CONFIDENTIAL GDK3223

UNIVERSITI UTARA MALAYSIA

FINAL EXAMINATION
FIRST SEMESTER 2008/2009 SESSION

CODE/COURSE : GDK3223 MATHEMATICS TEACHING METHODS
DATE : 11 NOVEMBER 2008 (TUESDAY)
TIME : 2.30 – 5.00 P.M. (2 ½ HOURS)
VENUE : DTSO

INSTRUCTIONS:

1. This exam paper contains TWO (2) sections i.e., Section A and Section B, in SEVEN (7) printed pages, excluding the cover page.
2. Section A contains SEVEN (7) structured questions. Section B contains FOUR (4) essay questions. You are required to answer ALL the questions.
3. Answer Section A on the examination paper and Section B on the answer sheets provided.
4. Answers to Section A and Section B should be tied together.
5. You are NOT ALLOWED to remove the examination paper from the examination hall.

MATRIC NO.: ___________________________ ___________________________
(in words) (in figures)
IDENTITY CARD NO.: __________________________
LECTURER : DR. RUZLAN MD. ALI
GROUP : A TABLE NO.: ___________________________

DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO DO SO

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SECTION A (40 marks)

INSTRUCTIONS:
Answer ALL the questions.

1. State **TWO (2)** objectives of the Mathematics Curriculum for the secondary schools in Malaysia.

   (i) 
   
   
   (2 marks)

   (ii) 
   
   
   (2 marks)

2. (a) Describe **ONE (1)** purpose of ‘set induction’ when delivering a mathematics lesson in the classroom.

   
   
   
   (2 marks)
(b) Give an appropriate example of a set induction when introducing the topic 'Coordinates' in a Form 2 classroom.


(3 marks)

3 Describe TWO (2) types of communicational skills that can be developed amongst students during the process of teaching and learning of mathematics. Give an appropriate example for each type.

(i) 


(4 marks)
4 Explain briefly the question type ‘close-procedural’ (Boaler & Brodie, 2004) that teachers normally asked when teaching mathematics. Give THREE (3) examples of this question type.

(5 marks)
5 Using appropriate illustrations, describe the steps to guide your students to construct a perpendicular to a line PQ passing through M.

(6 marks)
Figure 1 shows a triangle ABC and a line PQ. Describe the steps you would execute when guiding your students to determine the image of triangle ABC under a reflection in the line PQ.

(6 marks)
7 Discuss the teaching and learning activities that you would carry out to guide your students to understand the meaning of \( 5 \times \frac{3}{4} \)

(6 marks)
SECTION B (60 marks)

INSTRUCTIONS:
Answer ALL the questions.

1. Discuss the teaching and learning activities that you would carry out in guiding your students to understand the concept of Pythagoras Theorem by using the graph papers.
   
   (15 marks)

2. Table 1 shows the number of newborn babies at Taman Merbau over a period of 6 months. Explain your steps in guiding your students to construct an appropriate bar chart to display the data.

<table>
<thead>
<tr>
<th>Month</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of newborn babies</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 1

(15 marks)

3. Explain how you would incorporate Polya’s Model (1957) in guiding your students to determine to solve the following problem:

5 containers of water are poured into a water tank. Each container holds 2500 cm$^3$ of water. After 24 minutes, only 500 cm$^3$ of the water remained. If the water leaked out steadily, find out the amount of water that leaked out every minute.

(15 marks)

4. Figure 2 shows a trapezium.

![Diagram of a trapezium](image)

Figure 2

Describe the teaching and learning activities through the inductive approach that you would use to show your students that the area of trapezium is $\frac{1}{2} (a + b) \times h$.

(15 marks)

END OF EXAM PAPER