Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: GCSE Triple Science_Waves (SDQ)

Name of the Student:_____
Max. Marks : 24 Marks **Time : 24 Minutes**

Q1.

Ultrasound and X-rays are waves used in hospitals to create images of the inside of the human body. To produce the images below, the waves must enter the human body.

Ultrasound scan of an unborn child

© Isabelle Limbach/Thinkstock

X-ray of a broken bone

© itsmejust/iStock

(a) *In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate*.

Describe the features of ultrasound and X-rays, and what happens to each type of wave after it has entered the human body.

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(6)

(b) It would **not** be safe to use X-rays to produce an image of an unborn child.

Explain why.

_____

_____

_____

_____

(2)

(c) Ultrasound can be used for medical treatments as well as for imaging.

Give **one** use of ultrasound for medical treatment.

_____

_____

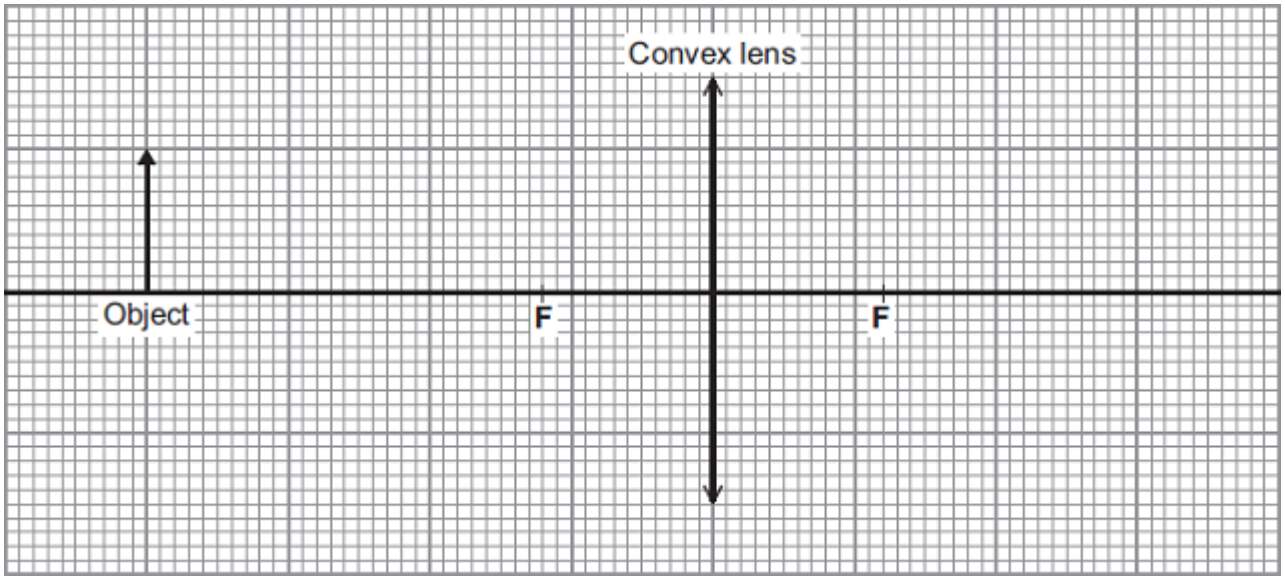
(1)

(Total 9 marks)

Q2.

(a) A camera was used to take a photograph. The camera contains a convex (converging) lens.

Complete the ray diagram to show how the lens produces an image of the object.



F = Principal focus

(4)

(b) State **two** words to describe the nature of the image produced by the lens in the camera.

1. _____

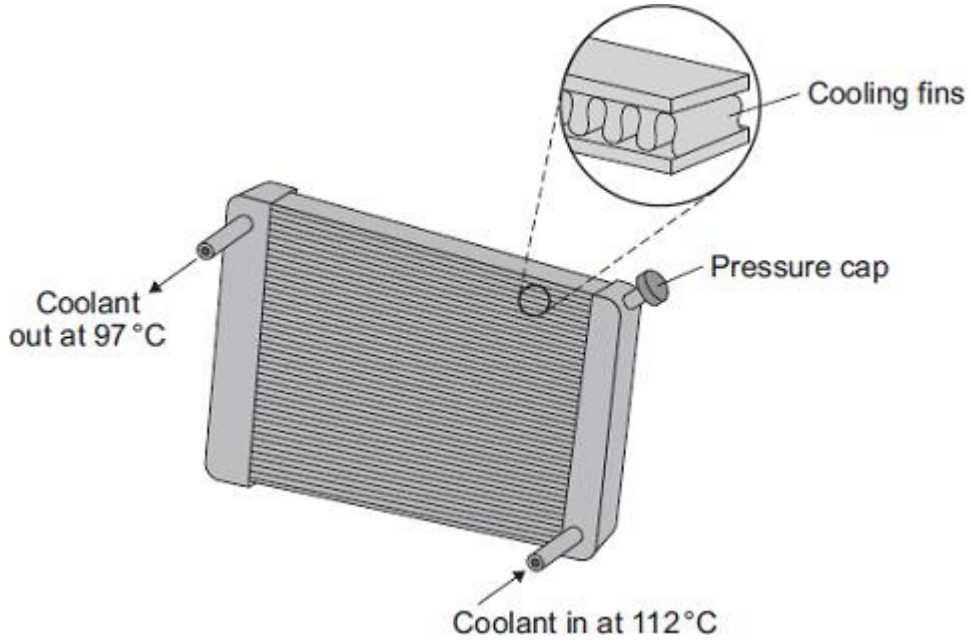
2. _____

(2)

(Total 6 marks)

Q3.

The diagram shows a car radiator. The radiator is part of the engine cooling system.



Liquid coolant, heated by the car engine, enters the radiator. As the coolant passes through the radiator, the radiator transfers energy to the surroundings and the temperature of the coolant falls.

(a) Why is the radiator painted black?

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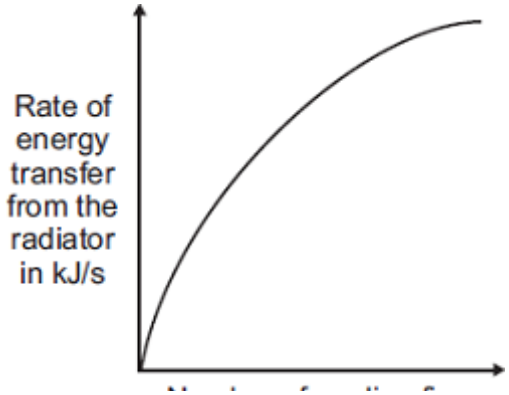
(2)

(b) Different radiators have different numbers of cooling fins along the length of the radiator.

The sketch graph shows how the number of cooling fins affects the rate of energy transfer from the radiator.



The number of cooling fins affects the rate of energy transfer from the radiator.

Explain how.

_____

_____

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_____

(2)

(c) When the car engine is working normally, 2 kg of coolant passes through the radiator each second. The temperature of the coolant falls from 112 °C to 97 °C.
Calculate the energy transferred each second from the coolant.
Specific heat capacity of the coolant = 3800 J/kg °C.

_____

_____

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_____

Energy transferred each second = _____ J

(3)

(d) On cold days, some of the energy transferred from a hot car engine is used to warm the air inside the car. This is a useful energy transfer.
What effect, if any, does this energy transfer have on the overall efficiency of the car engine?
Draw a ring around the correct answer.

decreases the efficiency **does not change the efficiency** **increases the efficiency**

Give a reason for your answer.

_____

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_____

(2)

(Total 9 marks)