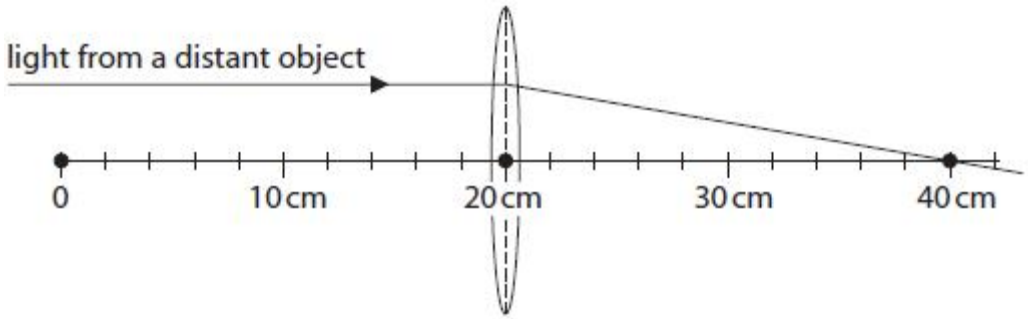
Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 5_ Light And Electromagnetic Spectrum

Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Q1.

(a) The diagram shows a thin lens placed at the 20 cm mark of a metre rule.



A ray has been drawn from a distant object.
Complete the sentence by putting a cross (☒) in the box next to your answer.
The focal length of the lens is

(1)

- ☐ **A** 10 cm
- ☐ **B** 20 cm
- ☐ **C** 30 cm
- ☐ **D** 40 cm

(b) The linear magnification of a thin lens is given the symbol *M*.
The following equation for *M* is used for lenses in cameras.

$$M = \frac{f}{(d - f)}$$

where *f* is the focal length of the lens and *d* is the distance between the lens and an object.
A lens has a focal length of 12 cm.
(i) Use the equation to calculate *M* when the distance from an object to the lens is 14 cm

(2)

M = ...

(ii) Use the equation to calculate *M* when the distance from an object to the lens is 11 cm

(1)

M = ...

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(iii) The table shows the magnifications produced by this lens for different distances between object and lens.

d / cm	*M*
3.0	−1.3
9.0	−4.0
15	4.0
21	1.3

Suggest what the sign of *M* indicates about the image produced by the lens.

(1)

.....

.....

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Q2.

The lens shown in the diagram has a focal length of 12.0 cm.



(a) Complete the sentences by putting a cross (☒) in the box next to your answer.

(i) This lens can produce

(1)

- ☒ **A** only inverted images
- ☒ **B** only real images
- ☒ **C** only virtual images
- ☒ **D** both real and virtual images

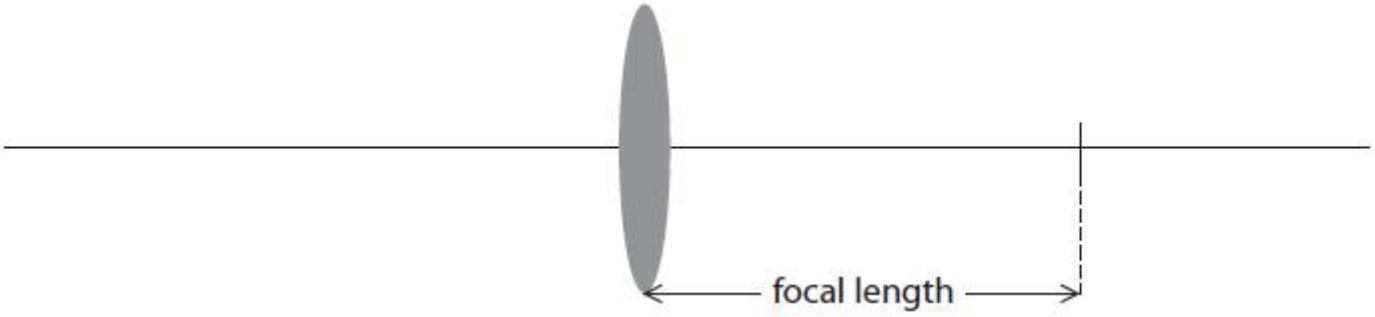
(ii) The power of the lens is

(1)

- ☒ **A** 8.3 dioptre
- ☒ **B** 8.3×10^{-1} dioptre
- ☒ **C** 8.3×10^{-2} dioptre
- ☒ **D** 8.3×10^{-3} dioptre

(iii) The diagram shows a converging lens with its focal length marked. Over this diagram draw a converging lens of greater power and mark in its focal length.

(2)



(b) An object is placed 8.5 cm in front of a converging lens of focal length 12.0 cm.

Calculate the image distance.

(4)

image distance = ... cm

(Total for Question = 8 marks)

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Q3.

Lenses are used in spectacles to treat some vision defects.
The two main lens types are converging lenses and diverging lenses.

(i) Diverging lenses always produce virtual, diminished images.

Which row of the table describes the images produced by a converging lens?
Put a cross (☒) in the box next to your answer.

(1)

	type of image	size of image
☒ **A**	only real	only magnified
☒ **B**	either real or virtual	either magnified or diminished
☒ **C**	either real or virtual	only magnified
☒ **D**	only virtual	only diminished

(ii) Describe how the power of a lens is related to its shape.
You may draw labelled diagrams if it helps your answer.

(2)

.....

.....

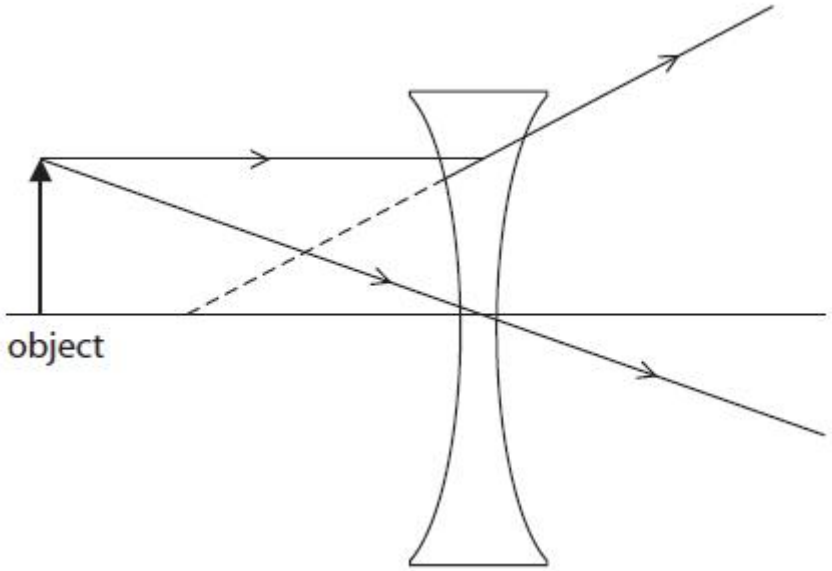
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Q4.

The diagram shows the formation of an image produced by one type of lens.



(i) On the diagram, draw and label the image produced.

(1)

(ii) On the diagram, show and label the focal length of the lens.

(1)

(iii) The type of lens shown in the diagram is used to correct a vision defect.

Name this vision defect.

(1)

.....

(iv) This lens has a focal length of −0.33 m.
An object is 0.50 m in front of the lens.

Calculate the distance of the image from the lens.

(4)

distance of image from lens = ... m

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