

THEMI HILL SECONDARY SCHOOL

FORM FOUR 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 know.
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 81cm^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 $k = 25 \text{ N/cm}$.
 - 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. What are waves?
79. Define the following terms
- (a) Period
 - (b) Trough
 - (c) Crest
80. Analyze the difference between amplitude and wavelength.
81. What do you understand by the terms:
- (a) Frequency

(b) Velocity

(c) Period

82. Mention types of waves which you know
83. There are four behaviors of waves, mention them.
84. Mention propagation of electromagnetic waves.
85. Mention three sources of sound waves.
86. Mention four importance of pinna in human ear.
87. What is Eustachian tube in human ear?
88. Analyze the difference between echo and reverberation.
89. Calculate the speed of sound travelling in air at 30°C .
90. A man standing 500m away from a wall he produces a sound at what time he will hear an echo? (assuming that speed travelling at 333.3m/s)
91. Analyze four importance of echo in organisms.
92. Is it possible for sound to travel in a space? Why?
93. Give the difference between music and noise.
94. Mention factors which affect loudness and pitch.
95. What is timbre?
96. Mention at least two musical instruments in the following categories
 - (a) Wind instruments
 - (b) Percussion instruments
 - (c) String instruments
97. What characteristics do differentiate sounds from different instruments?
98. If an echo is heard after 8 seconds from original sound. If the atmospheric temperature is 22°C , how far away is the cliff?
99. A rope of length 80cm and mass of 10g is set into vibrations. If the

tension in the rope is 20N, find the frequencies of the first and third harmonics.

100. Analyze two agricultural importances of electromagnetic waves.

101. How does electromagnetic spectrum used to support life?

102. Among of the seven bands of electromagnetic spectrum, which can be detected by human eye? Give its source.