

S.3PHYSICS PAPER I HOLIDAY WORK

Assume where necessary acceleration due to gravity $g = 10\text{ms}^{-2}$

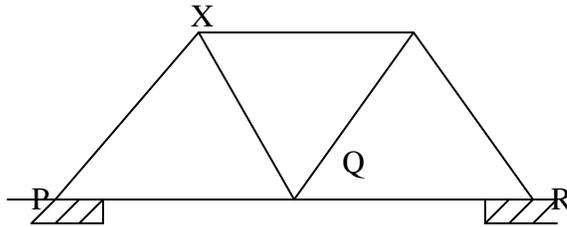
Instructions: Attempt all questions and write answers to Section A in the space below:

1.		11.		21.		31		41	
2.		12.		22.		32		42	
3.		13.		23.		33		43	
4.		14.		24.		34		44	
5.		15.		25.		35		45	
6.		16.		26.		36		46	
7.		17.		27.		37		47	
8		18.		28.		38		48	
9.		19.		29.		39		49	
10.		20.		30.		40		50	

- Two forces of 5N and 12N act on a body at right angles. Find their resultant.
A. 7N B. 13N C. 17N D. 169N
- A load of 500N is placed at 2m from a pivot of a sea saw. At what distance from the pivot should a weight of 250 N be placed to balance the sea-saw?
A. 05m B. 1.0m C. 2.0m D. 4.0m
- A girl whose mass is 50 kg runs up a staircase 25m high in 5s. Find the power she develops
A. $\frac{50 \times 4W}{25}$ B. $\frac{50 \times 10W}{25 \times 4}$ C. $\frac{50 \times 25W}{4}$ D. $\frac{50 \times 10 \times 25W}{4}$
- In a liquid, pressure is
A. transmitted in a specific direction B. transmitted in all direction
C. decreased with depth D. decreased with density.
- A mass of 0.2 kg produces an extension of 8 cm in a spring. The force required to produce an extension of 6 cm is.
A. 0.75N B. 1.50N C. 2.70N D. 24.00N
- Brownian motion experiment shows that molecules of gases are
A. stationary B. in motion in one direction only
C. in constant random motion D. more closely packed than molecules in liquids

7. A ductile material is that which;
 A. is fragile
 B. is not elastic
 C. can be moulded into any shape
 D. easily breaks under compression
8. A body of mass m kg and at height h m from the ground has
 A. total gravitational potential energy $= mh$
 B. the greatest gravitational potential energy at height h
 C. the greatest gravitational potential energy when it just drops to the ground
 D. the least potential energy when at a height $\frac{1}{2}h$ to the ground.
9. Which of the following can be used to measure the diameter of a bicycle spoke accurately?
 A. Metre rule
 B. Vernier caliper
 C. Tape measure
 D. Micrometre screw gauge
10. Forces of 7N and 24N act on a body at right angles to each other. The magnitude of the resultant force on the body is
 A. 25N
 B. 31N
 C. 17N
 D. 168N.
11. A pump is rated at 400W. How many kilograms of water can it raise in one hour through a height of 72m?
 A. 0.8 kg
 B. 5.6 kg
 C. 33.3 kg
 D. 2000 kg.
12. The maximum efficiency that can be obtained with four pulleys and a mechanical advantage of 3 is
 A. 100%
 B. 75%
 C. 12%
 D. 1.33%
13. When a pin hole camera is moved nearer an object, the size of the image.
 A. Remains the same
 B. becomes smaller
 C. becomes larger
 D. becomes diminished.
14. Reinforced concrete is stronger than ordinary concrete because concrete and steel are;
 A. both brittle materials
 B. both ductile materials
 C. strong in tension and compression respectively.
 D. Strong in compression and tension respectively.
15. A bullet of mass 0.02 kg is fired with a speed of 40ms^{-1} . Calculate its Kinetic energy.
 A. 0.4J
 B. 0.8J
 C. 16J
 D. 32J
16. A bimetallic strip operates on the principle that metals
 A. are heat controllers
 B. are good heat conductors
 C. have different rates of expansion
 D. have the same rates of expansion

17.



Which of the girders above are ties?

- A. XQ, QY, PX, YR B. PQ, QR, XY C. XQ, QY D. PX, YR

18. Calculate the effort when a load of 72N is raised using a block system of five pulleys and efficiency 80.

- A. 11.52N B. 18N C. 57.6N D. 288N

19. Which of the following physical properties changes when a body is moved from the earth to the moon?

- A. Mass B. Volume C. Weight D. Density

20. Which one of the following groups consists of vectors only?

- A. Momentum, acceleration, work, energy
B. Speed, Velocity, displacement, energy
C. Displacement, velocity, acceleration, force
D. Velocity, work, power, momentum.

21. If a mercury barometer reads 760 mm of mercury. What is the atmospheric pressure in Nm^{-2} ? (density of mercury is $1.36 \times 10^4 \text{ Kg m}^{-3}$)

- A. $1.03 \times 10^4 \text{ Nm}^{-2}$ B. $1.36 \times 10^4 \text{ Nm}^{-2}$ C. $1.03 \times 10^5 \text{ Nm}^{-2}$
D. $1.36 \times 10^5 \text{ Nm}^{-2}$

22. A rectangular block of tin is 0.5 m long and 0.01m thick. Calculate the width if it has a mass of 0.365 Kg and density of $7.3 \times 10^3 \text{ Kg m}^{-3}$.

23. A bullet of mass 150 g is fired with a speed of 400 ms^{-1} . The rifle recoils with a speed of 10 ms^{-1} . Find the mass of the rifle.

- A. 0.3 kg B. 0.6 kg C. 3.0 kg D. 6.0 kg

24. A hippopotamus can easily walk on mud without sinking while a goat will sink because

- A. a hippopotamus has more weight than a goat

- B. the center of gravity of the hippopotamus is lower than that of a goat
 C. a hippopotamus exerts more pressure than a goat
 D. a hippopotamus exerts less pressure than a goat
25. Oil sprayed over stagnant water kills mosquito larvae by
 A. covering the water surface and cutting off air supply
 B. increasing the surface tension of water and the larvae sink
 C. reducing the surface tension of water and the larvae sink
 D. reducing the density of water and the larvae sink.
26. The stability of a bus is reduced when a heavy load is placed on its roof rack because
 A. the total weight is increased B. the pressure upon the tyres is increased
 C. the maximum speed is reduced D. the center of gravity is raised.
27. When a liquid is heated
 A. its density decreases B. boiling occurs at all temperatures
 C. its molecules move with the same speed.
 D. Evaporation takes place throughout the liquid.
28. Mercury forms spherical drops when spilt on a wooden bench because it
 A. is very viscous B. has a high density
 C. has a high cohesive force D. has a low surface tension.
29. A notch in a material spreads more rapidly when the material is
 A. in tension B. in compression C. prestressed D. reinforced.
30. Which of the following is not true about a body moving with a constant velocity?
 A. Its acceleration is zero B. Its momentum is constant
 C. Its kinetic energy is constant D. There's a resultant force on it.
31. Which of the following is a scalar quantity?
 A acceleration B mass C momentum D velocity
32. If a mercury barometer reads 760 mm of mercury. What is the atmospheric pressure in $N m^{-2}$? (Density of mercury is $1.36 \times 10^4 kg m^{-3}$)
 A. $1.03 \times 10^4 N m^{-2}$ B. $1.36 \times 10^4 N m^{-2}$
 C. $1.03 \times 10^5 N m^{-2}$ D. $1.36 \times 10^5 N m^{-2}$
33. A hippopotamus can easily walk on mud without sinking while a goat will sink because,
 A. a hippopotamus has more weight than a goat.
 B. the center of gravity of the hippopotamus is lower than that of a goat.
 C. a hippopotamus exerts more pressure than a goat.
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34. Which of the following is not a unit of pressure?
 A. cmHg B. mmHg C. Nm^{-2} D. kgm^{-2}
35. Which of the following can be a unit of force?
 A. $\text{kg m}^2 \text{s}^{-1}$ B. Kg m s^{-2} C. kg m s^{-1} D. kg m s^{-2}
36. Particles in a solid at room temperature are:
 A. Close together and stationary B. relatively apart
 C. close together and vibrating D. far apart and moving at random
37. Pressure acting normally to a surface of an object depends on,
 A. Area and volume B. Mass and pressure
 C. Force and area D. Mass and force
38. Force is given by the product of:
 A. mass and distance B. mass and force
 C. mass and acceleration D. mass and volume
39. A room is 4 m long, 2.5 m wide and 2 m high. If the density of the air in the room is 1.3 kg m^{-3} , what is the mass of air in the room?
 A. 3.8 kg B. 6.5 kg C. 15 kg D. 26 kg
40. A force of 20 N extends a spring by 10 mm. Find the extension in mm caused by a mass of 0.5 kg.
 A. 0.25 B. 1.00 C. 2.50 D. 10.00
41. A force of 10 N acts on a body and produces an acceleration of 2 m s^{-2} . The mass of the body is
 A. 0.2 kg B. 5.0 kg C. 20.0 kg D. 50.0 kg
42. To keep a body moving in a circle there must be a force on it directed towards the centre, this is called the
 A. Electro static force B. Centripetal force
 C. Frictional force D. Circular force
43. Which one of the following groups consists of vectors only?
 A. Momentum, acceleration, work, energy
 B. Speed, Velocity, displacement, energy
 C. Displacement, velocity, acceleration, force
 D. Velocity, work, power, momentum.
44. In a hydraulic machine
 A. An object displaces it's own weight of liquid
 B. The pressure in the fluid is transmitted in all directions
 C. The density of the fluid is the same at all levels

