

QB365 Question Bank Software Study Materials

Recent Developments in Physics Important 2 Marks Questions With Answers (Book Back and Creative)

12th Standard

Physics

Total Marks : 40

2 Marks

20 x 2 = 40

- 1) Distinguish between Nanoscience and Nanotechnology.

Answer : (i) Nano science is the science of objects with typical sizes of 1 - 100 nm. It deals with the study of property change when a matter is divided into nano particles.

(ii) Nanotechnology is a technology involving the design, production, characterisation and applications of nano structured materials.

- 2) What is the difference between Nano materials and Bulk materials?

Answer : (i) If the particle of a solid is of size less than 100 nm, it is said to be a nano solid, if the particle size exceeds 100 nm, it is a bulk solid.

(ii) Both have same chemical properties. But their mechanical, electrical, optical, magnetic properties differ.

- 3) Give any two examples for "Nano" in nature.

Answer : (i) The scales on the wings of a morpho butterfly.

(ii) Peacock feathers.

- 4) Mention any two advantages and disadvantages of Robotics.

Answer : Advantages of Robotics:

(i) Robots are more precise and error free in performing the task.

(ii) Robots never get tired like humans. It can work for 24 x 7. Hence absenteeism in work place can be reduced.

Disadvantages of Robotics:

(i) Unemployment problem will increase.

(ii) Robots can perform defined tasks and cannot handle unexpected situations.

- 5) Why steel is preferred in making Robots?

Answer : Robots are automated machines which have many mechanical parts like wheels, arms, fingers, legs etc. Therefore a strong material is needed. For a given size, steel has several times stronger.

- 6) What are black holes?

Answer : Black holes are end stage of stars whose mass ranges from 20 times to 1 million times the mass of the sun. Because of their dense mass, they have very strong gravitational force such that no particle or even light can escape from it. Therefore they are not visible to human eye. Every galaxy has black hole at its center.

- 7) What are sub atomic particles?

Answer : The constituent particles of atom are called sub atomic particles. Therefore electron, proton and neutron are sub atomic particles. Later it was understood that protons and neutrons are made up of quarks. These quarks are also sub atomic particles. Recently it is discovered that the Higgs particles or God particles give mass to many particles like protons, neutrons etc.

- 8) What is the two important phenomena that govern the nano particles?

Answer : Quantum confinement effects and surface effects are the two important phenomena that govern nano particles.

- 9) How does the peacock feathers get colouration?

Answer : Peacock feathers get their iridescent coloration from light interacting with 2 dimensional photonic crystal structures just tens of nanometers thick.

10) What is the role of nanostructure in the morpho butterfly wings?

Answer : The scales on the wings of a morpho butterfly contain nanostructures that change the way light waves interact with each other, giving the wings brilliant metallic blue and green hues.

11) What is the use of industrial robots?

Answer : Industrial robots are used for welding, cutting, robotic water jet cutting, robotic laser cutting, lifting, sorting, bending, manufacturing, assembling, packing, transport, handling hazardous materials like nuclear waste, weaponry, laboratory research, mass production of consumer and industrial goods.

12) Define nano solid?

Answer : The particle of solid is of size less than 100 nm, it is said to be a nano solid. Ex. ZnO.

13) Mention the applications of nano material in the field of medicine.

Answer : (i) Drug delivery Systems
(ii) Prostheses and implants
(iii) Antimicrobial agents and coatings
(iv) Agents in cancer therapy

14) Give the six main types of industrial robots.

Answer : (i) Cartesian
(ii) SCARA [Selective Compliance Assembly Robot Arm]
(iii) Cylindrical
(iv) Delta
(v) Polar
(vi) Vertically articulated

15) What do you mean by precision medicine?

Answer : If the individual variability in genes, environment and life style for each person are taken into account in disease treatment and prevention, it is called precision medicine. It helps to customise health care.

16) Give the importance of wireless brain sensors.

Answer : The wireless brain sensors monitor intracranial pressure and temperature. There is no need for surgery to remove these devices as they are absorbed by the body.

17) What is robotic surgery?

Answer : Robotic surgery is a type of surgical procedure that is done using robotic systems. Robotically assisted surgery helps to overcome the limitations of pre-existing minimally-invasive surgical procedures. It enhances the capabilities of surgeons performing open surgery.

18) How does smart inhalers differ from ordinary inhalers?

Answer : (i) It reminds the patients when to take their medication.
(ii) It gathers data to help health care.

19) What are nucleons?

Answer : The particles inside the nucleus of an atom are known as nucleons. Protons and neutrons are called nucleons.

20) What is customer health care?

Answer : If the individual variability in genes, environment and life style for each person are taken into account in disease treatment and prevention it is called precision medicine. It helps to customise health care.