

SCOBA

S.2 PHY

### INSTRUCTIONS

**Attempt all questions**

#### Section A

*Answers to this section should be written in the section A answer grid provided on page 3*

1. Normal human body temperature in  $^{\circ}\text{C}$  is;  
A. 98                      B. 37                      C. 98.4                      D. 27
2. The image of a distant object formed in a pin hole camera is;  
A. real and inverted                      C. virtual and enlarged  
B. real and upright                      D. virtual and erect
3. Which one of the following has no use in finding the density of a piece of stone?  
A. density bottle                      C. measuring cylinder  
B. over flow can                      D. spring balance
4. In fixing the upper fixed point of a thermometer, the thermometer bulb is held;  
A. in steam just above the boiling water                      C. in the middle of boiling water  
B. just touching the boiling water                      D. in pure melting ice
5. A substance that transmits some light is called;  
A. opaque                      B. transparent                      C. translucent                      D. reflection
6. When you touch iron and wood on a cold morning, iron feels colder than wood because;  
A. iron is a metal                      C. iron is a better conductor of heat than wood  
B. wood is a good insulator                      D. heat is transferred from iron to fingers
7. Two plane mirrors are inclined to each other at an angle,  $\theta$ . If 7 images are seen, find  $\theta$   
A.  $60^{\circ}$                       B.  $45^{\circ}$                       C.  $72^{\circ}$                       D.  $90^{\circ}$
8. The amount of space occupied by an object is it's;  
A. Mass                      B. Weight                      C. Volume                      D. Density
9. The force which holds the molecules of mercury together is called;  
A. Gravity                      B. Adhesion                      C. Cohesion                      D. Electrostatics
10. A spherical ball has a radius of 3cm; find its volume in  $\text{m}^3$ .

A.  $\frac{4\pi \times 27}{3 \times 10^6}$

B.  $\frac{\pi \times 27}{4 \times 10^6}$

C.  $\frac{4 \times 10^6}{27 \times \pi}$

D.  $\frac{4\pi \times 3 \times 10^6}{27}$

11. Which of the following does not affect the rate at which a gas diffuses through a porous partition?  
 A. Temperature of the gas  
 B. Size of gas molecules  
 C. Volume of the gas  
 D. Size of the pore
12. A rectangular block has dimensions  $1.0 \times 1.5 \times 2.0m$ . If the density of the block is  $3000kgm^{-3}$ , find its mass in kg  
 A.  $9.0 \times 10^3$   
 B.  $1.0 \times 10^3$   
 C.  $9.0 \times 10^{-3}$   
 D.  $1.0 \times 10^{-3}$
13. Solids are not easily compressed because their molecules;  
 A. Are far apart.  
 B. Are closely packed.  
 C. Vibrate about their mean positions.  
 D. Have strong adhesive forces between them
14. When copper (II) sulphate crystal is placed at the bottom of the test tube containing water, a dense blue solution is formed in water at the bottom due to;  
 A. Diffusion  
 B. Capillarity  
 C. Surface tension  
 D. Brownian motion
15. Which of the following has the lowest density?  
 A. Mercury  
 B. Steam  
 C. Water  
 D. Ice

**SECTION A ANSWER GRID**

<b>1</b>	<b>5</b>	<b>9</b>	<b>13</b>
<b>2</b>	<b>6</b>	<b>10</b>	<b>14</b>
<b>3</b>	<b>7</b>	<b>11</b>	<b>15</b>
<b>4</b>	<b>8</b>	<b>12</b>	

**SECTION B (35 MARKS)**

Answer all questions in this section

16. (a) Define the term length and state its S.I Unit. (2 marks)

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(b) Convert 1 hour 40 minutes to S.I Units.

(2 marks)

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17. (a)(i) Define density.

(1 mark)

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(ii) State the S.I Unit of density.

(1 mark)

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(b) Find the density of stone of mass 200g and volume of 100cm<sup>3</sup>.

(2 marks)

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18. (a) (i) Define friction

(1 mark)

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(ii) A block of wood of mass ***m kg*** rests on a rough surface. State what happens to the frictional force if the mass of the block is doubled.

(1 mark)

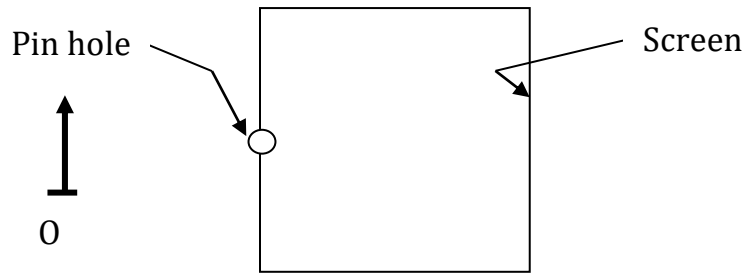
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(b) Two forces of 3N and 4N act on a body in opposite directions. Find the magnitude of resultant force on the body.

(2 marks)

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19. The figure shows an object pin, O placed in front of a pinhole camera.



(a) Complete the diagram to show how the image is formed on screen. (1 mark)

(b) State any two characteristics of the image formed. (2 marks)

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(c) State what would be observed if the size of the pinhole was increased. (1 mark)

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20. (a) (i) Define thermometric property. (1 mark)

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(ii) Outline any two examples. (2 marks)

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(b) Convert  $73^{\circ}\text{C}$  to Kelvin (1 mark)

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21. (a) (i) Define the term capillary (1 mark)

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(ii) Name one liquid that shows capillary depression. (1 mark)

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(b) Explain why water wets glass while mercury does not. (2 marks)

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22. (a)(i) Define diffusion. (1 mark)

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(ii) Suggest two factors that affect the rate of diffusion. (2 marks)

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(b) Explain why damp – courses are used in modern houses. (1 mark)

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23. (a) Define matter and state the three states of matter. (2 marks)

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(b) State what happens to ice if placed on a plate and left exposed for a few minutes. (1 mark)

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24. (a) Define fundamental interval. (1 mark)

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(b) The difference between the ice point and steam points of a calibrated thermometer is 25.0cm. The thermometer is then placed in a liquid and the mercury level falls 5.0cm below the steam points. Find the temperature of the liquid. (2 marks)

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**END**