

NORTH EX PUBLIC SCHOOL

CLASS-IX

SCIENCE ASSIGNMENT

1. Explain the working of the SONAR. A radar signal is reflected by the aeroplane and is received 0.00002 sec after it was sent. If the speed of the sound is 300000000m/s, how far is the aeroplane from radar?
2. What do you mean by positive work and negative work? Calculate the work done in pushing an iron block through a distance of 4.5 m against the force of friction of 200 N. Also state the type of work done.
3. Give three features of mammals that have helped them to become successful inhabitants of this planet.
4. a) Define one mole. Illustrate its relationship with Avogadro's Constant.
b) Calculate the number of mole in :
 - i) 12.044×10^{23} atoms of Carbon
 - ii) 64 g of Oxygen atoms.
 - iii) 66 g of Carbon dioxide molecules. (Atomic masses O= 16, C= 12)
5. State any one characteristic feature present in each of the following groups:
 - a) Pteridophyta
 - b) Gymnosperm
 - c) Angiosperm
6. "Prevention is better than cure". Justify this statement.
7. Give three medical uses of ultrasound.
8. What kind of food is advised when we fall sick and why?
9. Draw a longitudinal wave in a slinky. Show it on a graph between density variation and time. Mark on it region of maximum and minimum variation in density.
10. Find force of buoyancy on a body of volume 200 cubic cm when it is dipped in water with
 - a) Half the volume in water
 - b) Completely submerged in water.
11. Why is lightning seen a few seconds before the thunder is heard during a thunderstorm?
12. Define the kinetic energy. Give its S.I. unit. State two factors on which the magnitude of kinetic energy depends. Indicate the positions for an oscillating pendulum where it has maximum and minimum KE respectively.
13. Construct a table showing category of agents which cause infection and one disease infection caused by each: a) virus; b) fungus; c) bacteria; d) protozoa; e) worm. State the importance of categorization of infection causing agents.
14. "The classification of life forms will be closely related to classification." What do you understand by this statement? Explain with the help of an example.
15. Explain the following:
 - a) Balanced diet is necessary for maintaining healthy body.
 - b) Social harmony and good economic conditions are necessary for good health.
 - c) Swimmers are provided with an inflated rubber jacket/tube. Why?
 - d) It is easier to swim in sea water than in river water. Why?
 - e) It is difficult to stand on one foot as compared to standing on two-feet.
 - f) Health of an organism depends upon the surrounding environmental conditions.

16. A car weighing 1200 kg is uniformly accelerated from rest and covers a distance of 40 m in 5 s. Calculate the work done by the engine of car during this time. What is the final kinetic energy of car?
17. Define three characteristics of a musical sound. On what factors do they depend? A hospital uses an ultrasonic scanner to locate tumours in a tissue. What is the wavelength of ultrasound in a tissue in which the speed of ultrasound is 1.7 km/s? The operating frequency of the scanner is 4.2 MHz.
18. Show that for a freely falling object the sum of its potential energy and kinetic energy remain unchanged at all the points during its fall.
19. All mammals give birth to young ones.
 - a) Name two mammals which lay eggs.
 - b) Between which two phyla do they serve as connecting link?
 - c) Name a mammal which gives birth to poorly develop young one.
20. State the three observations made by Rutherford on his α -particle scattering experiment.
21. How is the quality of air affected? How does it harm human beings? What can you say about the levels of polluting substances near roads by observing the barks of trees?
22. What is reverberation of sound? Mention any four arrangements which should be made in an auditorium to control excessive reverberation.
23. Under which of the following conditions is a person most likely to fall sick?
 - a) When she is recovering from malaria.
 - b) When she has recovered from malaria and is taking care of someone suffering from chicken pox.
 - c) When she is on a four-day fast after recovering from malaria and is taking care of someone suffering from chicken pox. Why?
 - d) What suggestions would you make to that person, so that he/she doesn't contract the infection?
24. A tuning fork is producing sound. Prove with an activity that sound is produced by it due to vibrations.
25. Explain in detail about the effect of change in temperature of water bodies on aquatic organisms.
26. "Water helps in the formation of soil in two different ways." Explain in brief.
27. Distinguish between longitudinal wave and transverse waves. Give one examples of each.
28. Draw a neat and labelled diagram to illustrate nitrogen-cycle. Mention the main steps involved in this process.
29. Cite an experiment to show that sound needs a material medium for its propagation.
30. a) A system (X) of our body helps us fight infections even on getting exposed to the disease causing factors. Name (X) and the cells of (X).
 - b) What would be the outcome of lack of proper functioning of (X).
 - c) Which two basic factors should be taken care of by parents to ensure proper functioning of (X) in their children?