



PHYSICS

NCERT - NCERT PHYSICS(GUJRATI)

PHYSICAL WORLD

Exercises

1. Some of the most profound statements on the nature of science have come from Albert Einstein, one of the greatest scientists of all

time. What do you think did Einstein mean when he said: "The most incomprehensible thing about the world is that it is comprehensible" ?



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2. No physicist has ever “seen” an electron. Yet, all physicists believe in the existence of electrons. An intelligent but superstitious man advances this analogy to argue that ‘ghosts’

exist even though no one has 'seen' one. How will you refute his argument ?



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3. The shells of crabs found around a particular coastal location in Japan seem mostly to resemble the legendary face of a Samurai. Given below are two explanations of this observed fact. Which of these strikes you as a scientific explanation ?

(a) A tragic sea accident several centuries ago

drowned a young Samurai. As a tribute to his bravery, nature through its inscrutable ways immortalised his face by imprinting it on the crab shells in that area.

(b) After the sea tragedy, fishermen in that area, in a gesture of honour to their dead hero, let free any crab shell caught by them which accidentally had a shape resembling the face of a Samurai. Consequently, the particular shape of the crab shell survived longer and therefore in course of time the shape was genetically propagated. This is an example of evolution by artificial selection.



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4. The industrial revolution in England and Western Europe more than two centuries ago was triggered by some key scientific and technological advances. What were these advances ?



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5. It is often said that the world is witnessing now a second industrial revolution, which will transform the society as radically as did the first. List some key contemporary areas of science and technology, which are responsible for this revolution.



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6. Attempt to formulate your 'moral' views on the practice of science. Imagine yourself

stumbling upon a discovery, which has great academic interest but is certain to have nothing but dangerous consequences for the human society. How, if at all, will you resolve your dilemma ?



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7. Science, like any knowledge, can be put to good or bad use, depending on the user. Given below are some of the applications of science. Formulate your views on whether the

particular application is good, bad or something that cannot be so clearly categorised :

(a) Mass vaccination against small pox to curb and finally eradicate this disease from the population. (This has already been successfully done in India).

(b) Television for eradication of illiteracy and for mass communication of news and ideas.

(c) Prenatal sex determination

(d) Computers for increase in work efficiency

(e) Putting artificial satellites into orbits around the Earth

(f) Development of nuclear weapons

(g) Development of new and powerful techniques of chemical and biological warfare).

(h) Purification of water for drinking

(i) Plastic surgery

(j) Cloning



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8. India has had a long and unbroken tradition of great scholarship — in mathematics,

astronomy, linguistics, logic and ethics. Yet, in parallel with this, several superstitious and obscurantistic attitudes and practices flourished in our society and unfortunately continue even today — among many educated people too. How will you use your knowledge of science to develop strategies to counter these attitudes ?



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