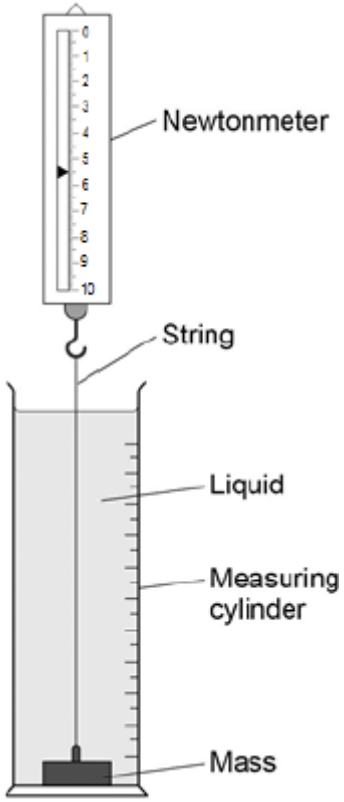
Name of the Student:_____

Max. Marks : 21 Marks **Time : 21 Minutes**

Q1.

A student investigated the force needed to raise a mass through different liquids at a constant speed.

She set up the apparatus shown in the figure below.



(a) In the investigation there are several variables.

Draw **one** line from each variable to the correct description for this investigation.

Variable	Description
Control	Distance the mass was lifted
Dependent	Value of force on the newtonmeter
	Mass

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Independent

Type of liquid

(3)

(b) The table below shows the student's results.

Liquid	**Force in N**
Water	10.0
Washing up liquid	11.1
Glycerol	11.5
Syrup	13.8

What was the resolution of the newtonmeter?

Tick **one** box.

0.1 N ☐

0.5 N ☐

1 N ☐

10 N ☐

(1)

(c) The student wanted to display her results.

How should she display her results?

Tick **one** box.

A bar chart ☐

A line graph ☐

A pie chart ☐

(1)

(d) Give a reason for your answer to part **03.3**.

_____

_____

(1)

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(e) A force of 13.8 N was used to lift the mass 30 cm vertically through the liquid.

Use the following equation to calculate the work done in lifting the mass.

Work done = force × distance

Choose the correct unit from the box.

J	m / s	N

_____

_____

_____

Work done = _____

Unit = _____

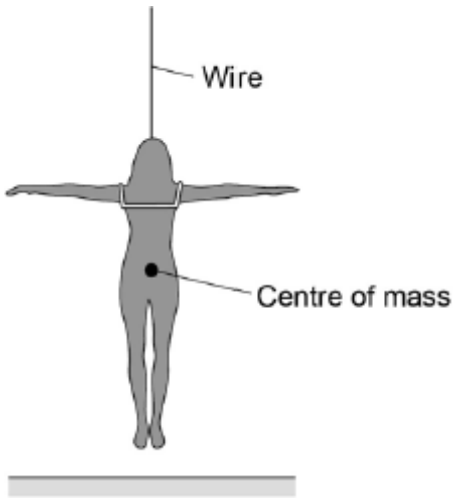
(3)

(Total 9 marks)

Q2.

An actor is attached to a wire so that she can hang above the stage.

Look at the figure below.



(a) On The figure above draw two arrows to show the forces acting on the actor.

(2)

(b) Which **two** forces are acting on the actor?

Tick **two** boxes.

Air resistance force ☐

Electrostatic force ☐

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Gravitational force ☐

Magnetic force ☐

Tension force ☐

(2)

(c) The actor hangs above the stage in a stationary position.

What is the resultant force on the actor?

Resultant force = _____ N

(1)

(d) The actor has a mass of 70 kg.

Gravitational field strength = 9.8 N / kg

Use the following equation to calculate the weight of the actor.

Weight = mass × gravitational field strength

Give your answer to 2 significant figures.

_____

_____

_____

Weight of actor = _____ N

(2)

(e) A motor pulls vertically upwards on the wire with a force of 720 N.

Calculate the resultant force on the actor.

_____

Resultant force = _____ N

(1)

(f) Another actor has a mass of 65 kg.

This actor is attached to the wire and the motor pulls her vertically upwards.

The resultant force on the actor is 25 N.

Write down the equation that links acceleration, mass and resultant force.

Equation _____

(1)

(g) Calculate the acceleration of the actor.

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_____

_____

_____

Acceleration of actor = _____ m / s^2

(3)

(Total 12 marks)

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