THEMI HILL SECONDARY SCHOOL

FORM THREE 2020

100 questions

1. What is physics?
2. What is the importance of mathematics in physics?
3. State the importance of physics in your life.
4. Discuss four areas where physics is applied.
5. People who study physics are known as ……
6. Match the items in the table below.

Item A	Item B
(a) Physics	(i) Deals with study of machines and laws
(b) Chemistry	(ii) Deals with behavior of matter
(c) Biology	(iii) Study man and his surroundings
(d) Geography	(iv) Study of matter in relation to energy
	(v) deals with study of chemicals only
	(vi) Deals with study of living things

7. What is a physics laboratory?
8. List ten laboratory rules
9. What is first aid?
10. Name five items found in first aid.
11. What are the warning signs?
12. State five classes of fire and their most appropriate fire extinguishers.
13. What is a scientific method?
14. The following are the steps of a scientific investigation:

    (a) ……

(b) ……

(c) ……

(d) ……..

(e) ……

(f) …….

15. What is measurement?
16. What do you understand by the term fundamental quantities?
17. What is a derived physical quantity?
18. Mention basic physical quantities which you known.
19. Mention three derived physical quantities
20. Define the following terms;
    (a) mass
    (b) temperature
    (c) length
    (d) time
21. Mention the instruments which are used to measure;
    (a) mass
    (b) length
    (c) time
22. When an irregular solid was immersed in 65cm^3 of water, the water level rose to 81 cm^3. What was the volume of the solid?
23. What is error?
24. What is density?
25. An irregular solid X has a mass of 50g. When it is totally immersed in water of volume 60cm^3, the final water volume is read as 70cm^3. Calculate the density of irregular solid X.
26. A piece of copper metal of volume 5.1cm^3 has a mass of 41.6g. Calculate the relative density of copper.

27. What is force?
28. Mention types of forces.
29. In a single word what does force of gravity mean?
30. Mention eight effects of forces.
31. In an object weighs 30N on the earth is its mass?
32. If an object has a mass of 200g, how much would it weigh on the earth?
33. An object weighs 200N on the earth. What would be its mass on the moon?
34. Define the following terms
    a) friction force
    b) restoring force
    c) stretching force
35. What is the difference between friction force and viscosity force?
36. What is the difference between repulsion force and attractive force?
37. State the four types of fundamental forces.
38. Define the following terms;
    a) Floating
    b) Sinking
    c) Up thrust
39. A hydrometer is an instrument used for measuring ……
40. What is Buoyancy force?
41. Explain the following terms:
    a) Real weight
    b) Apparent weight
42. State Archimedes' principle.
43. Mention three conditions for floating.
44. State law of floatation
45. What is hydrometer?

46. An object with a volume of 150cm^3 is floating in water 60% of its volume submerged. What is the density of the object?
47. What is matter?
48. Define the following terms;
    a) Elasticity
    b) Surface tension
    c) Capillarity
    d) Osmosis
    e) Diffusion
49. State Kinetic theory of matter.
50. State Hooke's law
51. Mention three physical states of matter.
52. Analyze the difference between adhesion and cohesion.
53. Distinguish between elastic and plastic materials.
54. The attractive forces between molecules of different substances is called …….
55. The elastic force constant of a spring is obtained by the ratio of …….
56. Which phenomenon is taking place when kerosene rises up a wick?
57. State the difference between a solid, a liquid and a gas.
58. A certain spring has a force constant of k = 25 N/cm.
    a) If an object with a mass of 500g were hung from the spring, how far in centimeters, would it stretch?
    b) What is the mass of an object that stretches the spring 35cm?
59. Explain how oil can float on water.
60. Explain how adding soap to the water would cause the oil and water to mix.
61. If the cohesive forces between the molecules of a liquid are greater than the adhesive forces between the liquid molecules and the molecules of glass, what shape of meniscus would the liquid have? Explain your answer.
62. Would adding soap to water increase or decrease the curve of its meniscus? Explain

your answer.

63. Would heating water increase or decrease the curve of its meniscus? Explain your answer.
64. Distinguish between elastic and plastic materials.
65. What is meant by Cohesion?
66. What is Adhesion?
67. Define pressure.
68. State the SI Unit of pressure.
69. Name devices that are used for measuring pressure.
70. State Pascal's principle.
71. How can you measure the pressure of a gas?
72. An open end of a rubber tubing of a manometer is placed in a fluid of density 1.2 g/cm^3. The mercury in the manometer rises by 3.0mm. What is the depth of the fluid at the rubber tubing end? (Density of mercury = 13.6 g/cm^3.)
73. Explain why hitting an inflated balloon with a hammer will not cause it to burst but sticking it with a pin will.
74. A can holds water with a constant depth of 0.5 m. Hole A is punched in the can 0.1 m below the surface of the water and hole B is punched 0.4 m from the surface. From which hole will the water spurt the farthest? Explain your answer.
75. Why are dams constructed thicker at the bottom than at the top?
76. A can holds water with a constant depth of 0.5 m. The surface of the water is exposed to the atmosphere. What is the pressure on the bottom of the can? (acceleration due to gravity is 10 m/s^2 and atmospheric pressure is 101.3 kg)
77. In a hydraulic brake system the piston in the master cylinder has a diameter of 2.0 cm and the pistons in the slave cylinders have a diameter of 3.5 cm. The brake pedal is pushed down 10cm with a force of 50 N. How far do the brake shoes move and with what force do they press against the brake drum?
78. Draw a well – labeled diagram of the gold – leaf electroscope.
79. How does gold leaf electroscope operate?
80. State what happens under the following conditions:-
    a) An ebonite rod is rubbed with fur.

b) The ebonite rod is held near a brass ball mounted on a glass stand.

c) The ball is touched momentarily with a finger while the rod is still held near.

d) The ebonite rod is removed.

81. A periscope could be used to see over a crowd at a football match. Draw a ray diagram of a periscope.

82. Find the potential energy gained by 800kg of concrete when raised up through a height of 40m. (Gravitational force = 10N/kg).

83. Briefly explain why:-

a) The tyres of a tractor are large and wide.

b) A woman wearing shoes with pointed hells is more likely to cause damage to a wooden floor than an elephant.

84. Define

(a) a resultant vector

(b) a vector component

(c) Resolution of vector

(d) relative velocity

(e) absolute motion

85. State a parallelogram law of vector addition.

86. By using the law stated above, find the magnitude and direction of the resultant of the forces each of 4N acting at a point at an angle of 120^0 with each other.

87. State the triangle law of vector addition.

88. A man walked 80m northward. After making a turn of 30^0 he walked 160m. By using triangle law, Find the

i. New displacement of the man from his original position.

ii. Direction of the man with respect to his original position.

89. What is the difference between vectors and scalars? What is their point of similarity?

90. A passenger is walking at a velocity of 0.5m/s inside a bus which moves in a velocity of 15m/s. If he is moving in front of the bus, calculate

    i. The velocity of the passenger relative to the ground.

    ii. The velocity of the passenger relative to the bus.

91. Mention four applications of thermal expansion of solid.

92. Briefly explain why holes are left below the chimney of a kerosene lamp or kitchen.

93. A steel tyre of diameter 150cm at 10°c is to be fitted on a train wheel of diameter 151cm what temperature must the tyre be heated just to fit the wheel.

94. State GAS LAW

95. A gas of volume 900cm^3 at 27ºC when warmed at constant pressure calculate the volume which will be occupied.

96. Define the following terms

    (a) Critical angle

    (b) Total internal reflection of light

97. Explain the following phenomenon

    (a) Adam full of water appears to look much shallow than they appear to be (real).

    (b) During the Sunny days on the road ahead, you see a pond of water which disappear once you approaches it.

    (c) A straight stick appear to bent when immersed in water

98. A small object is at bottom of a tall gas jar. If the gas jar is filled with water to a depth of 28cm. by how much is the object apparently displaced?

99. The critical angle of chlorobenzene is 40 49’ what is the refractive index?

100. Write down characteristics of the image formed when an object standing

    (a) Beyond C on the principle axis

    (b) At centre of curvature on the principle axis

    (c) In front of F on the principle axis.

101. An object 10cm high and at right angles to the principle axis of a convex mirror is 24cm from the pole. If the focal length of the mirror is 6cm find the distance of the

image from the pole and its height using graph method and describe if it real or virtual.

102. Differentiate concave mirror from a convex mirror.

103. State three laws of friction

104. Mention three ways of reducing friction