

2018 1EXP MYE Answers

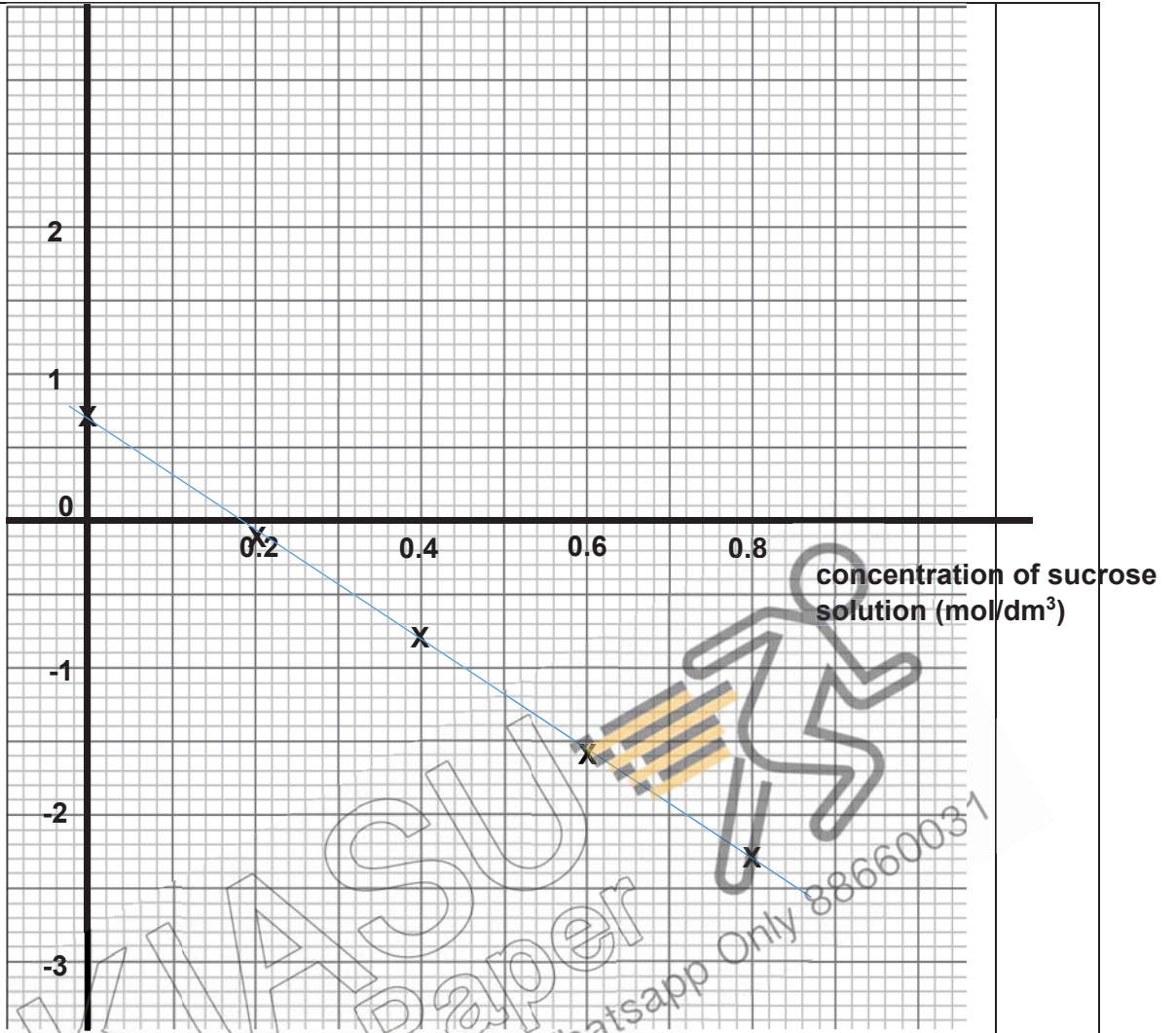
21	22	23	24	25	26	27	28	29	30
B	B	A	D	A	B	B	A	C	D
31	32	33	34	35	36	37	38	39	40
C	D	C	B	D	D	B	C	C	C

Section B

No	Suggested Answer	Marks
1a	E: pulmonary artery F: pulmonary vein G: vena cava H: aorta	1 1 1 1
b	Part L [1] Part L transport deoxygenated blood from the heart to the lungs to remove carbon dioxide [1]	1 1
c	To allow substances to diffuse across the walls quickly . [1]	1
d	Vessel E carries deoxygenated blood while Vessel F carries oxygenated blood. [1] Vessel E do not have valves but vessel F does [1] Vessel E carries blood at high pressure but vessel F carries blood at lower pressure. [1] Vessel E has thick muscular and elastic walls, but vessel F has thinner and less muscular and elastic walls. [1]	1 1
2ai	It is a scavenger [1]	1
ii	During drought, the number of dead animals will increase , [1] hence there are more food for the vultures [1] and the numbers of vultures will increase. [1]	1 1
bi	The grass population will decrease . When there are more zebras, more of them feed on the grass . [1]	1
ii	Population of zebra must be greater than lions to ensure there is sufficient energy available to be transferred to the next population . [1] This is due to the loss of energy [1] in the form of heat during respiration .	1 1
3ai	X: phloem [1] Function: Transport food/sugar (do not accept glucose or starch) from leaves to all parts of the plant [1] Accept ECF [-1 mark]	1 1
ii	Y: xylem [1] Function: Transport water and mineral salts from roots to all parts of the plant [1] Accept ECF [-1 mark]	1 1
b	Region Y as water dissolved with the red (region Y) staining the vessel . [1] Accept ECF if they can explain correctly. [1]	1

Section C						
a	Tube	Concentration of sucrose solution (mol/dm ³)	Length of potato at start (mm)	Length of potato after 2 hours (mm)	Change in length (mm)	
	A	0	40	40.7	+ 0.7	
	B	0.2	40	39.9	- 0.1	
	C	0.4	40	39.2	- 0.8	
	D	0.6	40	38.4	- 1.6	
	E	0.8	40	37.7	-2.3	
<p>2 correct – 1 marks Must include the sign. No sign minus ½ marks</p>						
b	<p>Osmosis is the net movement of water molecules from a region of higher water potential to a region of lower water potential across a partially permeable membrane.</p>					1 1
c	<p>There is a lower water potential in the solutions than in the cell sap. [1] Water molecules move out of the cell sap via osmosis [1] hence the length of the potato decrease.</p>					1 1
d						

change in length (mm)



Correct labelling of axis with units each [1]
Axes drawn with appropriate scale and units each [1]
Correctly plotted points and best-fit line [1]

e 0.18 mol/dm³. There is no change in length since cell sap and solution concentration are similar

2018 MYE 1EXP Answers

Section A

1	2	3	4	5	6	7	8	9	10
A	D	C	B	B	C	C	C	D	C
11	12	13	14	15	16	17	18	19	20
A	B	C	A	C	C	B	A	A	A

Section B

Answer all questions.

B1 Complete the table by filling in the most suitable instrument that can be used to measure each of these physical quantities and their respective accuracy.

The first line is done for you.

Measurement	Instrument	Accuracy
Exactly 36.3 cm ³ of water	Measuring cylinder	0.1 cm ³
Depth of a paper cup	Vernier calipers	0.01 cm [1]
Circumference of a tree	Measuring tape	0.1 cm [1]
Thickness of copper wire	micrometer	0.01 mm [1]

B2 Convert the following readings to the units indicated. Show your workings clearly.

(a) (i) 0.045 cm = m [1]

$0.045 / 100 = 0.00045 \text{ m or } 4.5 \times 10^{-4} \text{ m}$

(ii) 3.04 l = m l [1]

$3.04 \times 1000 = 3\ 040 \text{ ml}$

(a) Determine the period of the pendulum.

$1.0 \times 2 = 2.0 \text{ s}$

period = [1]

(b) State what you can do to ensure that the measurement of the period of the pendulum is as accurate as possible during an experiment.

Take the time for 20 oscillations then calculate the average time for one oscillation.

.....

- (c) State one thing you can do to increase the period of the oscillation.

Increase length of string.

[1]

[1]

- B4** (a) Fig. 4.1 shows two different types of excavators of the same mass.



Fig. 4.1

Which excavator is more suitable for operating on soft, muddy ground?
Explain your answer using the concept of pressure.

Excavator A [1]. A has a larger surface area in contact with the ground
compared to B thus it exerts a smaller pressure [1] on the ground.

[2]

B5 Fig. 5 shows a crane lifting some bricks during the building of a house.

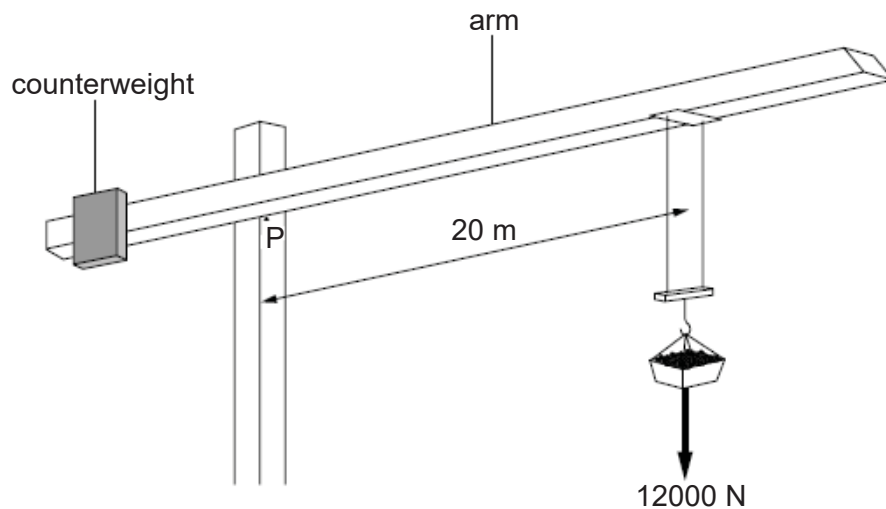


Fig. 5

The weight of the bricks produces a turning effect, or moment, on the arm of the crane about the point P. The weight of the bricks is 12000 N.

(a) Calculate the moment of this force, using the distance marked on Fig. 5.

$$12\,000 \times 20 = 240\,000 \text{ Nm}$$

[1]

[1]

Deduct 1 mark for wrong units

moment = _____ [2]

(b) State the direction of the moment cause by

(i) the weight of the counterweight about pivot P,

Anti-clockwise

END OF SECTION B

Section C

Answer all questions

- C1** A measuring cylinder contains 30 cm^3 of liquid. When 600 identical spherical polyvinyl chloride, PVC pellets are dropped into the liquid, they sink to the bottom and the liquid level rises to 36 cm^3 . The density of a PVC pellet is 1.39 g/cm^3 .

- (a) (i) State the density of 600 pellets.

1.39 g/cm^3

density = _____ [1]

- (ii) Determine the mass of 600 pellets.

Mass = density \times volume = $1.39 \times 6 = 8.34 \text{ g}$

Allow ecf

mass = _____ [2]

- (b) Fig. 1.1 shows the density of three substances.

Substances	Density (g/cm^3)
paraffin oil (liquid)	0.80
carbon tetrachloride (liquid)	1.60
glycerine (liquid)	1.26

Fig. 1.1

An equal volume of the three liquids in Fig. 1.1 are poured into a beaker, as shown on Fig. 1.2.

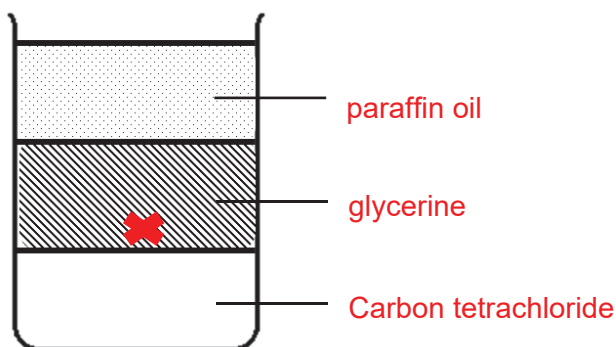


Fig. 1.2

(i) Using the information given in Fig. 1.1, identify the liquids on Fig. 1.2 by writing their names in the spaces provided in Fig. 1.2. [1]

(ii) In Fig. 1.2, use a cross (X) to indicate where the PVC pallet would be if it is put into the beaker. [1]

(iii) Which liquid from Table 4.1 would you use to find the volume of a piece of PVC pallet using the displacement method with a measuring cylinder? Explain your answer.

Glycerine or paraffin oil [1] as the pallet can be fully submerge in them thus the volume increase will be equal to the volume of the pallet. [1]

..... [2]

(d) The pallet is brought from Earth to Moon. State whether the following quantities will increase, decrease, or remain the same.

Explain the reason for each of your answers.

(i) mass

Same, as mass is the amount of substance that makes up the object.

..... [1]

(ii) weight

Decrease, as the weight is a force that depends on the location of the object.

..... [1]

(iii) density

Same, as density is mass per unit volume. Both the mass and volume remains the same on Moon.

..... [1]

END OF PAPER

