

Physics Interview Questions

1. On a hot day, what should you do with a fridge?
2. What makes some chemicals explosive?
3. When an ice cube melts in a glass of water, does the water level increase, decrease or stay the same?
4. Why don't animals have wheels?
5. How does an electric guitar work?
6. Which way is the earth spinning?
7. A tennis ball is placed on top of a basketball. The balls are dropped. To what height does the tennis ball bounce?
8. How high can you go up a mountain on just a Mars bar?
9. If you dig a hole right through the Earth and jump into it, what is your motion?
10. If you leave a fridge turned on in a thermally isolated room, what happens to the room?
11. If you could fold a piece of paper as many times as possible, how many times must you fold it to reach the moon?
12. Can you sketch the displacement time and velocity time graph for a skydiver jumping out of a plane?
13. Why can't you light a candle in a spaceship?
14. Why is the sky blue?
15. Two identical beakers with the same volume of water are placed on each pan of a double-pan balance. A steel ball is suspended from a string and submerged in the water of one of the containers. A hollow plastic ball of the same volume is submerged in the water of the other container and fastened to the bottom of the beaker by a string. Will the balance move, and if so in which direction?
16. Why are explosions a risk in flour mills? What stops bags of flour exploding in the kitchen?
17. Why do we blow on soup to cool it down?
18. How many molecules are there in a glass of water?
19. How does a glow-stick work?
20. Why don't fish freeze?
21. What issues might there be if you wanted to create a metallic oxide that has good conductive properties but is also transparent?
22. What is the concentration of water?
23. Why does iron rust and how can rusting be stopped?
24. How does blood maintain its pH?
25. A ball bearing is flying through space (vacuum and no overall gravitational field). It heads towards a doughnut, through its centre and out the other side. Can you draw graphs of 1) speed versus time and 2) acceleration versus time?
26. Can you draw the graphs of $y=1/x + x$ and $y=7+3\cos(2x+\pi/2)$?
27. Can you describe a heat engine?

28. A telephone company has run a very long telephone cable all the way round the middle of the earth. Assuming the Earth to be a sphere, and without recourse to pen and paper, estimate how much additional cable would be required to raise the telephone cable to the top of the 10m tall telephone poles?
29. A thin hoop of diameter d is thrown on to an infinitely large chessboard with squares of side L . What is the chance of the hoop enclosing two colours?
30. What is the area of an n -sided regular polygon inscribed within a circle of radius r ?
31. For a circle inscribed a regular n -sided polygon, what is the minimum n so that the ratio of the area of the part outside the circle to the area of the circle is less than or equal to 1:1000?
32. Can you draw a graph of weight versus time for the following: 1) man stands on scale very gently and then gets off again very gently; 2) man jumps onto scales and then jumps off again; 3) man stands on scale and lets his knees unlock so that he drops, then stops?
33. The wall of death fairground ride: it's spinning in a horizontal circle. Then the floor that people are standing on falls away. Can you calculate how fast it has to spin before the floor can fall away without the people dropping out given that: coefficient of friction= μ and radius of the ride= r ?
34. Can you calculate (in algebraic terms) the change that will take place to the fringe pattern when a piece of glass is placed in front of one of the slits? Can you draw the new fringe pattern?
35. Why do particle accelerators have to be so large?
36. How do particle accelerators work?
37. If you leave the fridge turned on in a thermally isolated room, what happens to the room?
38. Why can't you light a candle in a spaceship?
39. How many grains of sand are there in the world?
40. What happens if I drop an ant?
41. Why does fire go upwards?
42. Does a cup of hot coffee cool quicker if milk is added before or after stirring?
43. What angle should you aim when trying to shoot a monkey that will fall out the tree the moment you shoot?
44. What forces would act on you if you were at the centre of the earth?