intermediate Applied Mathematics, Main Session 2025

B. GENERAL REMARKS

General Remarks on the Written Examination

In general, the candidates' performance in this examination was as expected, the answers to the questions showed the full spectrum range of knowledge and problem-solving skills. Some candidates were very well prepared whilst others performed poorly.

C. COMMENTS ON PAPER

Question 1.

Most of the candidates constructed the system of forces and resolved correctly. Most of the candidates solved for P correctly but some summed up the forces and made them equal to zero (equilibrium). Most of the candidates calculated the magnitude of the resultant based on the value of P found in part (a). In addition, the candidates showed good understanding of how to take moments to find the line of action of the resultant.

Question 2.

Few candidates did not distinguish between the two cases hence applying the forces at the ends simultaneously. Other problems arose when some candidates resolved vertically when it was not required; included reactions at the supports when compiling the moment equations; taking moments not at the supports thus complicating the solution; whilst some did not write the moment equations correctly; or did not calculate the distance of the weight from end A and just stopped at X.

Question 3.

Most of the candidates drew the free body diagram correctly. Some missed to show the internal forces, and a few candidates did not properly orientate the triangle right, i.e. joint A was not positioned on top. Most of the candidates wrote and solved the equilibrium equations as intended.

Question 4.

Most of the candidates worked out part (a) as required. Most of the marks were lost in part (b). Although most of the candidates understood the question and used the inverse tangent function to solve for the angle, some candidates mixed up the distances of the centre of mass from point F.

Question 5.

The question was well understood, and the majority go full marks.

Question 6.

Most of the candidates understood the question and complied the necessary equations of motion to be able to solve for the acceleration and the tension in the string. Some candidates mixed the direction of the resultant, hence obtaining an incorrect answer. The following parts of the question were answered correctly using the constant acceleration equations to solve for the time and final velocity.

Question 7.

The most prevalent mistake was when the candidates used the force and acceleration method to obtain the acceleration, consequently using the constant acceleration equations to find the velocities. This method of solution is not applicable in this problem because the acceleration is not constant. Additionally, the candidates that did use the energy method did not formulate energy equations correctly.

Question 8.

The most common problem was lack of knowledge how to calculate the impulse. Some candidates made a mistake in part (d) by calculating the KE of just one particle.

Question 9.

The most common mistake was converting the r.p.m. to S.I. units. Most of the responses identified the reaction to be equal to the centripetal force. However, responses indicate that some candidates did not understand the link between the weight and the friction force, consequentially were unable to solve for the coefficient of friction.

Question 10.

Most of the candidates were unable to derive the required equations and consequently could not work out parts (c) and (d).

D. CONCLUDING COMMENTS

In general, the overall performance of the candidates was good. However, in some cases, the fundamental mathematical skills of algebraic solution and method to solve such problems need improvement. On a general note, the presentation of the solutions needs major development, proper annotation of what is happening and clear indication of the final answer to the solution.

Chairperson
Examination Panel 2025