SAMPLE Mid-semester Examination
First Semester, 2007

COURSE CODE  MATH1040
COURSE TITLE  BASIC MATHEMATICS
EXAMINER  MICHAEL JENNINGS
PERUSAL TIME  10 mins Writing permitted during perusal
WEIGHTING/MARKS  25%
WRITING TIME  1 Hrs 30 mins

Exam Type:  Closed Book
Calculator:  Yes – non-graphical
Dictionary:  No
Permitted Materials:  Non-graphical calculator, pens, pencils, rubber, ruler

SPECIAL INSTRUCTIONS TO STUDENTS:
There are two parts to this paper. Part A is worth 35 marks and Part B is worth 55 marks. Each question for Part A is worth 1 mark for a correct answer, and 0 marks for an incorrect answer. There are 12 questions in Part B; each question carries the stated number of marks, and part marks will be awarded for correct working.

There are some formulae on the last page of this paper.

Write your answers (including rough working in Part B) in the space provided. If you need extra room, use the back of other pages. You will be issued with a single sheet of blank paper. During perusal, you may write on this blank sheet, but not on the exam booklet. Do not write on the single sheet once perusal is over. Your single sheet will be collected with your exam and will be destroyed (so material written on that sheet will not be assessed).

This sample exam shows you what to expect on your real exam. The number of marks for each question is shown, along with some practice questions from your Study Guide which cover the same topic. Note that the Study Guide contains worked solutions to all of the questions. Your exam has the same cover sheet as this and has the same formulae at the end. I think this is a very useful study guide!
Part A

For each of the following 26 questions, enter the correct value of x into the corresponding box. There is no need to show any working. Each correct answer is worth 1 mark; each incorrect answer is worth 0 marks. (Hint: In each case, x is an integer between -6 and 6 inclusive.)

For practice questions, try:
- Questions 1 to 26 on Page 80 of your Study Guide.
- Questions 1 to 32 on Page 86 of your Study Guide, but not Questions 1, 2, 5, 6, 7, 11, 14, 15, 21, 22, 23, 24, 30, 31 or 32.
- Questions 1 to 23 on Page 92 of your Study Guide, but not Questions 1, 2, 5, 6, 7, 11, 17 or 18.
- Questions 1 to 20 on Page 98 of your Study Guide, but not Questions 1, 2, 5, 6, 7, 17 or 18.
- Questions 1 to 13 on Page 104 of your Study Guide, but not Questions 1, 2, 4, 8, 9 or 13.

For each of the following nine multiple choice questions, enter your answer into the corresponding box. There is no need to show any working. Each correct answer is worth 1 mark; each incorrect answer is worth 0 marks.

For practice questions, try:
- Multiple choice Questions 1 to 9 on Pages 80 and 81 of your Study Guide.
- Multiple choice Questions 3 to 6 on Pages 86 and 87 of your Study Guide.
- Multiple choice Questions 1 to 10 on Pages 92 and 93 of your Study Guide, but not Questions 2, 3 or 7.
- Multiple choice Questions 1 to 13 on Pages 98 and 99 of your Study Guide, but not Questions 2, 3 or 7.
- Multiple choice Questions 1 to 10 on Pages 104 and 105 of your Study Guide, but not Questions 2, 3 or 7.

There will be NO other questions in Part A after the Multiple Choice questions.
Part B

Each of the following questions carries the stated number of marks. Write your answers in the space provided. Part marks will be awarded for correct working.

1. See the Study Guide - Question 1 Page 81, Question 1 Page 87, Question 1 Page 93, Question 1 Page 99, Question 1 Page 105. (3 marks)
2. Three parts worth 3 marks, 1 mark and 1 mark. See the Study Guide - Question 2 Page 81, Question 3 Page 87, Question 6 Page 94, Question 6 Page 100, Question 6 Page 106 (5 marks)
3. See the Study Guide - Question 3 Page 82, Question 5b Page 88, Question 8 Page 100, Question 8 Page 106. (2 marks)
4. (Similar to Q3) See the Study Guide - Question 4 Page 82, Question 5a Page 88. (3 marks)
5. (a) See the Study Guide – Question 5 Page 82, Question 9 Page 88 (4 marks)
   (b) See the Study Guide – Question 13 Page 94, Question 13 Page 100, Question 13 Page 106. (3 marks)
6. See the Study Guide – Question 6 Page 82, Question 2 Page 93, Question 2 Page 99, Question 2 Page 105 (3 marks)
7. See the Study Guide – Question 7 Page 82, Question 3 Page 94, Question 3 Page 100. (4 marks)
8. See the Study Guide – Question 8 Page 82, Question 7 Page 94, Question 7 Page 100. (2 marks)
9. See the Study Guide – Question 10 Page 82, Question 4 Page 94, Question 4 Page 100, Question 4 Page 106. (3 marks)
10. Seven parts, first 4 worth 1 mark each and last 3 worth 2 marks each. See the Study Guide – Question 12 Page 82, Question 3e, f Page 116, Question 7 Page 122, Question 7 Page 128, Question 7 Page 134. Your question is a bit different to these. (10 marks)
11. See the Study Guide – Question 9 Page 82, Question 13 Page 94, Question 13 Page 100, Question 13 Page 106. Question involves straight lines and distances. (8 marks)
12. A mystery question involving sigma. (5 marks)

Some formulae:
Principle of inclusion/exclusion:

Conditional probability:

Distance between \((x_1, y_1)\) and \((x_2, y_2)\):

Gradient formula:

Have you read Page 79 of the Study Guide? It gives some good ideas on how to approach the exam.