

S.2 PHYSICS

INSTRUCTIONS:

- Answer all questions in all sections.
- Answers to section A and B should be in the spaces provided
- Take $g = 10\text{m/s}^2$, density of water = 1000k/m^3
- Answers to section C should be on a separate sheet of papers.

SECTION A

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

1. A body moves with uniform acceleration of $P \text{ m / s}^2$. If its initial velocity is $x \text{ m/s}$ and it travels for t seconds to attain a final velocity of $y \text{ m/s}$, find the value of P in terms of x , y and t .

A. $x + yt$	C. $\frac{y + x}{t}$
B. $\frac{y - x}{t}$	D. $y + xt$

2. The force which holds the molecules of water together is called

A. gravity.	C. cohesion.
B. adhesion	D. electrostatic

3. Which of the following statements is correct about diffusion.
 - A. It takes place at the same rate in all the state of matter.
 - B. it is faster in gases than in liquids.
 - C. it is faster in liquids than in gases
 - D. it does not depend on temperature.

4. A body starts from rest and accelerated uniformly at a rate of 8m/s^2 . Find the time it takes to cover a distance of 100m.
- A. 25s
B. 12.5s
C. 5s
D. 3.5s
5. The function of silvering in a vacuum flask is to prevent heat loss by
- A. radiation
B. conduction.
C. convection.
D. convection and conduction.
6. The speed of a car increases uniformly from 0 Km/h to 72 km / h to 72km / h in 25 seconds. What is the acceleration in m / s^2 ?
- A. 7.2
B. 3.6
C. 2.9
D. 0.8
7. Calculate the pressure exerted on the ground by a car of mass 750 kg in the area of contact with the ground of each tyre is 30cm^2 .
- A. $2.25 \times 10^6 \text{Pa}$
B. $6.25 \times 10^5 \text{pa}$
C. $4.0 \times 10^4 \text{pa}$
D. $2.5 \times 10^4 \text{Pa}$
8. An empty glass flask has a mass of 100g and volume 250cm^3 . What will be its mass when full of liquid of density $950 \text{kg} / \text{m}^3$.
- A. 380g
B. 363.2g
C. 337.5g
D. 237.5g
9. The rate of change of displacement is called
- A. speed
B. velocity.
C. Acceleration.
D. Momentum
10. A girder which is under tension is called
- A. Tie
B. Beam
C. Strut
D. Pillar
11. A steel needle floats on the surface of clean water because of
- A. Cohesion.
B. adhesion.
C. Capillarity.
D. Surface tension.

12. A body is said to be moving with uniform velocity when the rate of change of:
- A. Acceleration with time is constant.
 - B. Velocity with time is constant.
 - C. Distance with time is constant.
 - D. Displace with time is constant.
13. A constant force of 5N acts on a body and moves through a distance of 2m in 10 seconds. Calculate its power.
- A. 2.5W
 - B. 10W
 - C. 40W
 - D. 100W
14. A hydraulic brake works on the principle of
- A. Transmission of pressure in liquid.
 - B. Distribution of force in a liquid.
 - C. Absorbers of heat.
 - D. Transmitters of heat.
15. The fins of car radiators are painted black because black bodies are poor.
- A. Reflectors of heat
 - B. Radiators of heat.
 - C. Absorbers of heat.
 - D. Transmitters of heat.
16. A car raises a mass of 500kg vertically upwards at a speed of 10 m/s. Find the power developed.
- A. 5×10^0
 - B. 5×10^1
 - C. 5×10^2
 - D. 5×10^4
17. The most suitable instrument for measuring the outer diameter of a test tube is
- A. A ruler
 - B. A tape measure
 - C. Vernier Calliper
 - D. A micrometer screw gauge

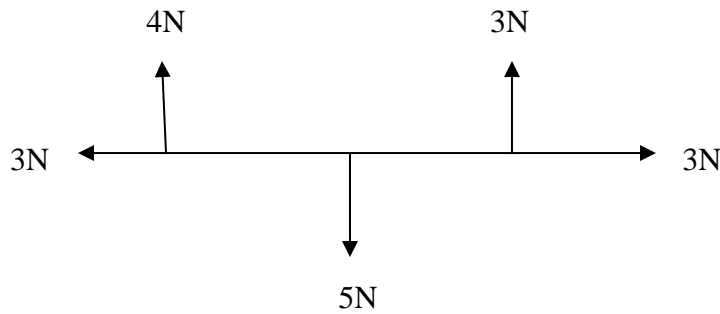
18. The interval between the ice and steam points on a thermometer is 192m. Find the temperature when the length of the mercury thread is 67.2m from the ice point.

- A. 32.8°C
- B. 35.0°C
- C. 65.0°C
- D. 67.2°C

19. The purpose of treads on tyres is to make them.

- A. Stronger
- B. Attractive
- C. Reduce friction.
- D. Grip the road surface.

20.



Five forces of 5N , 3N, 4N, 3N and 3N acts on a body as shown in the figure above. Find the resultant force.

- A. 2N
- B. 7N
- C. 12N
- D. 18N

SECTION B

21. (a). State the Kinetic theory of matter.

(b) (i). Draw a labeled diagram to show Brownian motion in gases.

(ii). State the observation made in the diagram above.

(iii). Explain the observation above

(iv). What would be observed if the setup above was put in ice.

(c). Explain why water spreads over horizontal glass plate yet mercury forms lone round drops

2. Define the following and give two examples of each

(a). (i). Ductility

(ii). brittleness

(b). (i). Define strength

(ii). State two factors which affect the strength of a material

(c). A force caused the lath below to appear as shown below.

Name the face marked

(i). DFEC

(ii).

(d). (i). Define a notch

(ii). State two ways of reducing the notch effect.

23. (a). Define

(i). density

(ii). relative density

(b). A density bottle of 20.0g has a mass of 35.6g when full of water and 32.5g when full of spirit.

Calculate

(i) The relative density of spirit.

(ii) The density of spirit

24. (a).(i). Define surface tension

(ii). State three ways of reducing surface tension.

(b) (i) State three assumptions used in the estimation of the size of oil molecule.

(ii). 50 drops of oil fill exactly a cylinder of 20cm^3 . If the radius of the oil patch is 14cm. Calculate the size of the oil patch.

SECTION C

25. (a). Define the following terms as used in dynamics and state the unit for the measurement

- i. Speed
- ii. Velocity
- iii. Displacement
- iv. Acceleration

(b). Write down the equation of motion

- (c). A car accelerates uniformly from a velocity of 22.5 m/s to a velocity of 35 m/s in 10 seconds. Calculate
- (i). the acceleration.
 - (ii). the distance travelled during this acceleration.
26. (a). (i) Define temperature
- (ii) Distinguish between lower fixed point and upper fixed point.
 - (iii) Describe an experiment to determine the lower fixed point of a thermometer.
- (b) Express the following in Kelvins.
- (i) 55°C
 - (ii) -49°C
 - (iii) 7000°C
- (c) State three ways of heat transfer.
- (d) Give three reasons why mercury is a suitable liquid for use in a thermometer.

END

HAPPY X - MASS

