

AA-14
FORM ONE PHYSICS

1. Distinguish between a basic physical quantity and a derived physical quantity giving an example of each.

(3mks)

Physical quantity	Derived physical quantity

2. State any **two** ways by which frictional force between two surfaces can be reduced. (2mks)

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3. Explain why large mercury drops form oral ball on a glass slide (2mks)

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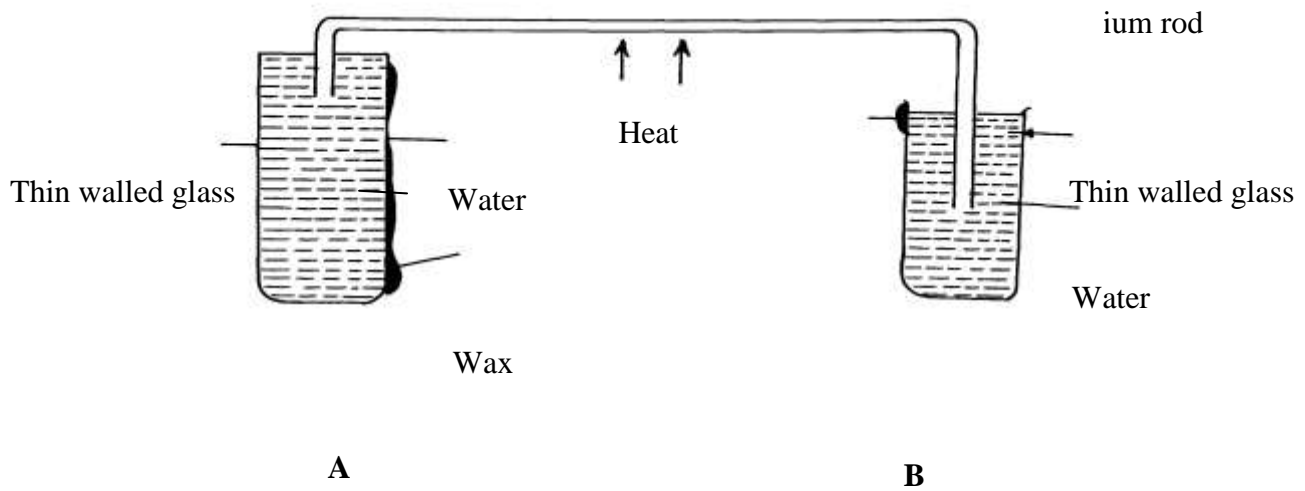
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4. Explain why a man using a parachute falls through air slowly while a stone falls through air very fast.

(2mks)

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5. State and explain what happens to waxes in **A** and **B**



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6. Explain why nylon dress sticking on the body crackles when being removed. (2mks)

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7. Determine the maximum pressure a block of copper of density 8.9g/cm^3 measuring $5\text{cm} \times 3\text{cm} \times 2\text{cm}$ exerts on a horizontal surface given $g = 10\text{N/kg}$ (5mks)

8. A boy 150 cm tall forms a shadow of length 200cm. A tree nearby forms a shadow of length

800cm as shown in the figure. Calculate the height of the tree

(3mks)

200cm

800cm

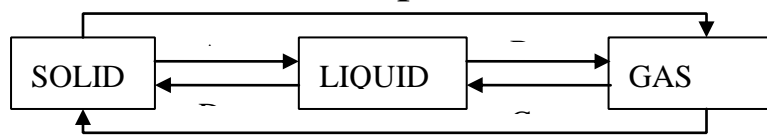
9. The figure below shows a simple mercury barometer when straight in (a) and when tilted in (b). Mark the level of mercury in tilted tube.

(1mk)

10. Complete the table to show the accident that can occur in a laboratory, cause and remedy. (4mks)

Accident	Cause
<u>Remedy</u>	
(i)	
(ii)	

11. The figure shows the relationship between the three states of matter.



Name the processes **A, B, C, D, E,** and **F**

(3mks)

A.....

B.....

C.....

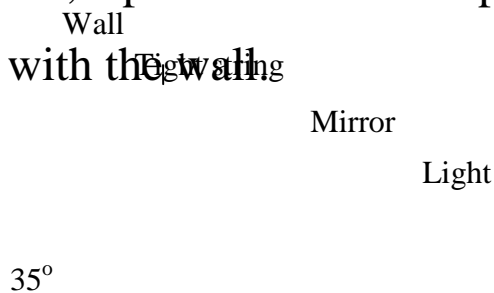
D.....

E.....

F.....

12. Determine the volume of a prism of height 6 cm base of 7 cm and length 4 cm. (2mks)

13. In a hair salm, a plane mirror is suspended by a string and makes an angle of 35° with the wall.



A ray of light strikes the mirror horizontally. Determine the angle between incident ray and reflected ray.

(3mks)

14. A thread is wound on cylindrical object. The number of closely packed turns is 15 and the length l is 9mm. Calculate the thickness of the thread
(2mks)

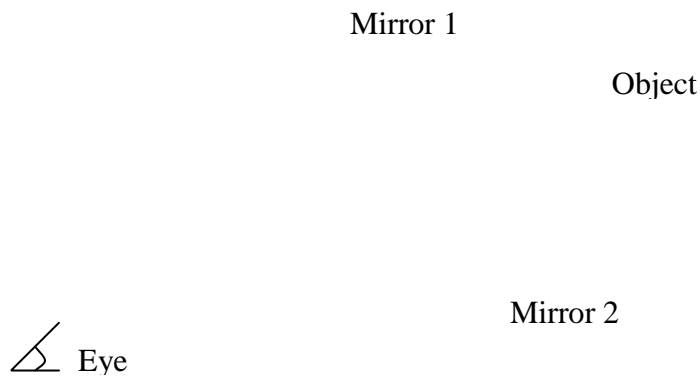
15. Determine the resultant force in the following case.
(2mks)

3N

2N

4N

16. The figure shows part of an incomplete device.



Draw ray diagrams to show position of the image.

(2mks)

17. Explain why water tanks in houses are placed as high as possible

(1mk)

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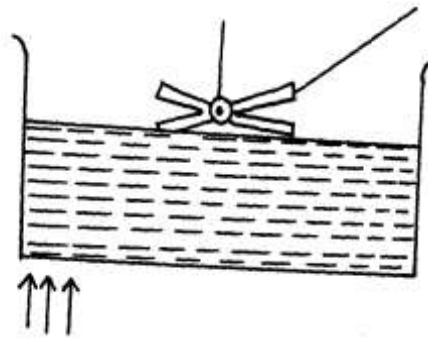
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18. The paddle wheel in the figure below is made of alight material and is well oiled. State and explain how it will behave when the water is heated.

(2mks) Groove Paddle



Heat

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19. A positively charged rod is brought near the cap of a lightly charged electroscope. The leaf first decreases in divergence but as the rod is brought nearer, it diverges. State the charge on

the electroscope and explain the behaviour of the leaf.

(3mks)

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20. A manometer containing water shows a difference in level of 10cm when connected to

a laboratory gas. Calculate the pressure exerted by the gas supply
(*atmospheric pressure = 100,000N/m²*)

(4mks)

Gas in

10cm

21. (a) Define current stating its S.I units.

(2mks)

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(b) A battery circulates charges round a circuit for 1.5 minutes. If the current is held

at 2.5 Amperes, what quantity of charge passes though the wire? (3mks)

22. Here is Hare's apparatus;
Sucking



(i) Explain why the two liquid levels are different.

(2mks)

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(ii) Determine density of liquid X given that density of water is 1g/cm^3 . (3mks)

23. Seen in a microscope during a Brownian motion experiment are “bright specks”.

(i) What are these “bright specks?”

(1mk)

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(ii) State the behaviour of these “bright specks”

(1mk)

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(iii) Explain the behaviour of these “bright specks”.

(2mks)

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(iv) State **two** reasons why these “bright specks” are used.

(2mks)

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24. Eight dry cells can be arranged to produce a total e.m.f of 12V just like a car battery.

(a) Determine the e.m.f of an individual dry cell.

(1mk)

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(b) Why is it possible to start the car with the lead-acid battery, but not with the eight dry

cells connected in series?

(2mks)

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(c) Explain why it is dangerous to light a cigarette near a charging car battery. (1mk)

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25. (a) Define density and state its S.I units.

(2mks)

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(b) A density bottle weighs 80g when empty, 130g when full of oil and 150g when full of water. If the density of water is 1g/cm^3 , calculate the density of oil. (3mks)

(c) Water of volume 2m^3 and density 1g/cm^3 is mixed with milk of volume 1m^3 and density 1.4g/cm^3 . Calculate the density of the resulting mixture. (4mks)

26. (a) Define force and give its S.I units

(2mks)

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(b) State **two** effects of force on an object

(2mks)

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(c) Name and show forces acting on a box placed on a table.

Box

(2mks)

Table surface

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27. The figure is of a clinical thermometer.

Explain why;

(i) there is a constriction on the tube

(1mk)

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(ii) the bulb glass is thin

(1mk)

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(iii) the tube is thin

(1mk)

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28. (a) Define the term magnification as applied to the formation of images by a pin hole camera. (1mk)

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(b) A pin hole camera of length 15cm forms an image 3cm high of a man standing 9m in front of the camera. Determine the height of the man to the nearest centimeter. (3mks)

29. (a) Define area and state S.I units. (2mks)

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(b) Convert 9.0m^2 into cm^2 (2mks)

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(c) Explain why when salt of volume $u\text{cm}^3$ is mixed with water of volume $V\text{cm}^3$, the salt solution has a volume less than $(u+v)\text{cm}^3$, the two volumes combined. (2mks)

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