Noradin Secondary Schools

EXAMINATION OF ACADEMIC YEAR, 2019/2020

Physics Form Four |4|

November, 2019

Time: 2: Hours

STD Name: _____

Student ID#:_____

Class NO#:_____**Form:**_____ **Section:** _____ **Shift:** _____

INSTRUCTIONS

- This exam paper consists of ***11 pages*** *including the cover pager*. Count them now; inform the invigilator if there are any missing or extra pages.
- Write your name and other details needed in the spaces provided above.
- If you make a mistake cross it out (×) and write your correct answer clearly.
- Write all your answers using in the spaces provided. No extra papers are allowed.
- Red pens or pencils are not allowed for your final answers.
- If you have time at the end, go back to the paper and read through your answers carefully.

- Any cheating trial will lead to the cancellation of your exam.

Part one: multiple choice (20 marks)

Circle the correct answer

1. fig. 3.1 shows the speed-time graph of part of a short journey made by a cyclist.

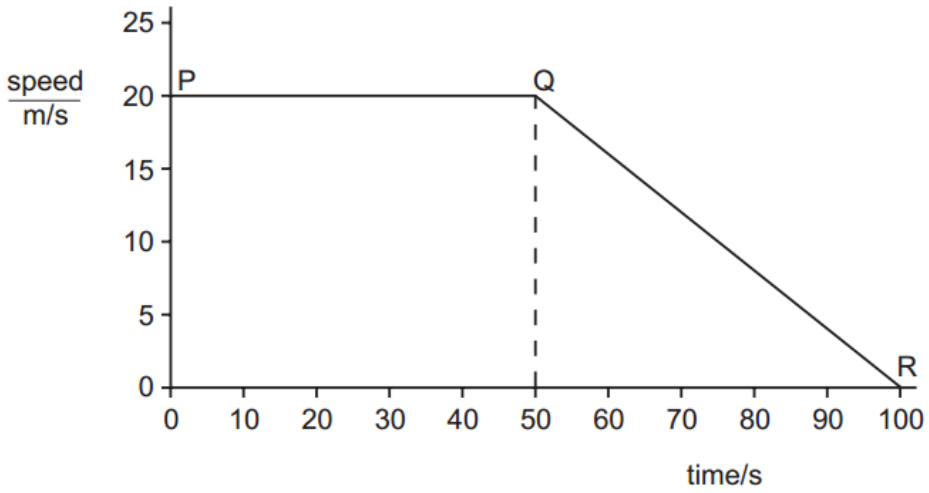
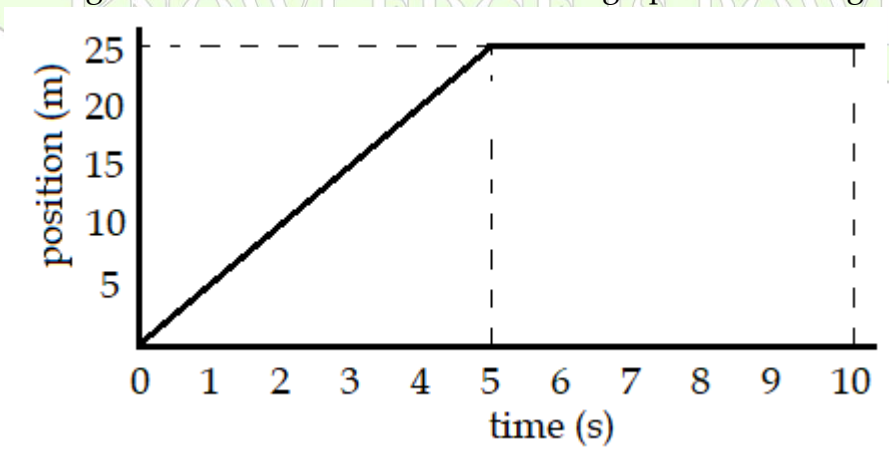


Fig. 3.1

Which part of Fig. 3.1 shows when the cyclist is travelling at constant speed?

a. PQ	b. PR	c. QR	d. OP

2. The figure below shows the distance-time graph of a moving car



What is the total distance travelled by the car?

a. 125m	b. 25m	c. 250m	d. 187.5m

3. Which of the following is a vector quantity
    a. 20m
    b. 20kg
    c. 20m/s
    d. 20m/s up
4. Fig. 1.1 is speed time graph that shows the motion of an object.

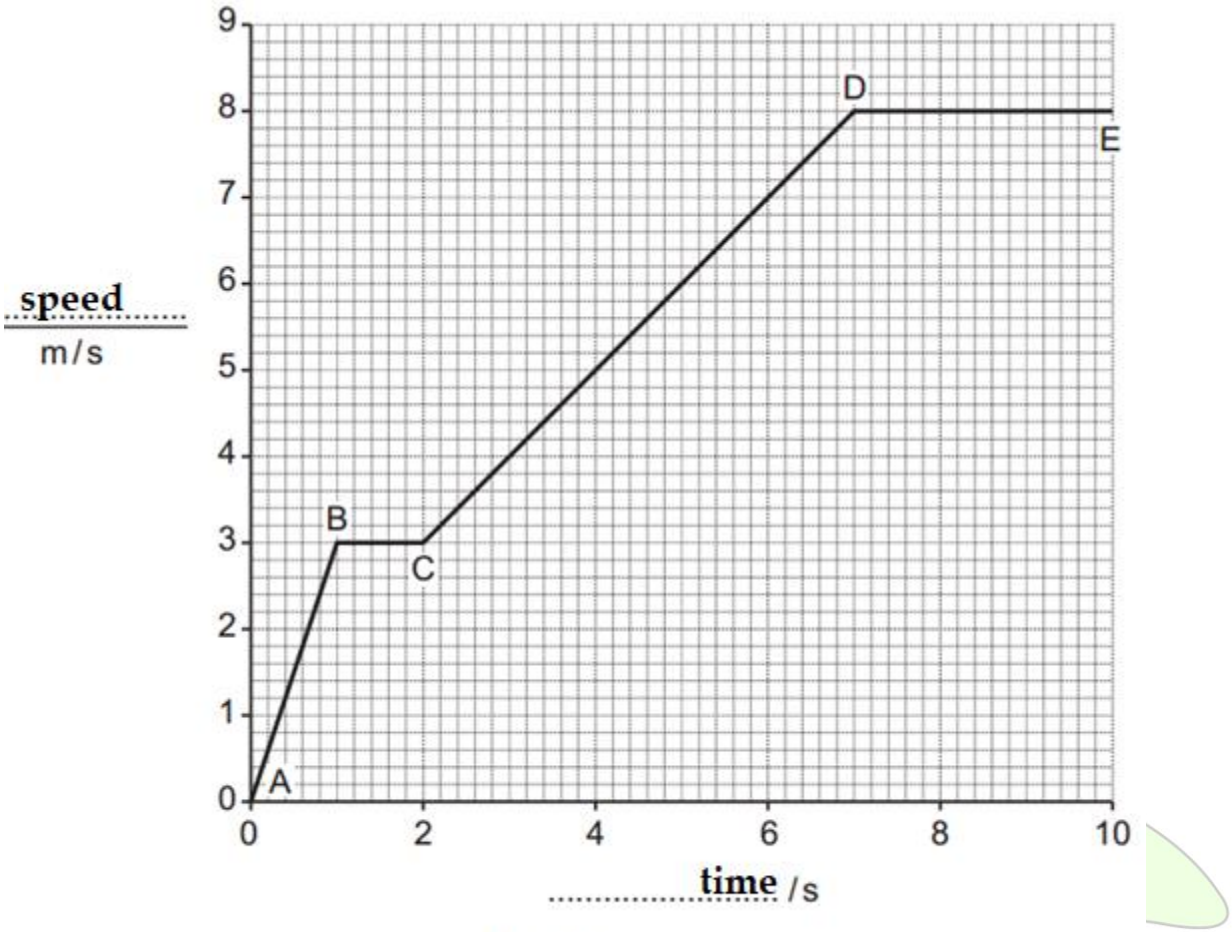


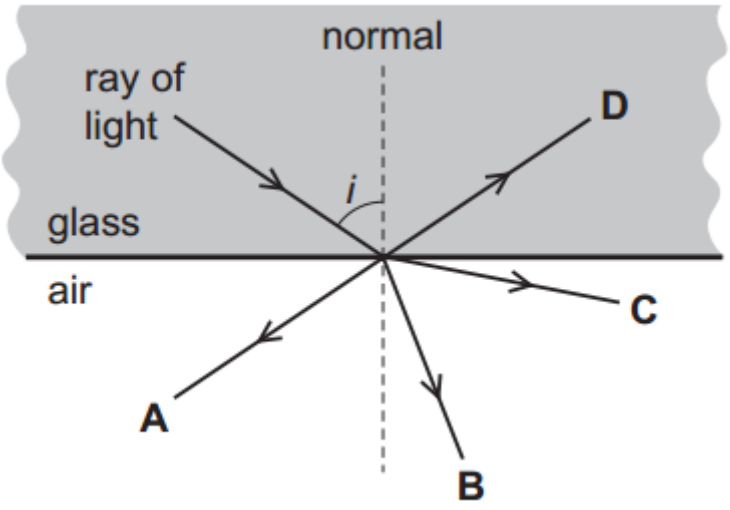
Fig. 1.1

Identify the part of the graph which shows the greatest acceleration. Tick one box.

a. A to B
b. B to C
c. C to D
d. D to E

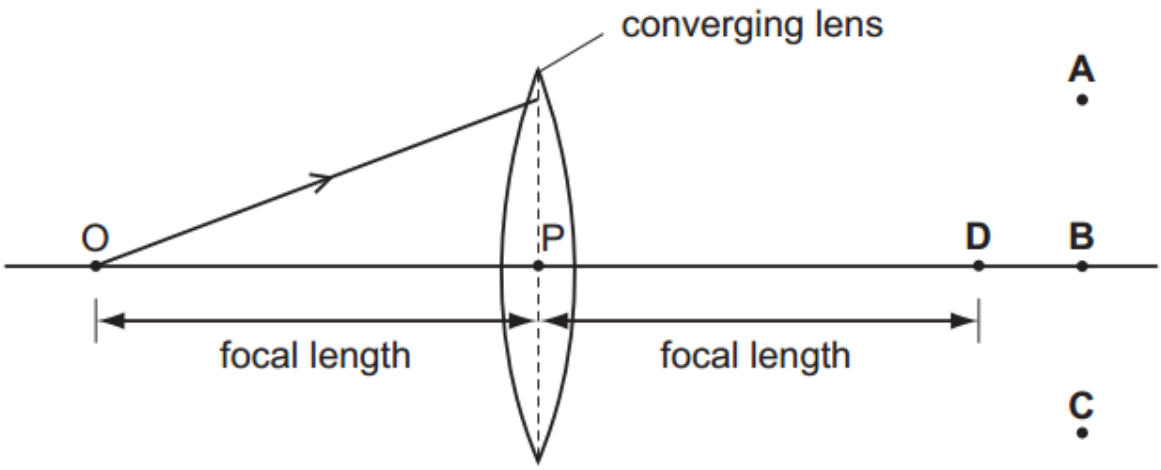
5. The diagram shows a ray of light incident on the edge of a piece of glass. The angle i is greater than the critical angle.

Which arrow shows the direction of the ray after it leaves the edge of the glass?

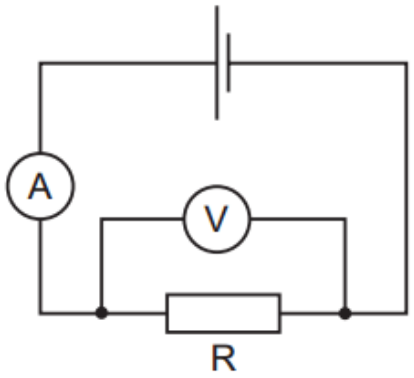


6. In the diagram, the distance OP is the focal length of the converging lens. One ray of light from O is shown.

Through which point will this ray pass, after refraction by the lens?



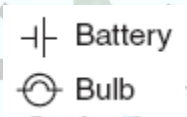
7. A circuit is set up to determine the resistance of a resistor R. The meter readings are 2.0A and 3.0V.



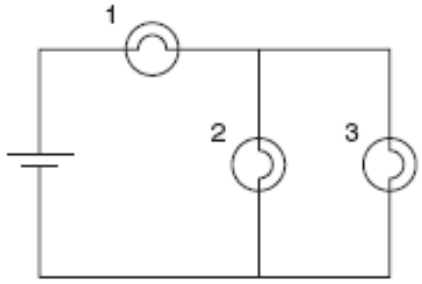
What is the resistance of the resistor R?

A 0.67Ω **B** 1.5Ω **C** 5.0Ω **D** 6.0Ω

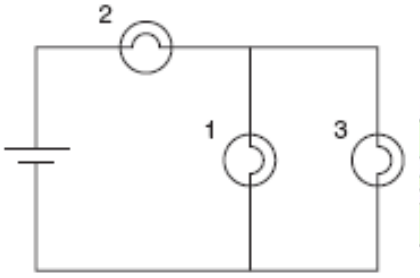
8. In which circuit will Bulb 3 remain lit if Bulb 1 burns out?



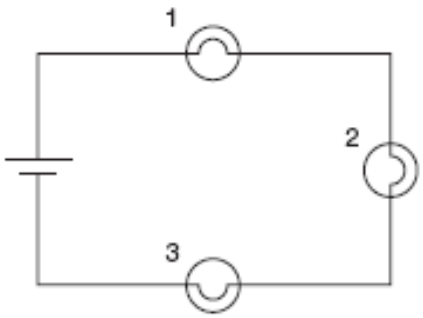
a.



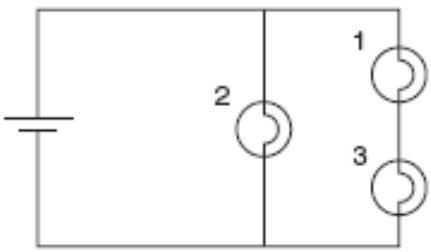
c.



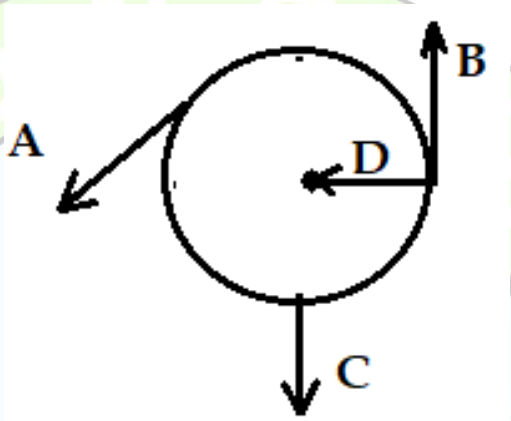
b.



d.



9. Which labelled letter represent the direction of velocity of an object moving in a circular path.



10. A girl walks 2 m north, 4 m west, and 2 m south. Her final displacement is
    a. 4 m east
    b. 4 m west
    c. 2 m north
    d. 2 m south
    e. 5 m north west

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PART TWO: STRUCTURED QUESTIONS (30 marks)

1. A woman is driving her car at a speed of 12 m/s. She increases the speed of her car uniformly to 15 m/s in 6 seconds

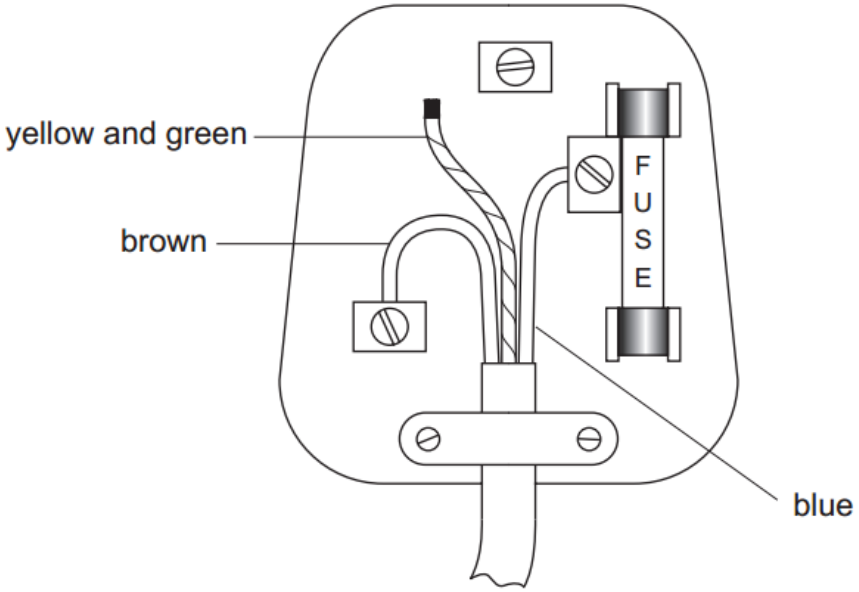


Calculate the acceleration of the car (use: $= \frac{v-u}{t}$)

……
……
……(3marks)

2. The cover of a three pin plug is opened. What is seen is shown in the diagram below. (3marks)

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(a) What two faults do you notice in the plug?

1. ……

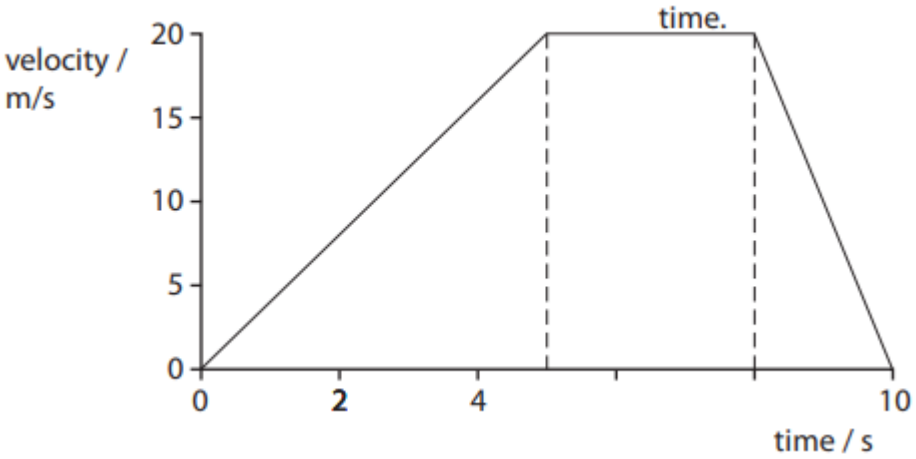
2. ……

(b) Explain the purpose of the fuse

……

……

3. The graph shows how the velocity of a small car changes with time. (4marks)



a. Calculate the acceleration of the car when it is speeding up

……

……

……

……

b. Calculate the acceleration of the car when it is decelerating

……

……..

……

……

4. Use words from the box to complete the three spaces in the sentence. (4marks)

direction	resistance	speed	velocity

You may use each word once, more than once or not at all.

a. The Moon's..... .is constant but it's ..... changes because it's ..... changes.

b. When any object moves in a circular, or nearly circular, path a force must act towards the centre of the circle.

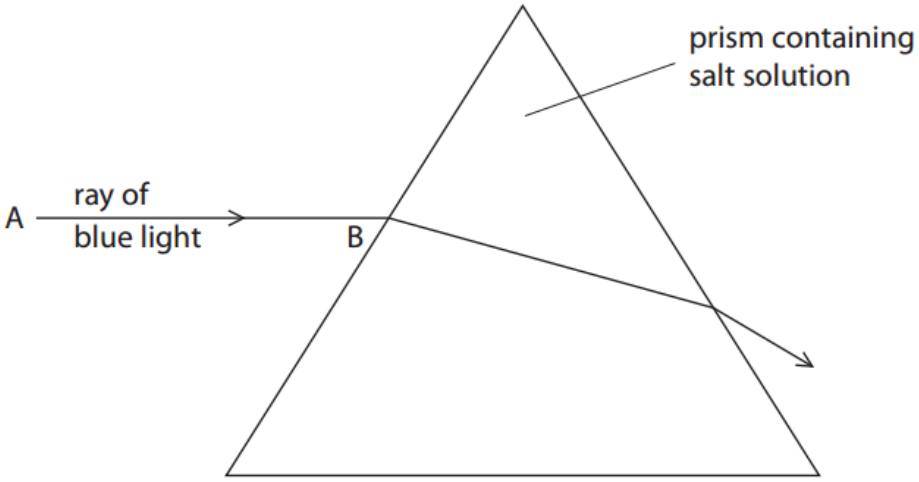
What word is used to describe this force?

.....

5. A student investigates refraction of light by using a salt solution in a hollow prism. He shines a ray of blue light from A to B and traces the path of the ray through the prism.

The diagram shows the path of the ray of blue light.

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a. Explain what is meant by the term refraction.

……

……

…… (2marks)

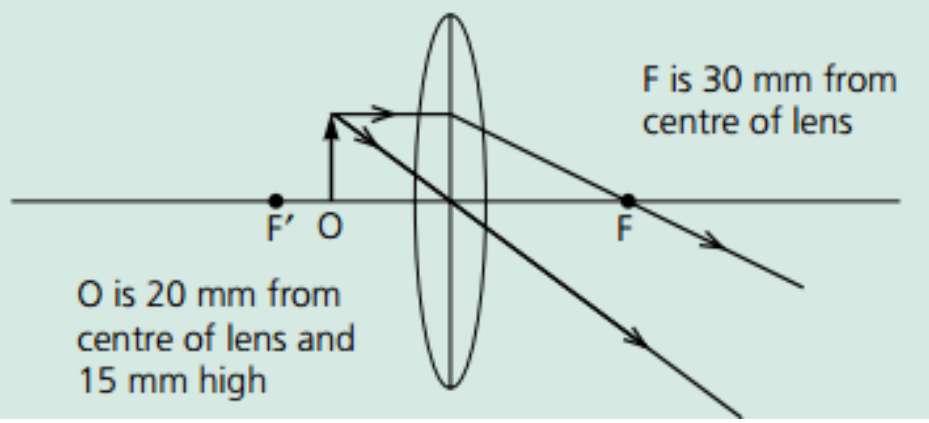
b. On the diagram, draw the normal at B and label the angle of incidence with i.

(2marks)

6. Draw a line from each quantity to its correct description. (2marks)

quantity	description
	the flow of charge in a circuit
current	the number of lamps in the circuit
voltage	the length of the wires in the circuit
	the push of the battery on the charges in the circuit

7. The diagram shows an object O placed in front of a convex (converging) lens and the passage of two rays from the top of the object through the lens.



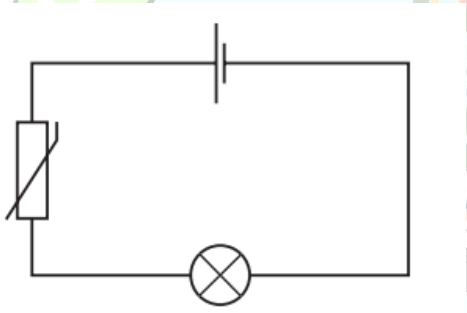
a. Complete the diagram (using the dimensions given) to show where the image is formed. (1marks)

b. State two properties of the image (2marks)

i. ……..

ii. ……..

8. When the thermistor in the circuit below is heated, the current in the lamp increases.



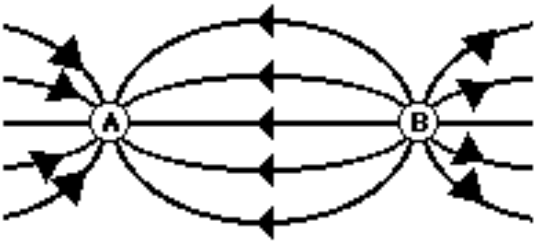
a. Why does this happen? (1mark)

……

b. What change occurs to current? (1mark)

……..

9. Consider the electric field lines shown in the diagram below, from the diagram it is apparent that object A is _____ and object B is _____ (2marks)



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10. Some students investigate the speed of cars. They measure the time it takes each car to travel a distance of 80m.
    The table shows some of their results

colour of car	distance travelled / m	time / s
green	80	5.0
red	80	4.0
blue	80	5.5
black	80	4.3
white	80	5.6

a. State the color of the slowest car (1mark)

……

……

b. Calculate the speed of the black car (3marks)

……

……

……

……

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