

**Name of the Student:** \_\_\_\_\_

**Max. Marks : 21 Marks**

**Time : 21 Minutes**

**Q1.**

An eye test shows that a person suffers from astigmatism.

- (a) Give the main cause of astigmatism.

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- (b) State the effect of astigmatism on the image seen.

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- (c) State the type of lens needed to correct this defect of vision.

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- (d) Give **two** quantities which must be known in order to manufacture the correcting lens.

1. \_\_\_\_\_

2. \_\_\_\_\_

**(Total 5 marks)**

**Q2.**

A converging lens of power 10 D produces a magnified image of a small object. The image is 0.25 m from the centre of the lens and is the same way up as the object.

- (a) State **one** other property of the image.

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**(1)**

- (b) Determine the focal length of the lens.

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**(1)**

- (c) Show that the object should be placed approximately 0.07 m from this lens for the image to be formed.

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(3)

- (d) Draw a ray diagram below to show how this image is formed. Mark the positions of the object, image and the principal foci of the lens.

A scale diagram is **not** required.

(2)

(Total 7 marks)

**Q3.**

Electrodes are attached to the chest of a healthy person and a normal ECG waveform is obtained.

- (a) State **two** ways of ensuring good electrical contact between the electrodes and the person.

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(2)

- (b) State **two** properties of the amplifier needed to amplify the signal from the electrodes.


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(2)

- (c) Sketch, on the axes below, the waveform that you would expect to obtain. Label the axes with appropriate scales.

potential at  
body surface/mV



Mark on the waveform where the following occur:

- (i) atrial depolarisation
- (ii) ventricular depolarisation
- (iii) ventricular repolarisation.

(5)

(Total 9 marks)