education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

MATHEMATICS P3

NOVEMBER 2006

MARKS: 50

TIME: 1 hour

This question paper consists of 6 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions:

1. This question paper consists of FIVE questions. Answer ALL the questions.

2. Clearly show ALL calculations, diagrams, graphs, et cetera you have used in determining the answers.

3. An approved scientific calculator (non-programmable and non-graphical) may be used, unless stated otherwise.

4. If necessary, answers should be rounded off to TWO decimal places, unless stated otherwise.

5. Number the answers correctly according to the numbering system used in this question paper.

6. Diagrams are NOT necessarily drawn to scale.

7. It is in your own interest to write neatly and legibly.

QUESTION 1

Estimate the probability for each event given below. State whether the probability is *impossible*, *likely*, *a 50-50 chance*, *unlikely*, *certain*, you *cannot tell* with the given information. Substantiate your answer.

Event A: In South Africa you will write a mathematics examination at the end of Grade 12. (2)

Event B: A low-energy light bulb, which is expected to last for 300 hours, blows after 2 hours. (2)

Event C: If you throw a coin, you will get 'tails'. (2)
[6]

QUESTION 2

Two hundred teenagers had to answer the following question:

What is your favourite type of music?

The teenagers responded as follows:

160 chose hip-hop (HH)
140 chose qwaito (Q)
108 chose hip-hop and qwaito (HH en Q)

2.1 Draw a Venn diagram illustrating the given information. (4)

Use the Venn diagram in QUESTION 2.1 to calculate the probability (in the simplest form) that a teenager, randomly chosen, will like the following music:

2.2 Qwaito only (2)

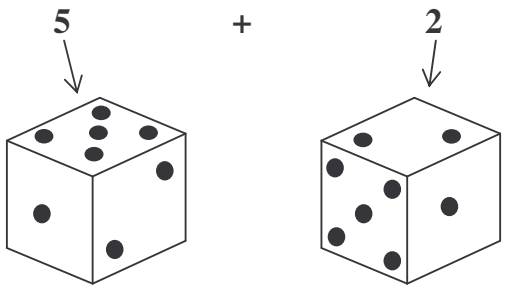
2.3 None of the TWO (2)

2.4 Qwaito and hip-hop (3)
[11]

QUESTION 3

Two dices are thrown and the two numbers are added.

EXAMPLE (use the top view):



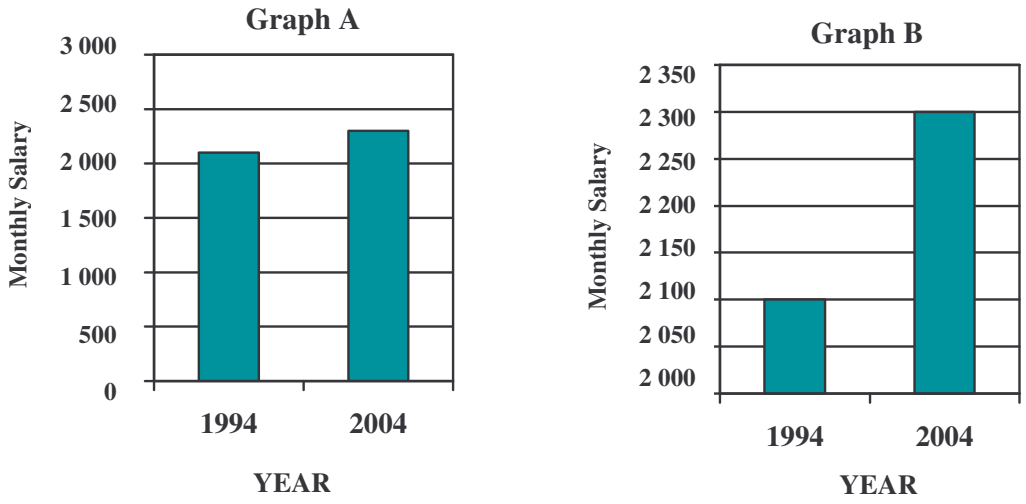
3.1 Determine n(S). (2)

3.2 Calculate the probability (in the simplest form) and show ALL calculations, that:

3.2.1 The sum will be 4 (2)

3.2.2 The sum will be smaller than 5 (2)
[6]

QUESTION 4



These graphs were drawn by the employer and the workers' union of a big company after a salary dispute.

4.1 Which graph, do you think, would be presented by the employer? Substantiate your answer. (3)

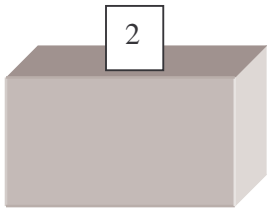
4.2 Which graph, do you think, would be presented by the workers' union? Substantiate your answer. (3)

4.3 Explain how the difference in impressions was created in the graphs. (3)
[9]

QUESTION 5

Cards numbered from 1 to 16 are placed into a box and shaken. Cards are then drawn and returned to the box. Events are represented by symbols as follows:

- A factor of 15 is drawn: F
- A multiple of 2 is drawn: M
- An uneven number is drawn: U



Calculate and leave your answer in its simplest form:

5.1 P(F and U) (3)

5.2 P(M or U) (4)
[7]

QUESTION 6

6.1 Study the following definitions of a square that three Grade 10 Mathematics learners have given in a test:

James's definition	**George's definition**	**William's definition**
A square is a quadrilateral of which all sides are equal.	A square is a quadrilateral of which both pairs of opposite sides are parallel and the angles are equal to 90º.	A square is a quadrilateral of which all sides are equal and all angles are equal to 90º.

When their test books were returned, only William's answer had been marked correct.

Would you agree with this? Explain why James's and George's definitions were marked incorrect. (3)

6.2 Anna describes the quadrilateral she is thinking of, as follows:

My quadrilateral is a quadrilateral of which the diagonals are not equal in length, but intersect each other perpendicularly.

6.2.1 What quadrilateral is Anna thinking of? (1)

6.2.2 Write down another definition that would describe the quadrilateral Anna is thinking of. (3)

6.3 Raoul describes the quadrilateral he is thinking of, as follows:

My quadrilateral is any quadrilateral of which one diagonal is halved by the other diagonal.

6.3.1 Is Raoul's definition describing the same quadrilateral as Anna's definition? Explain your answer. (2)

6.3.2 Change Raoul's definition so that it describes the same quadrilateral as Anna's definition. (2)
[11]

TOTAL: 50