MAT215 ELEMENTARY NUMBER THEORY & CRYPTOGRAPHY ASSIGNMENT 3

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Instructions.

- Due: before the lecture on **14th November 2025**.
- Must be submitted as a printed/written document.
- Begin each solution on a new page, and use only blank or dotted pages (not ruled).
- Staple the submission.
- State your sources at the top of each problem (even if you worked independently).
- Late penalty is 25% per late day.
- Failure to follow any of these instructions will result in 0 points.
- **All page numbers refer to the questions given to you via emails periodically, and which we consulted during the lectures.**

Problems. All problems carry equal weightage.

(1) Page 165, Exercise 6.11.10.
(2) Page 166, Exercise 6.11.21.
(3) Page 166, Exercise 6.11.22.
(4) Page 166, Exercise 6.11.30.
(5) Page 167, Exercise 6.11.35.
(6) Page 168, Exercise 6.11.40.
(7) Page 204, Exercise 7.8.6.
(8) Page 205, Exercise 7.8.17.
(9) Page 207, Exercise 7.8.29.
(10) Page 207, Exercise 7.8.30.
(11) Page 207, Exercise 7.8.36.
(12) Page 211, Exercise 7.8.64.
(13) Page 231, Exercise 8.8.2.
(14) Page 232, Exercise 8.8.16.
(15) Page 233, Exercise 8.8.20.
(16) Page 233, Exercise 8.8.21.
(17) Page 233, Exercise 8.8.22.
(18) Page 235, Exercise 8.8.39. (Here, replace the word 'pirate' by 'paint' for the analogy we discussed in the lectures.)
(19) Page 235, Exercise 8.8.40.
(20) Page 237, Exercise 8.8.57.

Date: 03 November 2025.