

LOCATION: SWANSEA

LLEOLIAD: ABERTAWE

LEVEL 3

LEFEL 3

EXAMINATION PERIOD
JULY 2022

CYFNOD ARHOLIADAU
GORFFENAF 2022

MODULE CODE: ACHA3000
Introduction to Maths & Science

TIME: 1.5 HOURS

ANSWER ALL QUESTIONS

Equipment or materials required – calculator

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Where needed, take the value of gravity to be 9.81m/s^2

Question 1

Write down the units for the following:

- | | |
|-----------------|----------|
| a. Mass | [1 mark] |
| b. Force | [1 mark] |
| c. Weight | [1 mark] |
| d. Velocity | [1 mark] |
| e. Acceleration | [1 mark] |

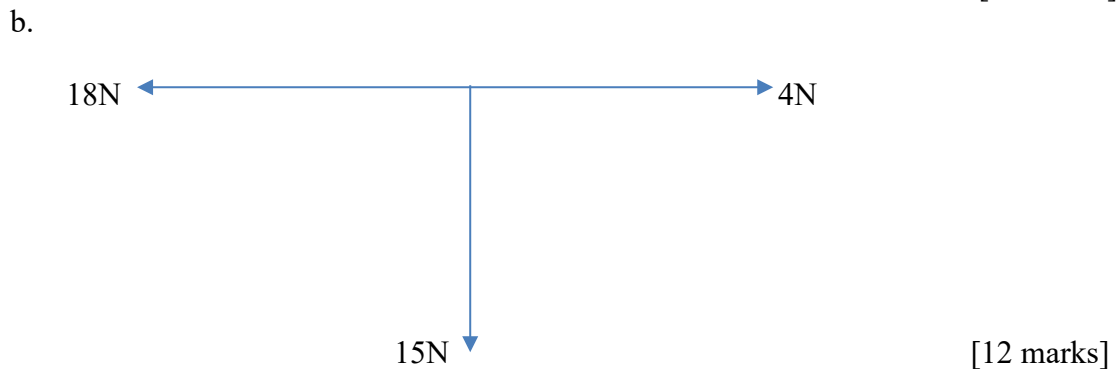
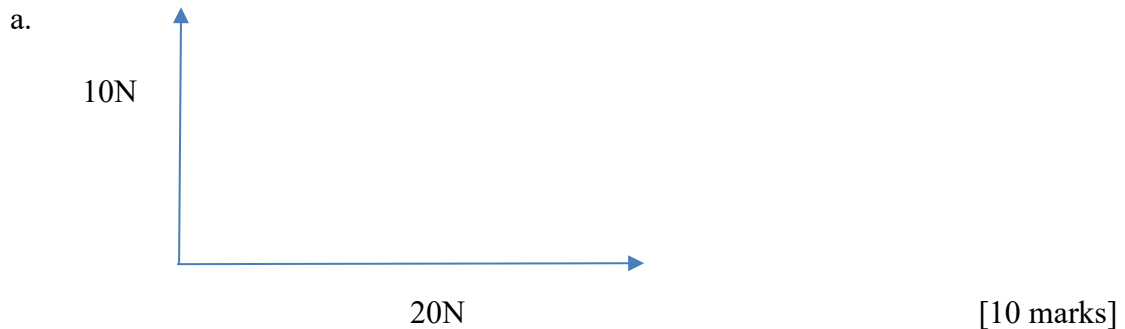
Question 2

Given that the equation for Pressure can be written as $Pressure = \frac{Force}{Area}$

Write down the units for pressure. [1 mark]

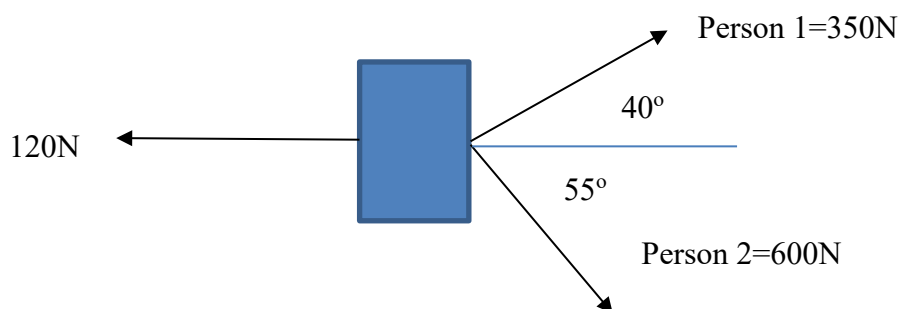
Question 3

Calculate the magnitude, direction and specify a bearing of the resultant for the following vectors:



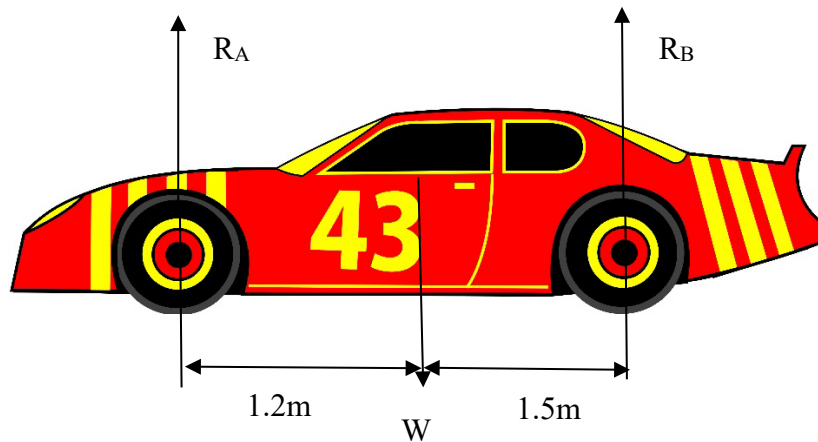
Question 4

A container is pulled along by two people, as seen in the figure below. There is a resistance to motion of 120N. Calculate the resultant force acting on the container. [8 marks]



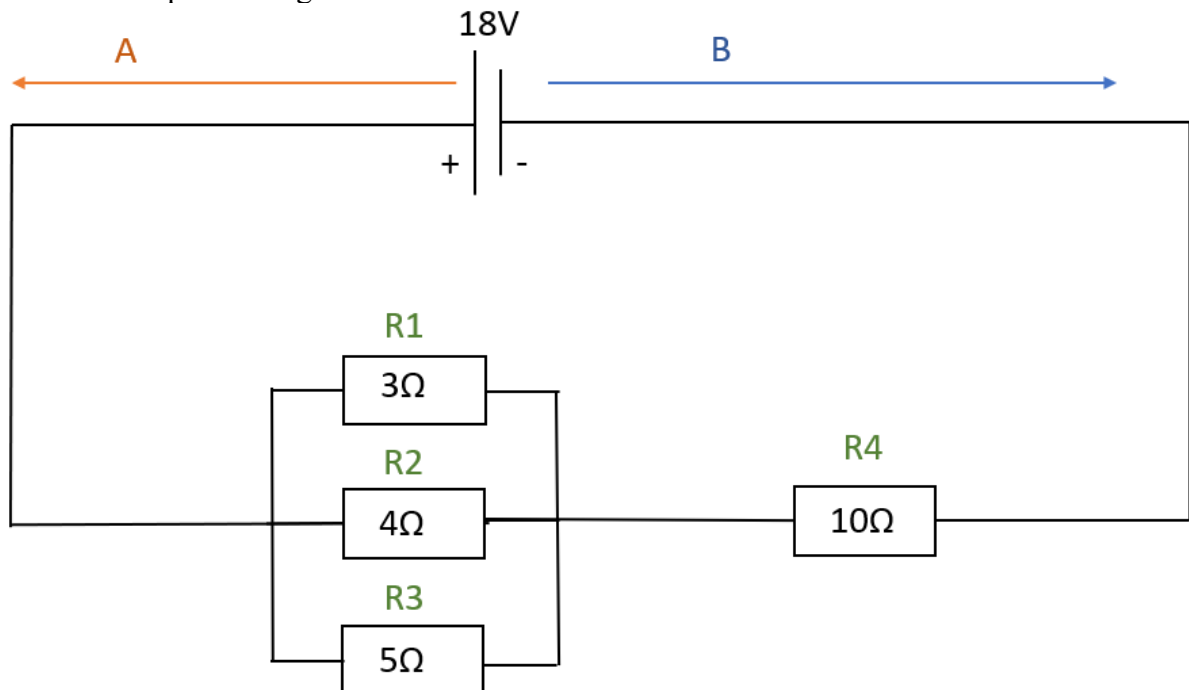
Question 5

Calculate the reaction forces at the wheels of the car below given it has a mass of 1200kg. [6 marks]



Question 6

A Circuit has a 18V battery as a DC source and 4 resistors. Resistors R1, R2 and R3 are connected in parallel together and are in series with R4



- which direction is conventional current flow in 'A' positive to negative or 'B' negative to positive [1 mark]
- What is the circuits total resistance [2 marks]
- what is the current draw on the battery [2 marks]
- what is the voltage across the 10Ω resistor (R_4) [2 marks]
- what is the current through the 4Ω resistor (R_2) [3 marks]
- what is the current through the 5Ω resistor (R_3) [2 marks]
- Calculate which resistor transfers the highest amount of energy [3 marks]