

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
ADVANCED SUBSIDIARY GCE**

F732

GENERAL STUDIES

The Scientific Domain

MONDAY 18 JANUARY 2010: Morning

DURATION: 1 hour

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Answer Booklet

OCR SUPPLIED MATERIALS:

8 page Answer Booklet

OTHER MATERIALS REQUIRED:

An approved calculator

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the spaces provided on the Answer Booklet.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- If you use additional sheets of paper, fasten the sheets to the Answer Booklet.
- Answer **ALL** questions in Section A and **ONE** question in Section B.

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 **60**.
- You are advised to divide your time equally between Sections A and B.
- **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.**

SECTION A

Answer ALL the questions in this section.

- 1 (a) Humans have a number of senses, for example sight. Identify FOUR other senses. [2]
- (b) Many people use spectacles to improve their quality of life. Different types of lenses can be used to correct long and short sight.

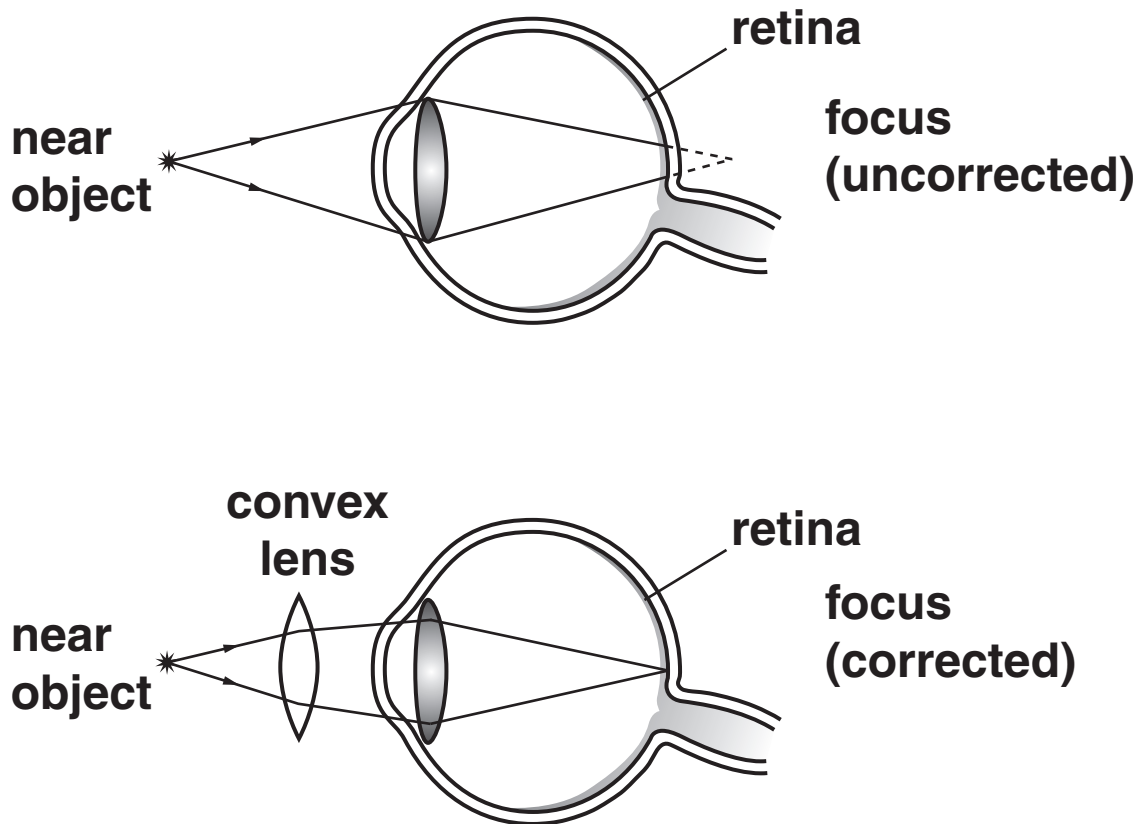


Fig. 1(a) Long sight

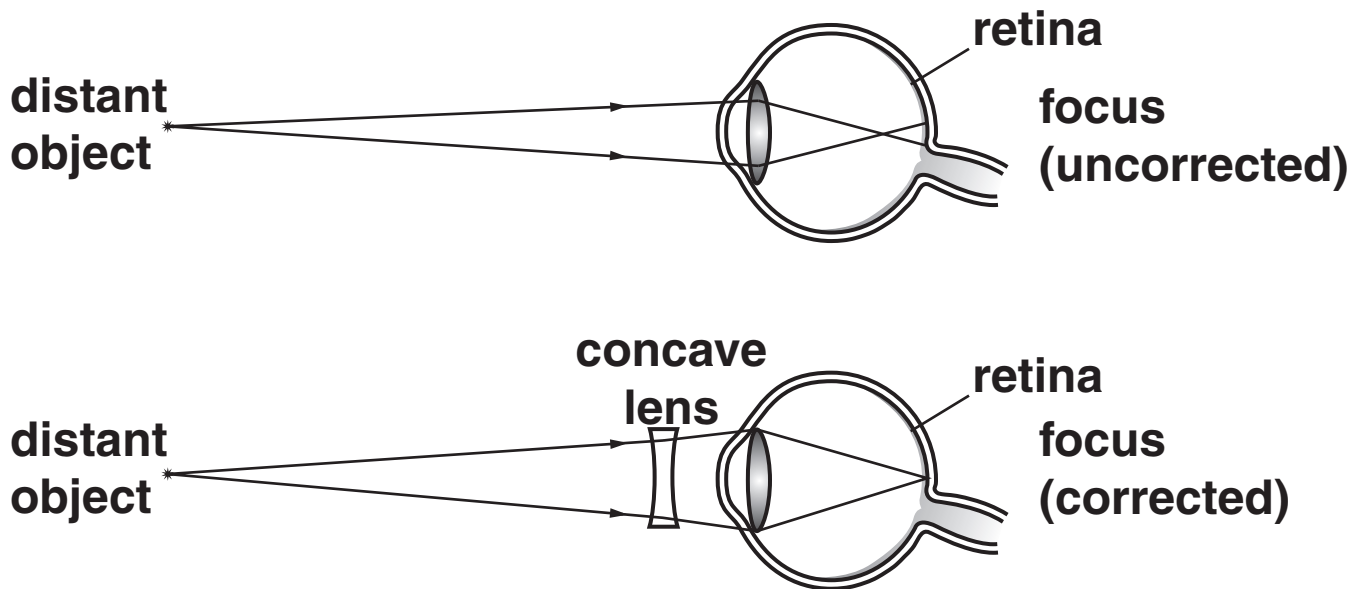


Fig. 1(b) Short sight

- (i) Use Figs. 1(a) and 1(b) to explain how convex and concave lenses, when used in spectacles, can help correct long and short sight. [4]
- (ii) Describe briefly TWO ways in which this helps to improve people's quality of life. [2]
- (c) Some opticians suggest that the prescription of spectacles can improve the behaviour and learning of many young children at school. Suggest TWO reasons for this. [4]

(d) Fig. 1(c) shows a spectator at an event in a crowd. The spectator is using a periscope to improve his view of the action that is taking place.



Fig. 1(c)

Fig. 1(d) shows how a prism reflects light internally.

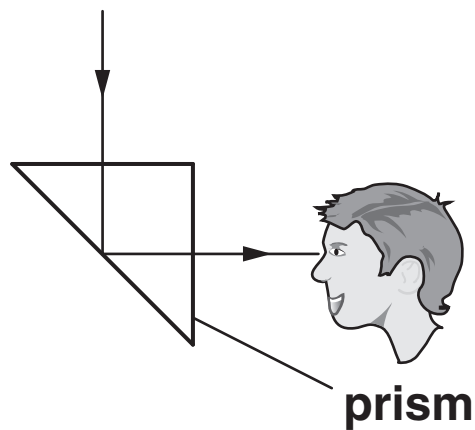
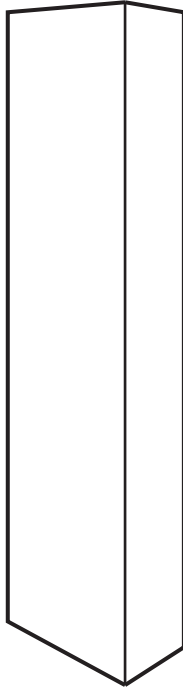


Fig. 1(d)

Describe how TWO PRISMS can be used to make a periscope. You may use a diagram with your description. [4]

- 2 In the ancient city of Tur, a solid, rectangular obelisk was built. (Fig. 2) The structure took less than three Tur weeks to complete. Use the following information to calculate on which day of the week the Zin Obelisk was completed. Show clearly how you came to your answer.



Zin : The Obelisk
Height : 90 metres
Length : 20 metres
Width : 5 metres

Fig. 2

Here are the facts to help in your calculation. (You may use a calculator.)

- 1. Time in Tur is measured in days.**
- 2. A Tur day is divided into schlibs and ponks.**
- 3. There are eight ponks in a schlib.**
- 4. The height of the Zin obelisk is 90 metres.**
- 5. The length of the Zin is 20 metres.**
- 6. The width of the Zin is 5 metres.**
- 7. The Zin is built of stone blocks, each of which is 50 centimetres by 50 centimetres by 50 centimetres.**
- 8. The Tur Five Day Week**

Day	Name of the day
One	Educoday
Two	Genoday
Three	Linoday
Four	Haroday
Five	Roveroday

- 9. Each working day has nine schlibs.**
- 10. Each worker takes rest periods during the working day totalling sixteen ponks.**
- 11. Each worker lays 150 blocks per schlib.**
- 12. At any time when work is taking place, there is a gang of nine people on site.**

- 13. One member of the gang has religious duties and does not lay blocks.**
- 14. No work takes place on Roveroday.**
- 15. Work starts at daybreak on Educoday.**
- 16. Only one gang is working on the construction of the Zin Obelisk. [14]**

[Adapted from M. Woodcock, D. Francis and D. Young. 'Problem Solving: The Zin Obelisk. A practical manual for team building' (1979), San Diego CA, University Associates].

Section A Total [30]

SECTION B

Answer ONE question from this section. Answers should be in continuous prose.

3 Between the years 1950 and 2000, the fertility of the human population in Britain declined. Examine possible reasons for this decline in human fertility. [30]

4 Scientists working on the exploration of space have contributed to the development of the following:

- **satellite navigation for aircraft, ships and cars**
- **satellite images of the earth's surface**
- **more efficient fuels for transport and heating**
- **non-stick 'Teflon' type materials**
- **stronger materials to increase safety and performance in helicopters and cars**
- **safety equipment for people in hazardous environments**
- **greater understanding of the origins of the universe**
- **cooperation between nations**
- **facilities for the disposal of radioactive waste.**

Select TWO developments from the list which you feel have contributed most to modern life and the ONE you feel has contributed the least. Justify your selection in EACH of the three cases. [30]

- 5 A scientist has been asked, by a driving school, to design an experimental programme which aims to find a way of improving the rate at which its clients pass their driving test. This would be in addition to the usual ten weekly one hour lessons.**

The scientist has been asked to test the following suggestions for improving the pass rate:

- three lessons per week for ten weeks**
- two unaccompanied driving sessions, with video, on a private practice circuit**
- an intensive driving course over six consecutive days.**

Describe, with justifications, an experimental design the scientist might recommend to the driving school.

[30]

Section B Total [30]



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