

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
Advanced Subsidiary GCE

GENERAL STUDIES

2962

The Scientific Domain

Monday **15 MAY 2006** Afternoon 1 hour 15 minutes

Additional materials:
8 Page Answer Booklet

TIME 1 hour 15 minutes

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and candidate number in the spaces provided on the answer booklet.
- Write your answers in the answer booklet.
- If you use additional sheets of paper, fasten the sheets to the answer booklet.
- Answer **all** the questions in Section A and **one** question in Section B.
- Read each question carefully and make sure you know what you have to do before starting your answer.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is 100.
- **Where an answer requires a piece of extended writing, the quality of your written communication will be assessed, including clarity of expression, structure of arguments, presentation of ideas, grammar, punctuation and spelling.**
- You may use an approved calculator.

This question paper consists of 4 printed pages.

Section A

Answer **all** questions in this section.

1

Bank X – Savings Account

Excellent Rates for Investors
5% p.a. (simple interest)

The formula for simple interest is

$$I = \frac{PRT}{100}$$

I is the interest

P is the amount of money invested

R is the interest rate per annum

T is the number of years

Bank Y – Special Savers

Higher Interest Rates
for Investors
4% p.a. (compound interest)

The formula for compound interest is

$$A = P \left(1 + \frac{R}{100} \right)^n$$

A is the total amount of money

P is the amount of money invested

R is the interest rate per annum

n is the number of years

John inherited £16 000 from his aunt.

He decided to invest $\frac{1}{4}$ of it in Bank X.

- (a) (i) For this amount calculate how much interest John received after three years from Bank X. Give your answer in pounds. [3]
- (ii) How many years would it take John to double his investment? [2]

John decided to put the remaining £12 000 in Bank Y.

- (b) How much money did John have in Bank Y after three years?
Give your answer to the nearest pound. [4]
- (c) Explain the difference between simple interest and compound interest. [4]
- (d) One year ago Megan invested her money in Bank Y and now has £15 152.80
How much money, in pounds, was originally invested? [2]

- (e) John could have chosen to invest in Premium Bonds.

Here is part of the NS&I (National Savings & Investments) publicity material:

“We’re increasing your chances of winning ... someone with the maximum of £30 000 investment who enjoys average luck would win 15 tax-free prizes a year – from £50 right up to our jackpot of £1 million.

Premium bonds are 100% secure. You can get your money back whenever you want.”

- (i) According to the publicity material, how many prizes per year might someone with an investment of £16 000 expect to win? [2]
- (ii) Each month the total number and value of prizes vary. Suggest **two** factors which may account for this variation. [2]
- (iii) Some people might see Premium Bonds as an attractive investment. Suggest **three** reasons why. [3]
- (f) Suggest **three** factors John might need to think about before transferring his inheritance from his savings accounts to Premium Bonds. [3]

- 2 Identify **one** example of each of the following. For each example, outline **one** advantage and **one** disadvantage.

- (a) A renewable source of energy.
- (b) A method of contraception.
- (c) A mission to another planet.
- (d) Genetic engineering.
- (e) Organ transplantation.

[25]

Total [50] marks

Section B

Answer one question from this section. Answers must be in continuous prose.

- 3 (a) Identify a sporting activity that would be appropriate for each of the following.
Use a different sport for each and justify your choices.
- (i) an overweight person
 - (ii) a teenage wheelchair user
 - (iii) a pregnant woman
- [10]
- (b) "More and more people of different ages are taking part in active sports eg. walking, running, cycling." Why? [40]
- 4 (a) Describe, with an example, how a different mathematical technique is used in each of the following employment areas:
- (i) government;
 - (ii) manufacturing;
 - (iii) agriculture.
- [10]
- (b) Why is it so important that pupils learn to understand and use a variety of mathematical techniques (eg. graphs, percentages, probability) while they are still at school? [40]
- 5 (a) "Whenever possible people in the UK today prefer to travel by motorway."
Using three examples, explain how this statement is valid in some cases but not in others. [10]
- (b) The increasing congestion on motorways is forcing politicians to consider different ways of improving travel. Examples include:
- widening motorways and increasing the number of traffic lanes;
 - introducing a variety of toll charges;
 - improving railways.
- Examine the disadvantages of these on the environment. [40]

Total [50] marks