PHYSICS

AAKASH INSTITUTE ENGLISH

PHYSICAL WORLD

Examples

1. What are the interconnected steps of the scientific method?

Watch Video Solution

2. What is Physics?

3. What are the two domains of interest in Physics?

4. What are the two principal thrusts in Physics?

Watch Video Solution

5. What is the difference between science and technology?

Watch Video Solution

6. Comment on contribution of physics in the development of biological sciences.

Watch Video Solution

7. Can gravitational force lie repulsive like electrostatic force?

Watch Video Solution

8. Compare the strengths of four fundamental forces.

Watch Video Solution

9. What do you mean by central forces?

Watch Video Solution

10. What do you mean by the statement that a force obeys inverse square law?

Watch Video Solution

11. Are strong nuclear forces charge dependent?

Watch Video Solution

12. What is the range of four fundamental forces?

Watch Video Solution

13. Which forces have the shortest range?

Watch Video Solution

14. Name the strongest fundamantal force.

Watch Video Solution

15. What do you mean by strong nuclear force?

Watch Video Solution

16. Are conservation of mass and conservation of mechanical energy fundamental laws of nature?

Watch Video Solution

17. A student takes the example of a body falling under gravity. He says that he can prove the conservation of mechanical energy by adding the kinetic and potential energies at a point, and showing that it tums out to be constant. Cormment.

Watch Video Solution

18. What do you understand by a law of Physics?

Watch Video Solution

19. Conment on the statement, 'A law cannot be proved'.

Watch Video Solution

20. What are conserved quantities?

Watch Video Solution

Try Yourself

1. What are the suggested basic steps that scientists follow?

Watch Video Solution

2. Can everything he proved in Physics?

Watch Video Solution

3. What is falsifiabilty?

Watch Video Solution

4. What is the range of time scale?

Watch Video Solution

5. For scientific progress, is only qualitative thinking enough?

Watch Video Solution

6. On which scientific principie, are radio and TV based?

Watch Video Solution

7. On which principle is refrigorator based?

Watch Video Solution

8. On which principle is rocket propulsion based?

Watch Video Solution

9. On which principle is photocell based?

Watch Video Solution

10. Name the forces which obey inverse square law.

Watch Video Solution

11. Which forces are charge dependent?

Watch Video Solution

12. Nuclear forces are short range forces. Comment.

Watch Video Solution

13. Name the strongest and the weakest force.

Watch Video Solution

14. Mention any one long range force and short range force.

Watch Video Solution

15. Newton's law of gravitation is universal because

Watch Video Solution

16. Does gravitational force between two object depend on medium between them?\

Watch Video Solution

17. Does gravitational force between two bodies get affected by presence of other bodies?

Watch Video Solution

18. Can electromagnetic forces be attractive as well as repulsive?

Watch Video Solution

19. Do electromagnetic forces obey inverse square law?

Watch Video Solution

20. Are strong nuclear forces basically attractive?

Watch Video Solution

21. Are gravitatioral forces charge dependent?

Watch Video Solution

22. Name the parlicle associated with gravitational force.

A. Photon

B. Nucleon

C. Proton

D. Graviton

Answer:

Watch Video Solution

23. Name thie article associated wilh electromagnetic force.

Watch Video Solution

24. What happens to the electrostatic force when both charges are doubled?

Watch Video Solution

25. What happens to the force between two charges if the distance between them is (a) halved (b) doubled?

Watch Video Solution

26. What happens to the gravitational force when masses of both the bodies as well as distance between them is doubled?

Watch Video Solution

27. Symmetry of nature w.r.t. translation in space is equivalent to which law of conservation?

View Text Solution

28. Symmetry of nature w.r.t. translation in space is equivalent to which law of conservation?

Watch Video Solution

29. Isotropy of spaco (no intrinsically preferred direction in space) underlies which law of conservation?

View Text Solution

30. Would it be right to ask someone to prove the law of conservation of energy?

Watch Video Solution

31. Are all conserved quantities scalar?

Watch Video Solution

32. Can a law ever be final?

Watch Video Solution

33. Laws of conservation of linear and angular momentum can be derived from Newton's laws of motion in mechanics. Are they valid beyond mechanics?

Watch Video Solution

34. Is the total mechanical energy conserved for a falling body if we include the effect of air resistance during its fall?

Watch Video Solution

35. What remains conserved in a chemical reaction?

Watch Video Solution

Assignment Section A

1. Origin of the word 'Science' is from

A. French word 'Scientia'

B. Greek word 'Scientia'

C. Latin word 'Scientia', which means 'scientific'

D. Latin word 'Scientia', which means 'to know'

Answer: D

Watch Video Solution

2. Origin of the word 'Physics' is from

A. French word 'Fusis'

B. Latin word 'Fusis'

C. Greek word 'Fusis', which means 'Nature'

D. Greek word 'Fusis', which means 'Physical'

Answer: C

Watch Video Solution

3. Main thrust in-physics is on

A. Unification

B. Reduction

C. Both (1) & (2)

D. Experiments

Answer: C

Watch Video Solution

4. Explaining diverse physical phenomena in terms of a few concepts and laws is

A. Reduction

B. Unification

C. Law

D. Fact

Answer: B

Watch Video Solution

5. Deriving the properties of a bigger, more complex system from the properties and Interaction of its constituent simpler parts is

A. Unification

B. Reduction

C. Law

D. Fact

Answer: B

Watch Video Solution

6. Logical possibility that an assertion, hypothesis or a theory can be contradicted by , an observation or the outcome of a physical experiment is

A. Law

B. Hypothesis

C. Fact

D. Falsifiability

Answer: D

 Watch Video Solution

7. Which of the following statements is/are correct?

A. Universal law of gravitation is an assumption or hypothesis

B. Universal law of gravitation can be proved

C. Universal law of gravitation can be verified

D. Both (1) & (3)

Answer: D

 Watch Video Solution

8. "Science is not just a collection of laws, a catalogue of unrelated facts . It is a creation of human mind: with its freely invented ideas and concepts." Who made these remarks?

A. Newton

B. Maxwell

C. Einstein

D. Raman

Answer: C

Watch Video Solution

9. "The most incomprehensible thing about the world is that it is comprehensible." Who made these remarks?

A. Newton

B. Maxwell

C. Einstein

D. Raman

Answer: C

Watch Video Solution

10. "We know very little and yet it is astonishing that we know so much, and still more astonishing that so little knowledge (or science) pan give us so much power .. " Who made these remarks?

A. Newton

B. Maxwell

C. Einstein

D. Bertrand -Russel

Answer: D

 Watch Video Solution

11. "I do not know what I may appear in the. world, I seem to have been only like a boy playing on the sea-shore and diverting myself

every now and then finding a smoother pebble or a prettier shell than ordinary, while the great ocean of truth lay undiscovered before me." Who said this?

A. Newton

B. Maxwell

C. Einstein

D. Raman

Answer: A

Watch Video Solution

12. A thought experiment in Physics is one which is

A. Theoretically possible but experimentally not feasible

B. Neither theoretically possible nor experimentally feasible

C. Performed by a non-physicist

D. Performed by a chemist

Answer: A

Watch Video Solution

13. In 'Mesoscopic Physics', we deal with

A. Phenomena at laboratory

B. Molecular phenomena

C. Nuclear phenomena

D. Few tens or hundreds of atom

Answer: D

Watch Video Solution

14. "Classical Physics" deals with

A. Macroscopic phenomena

B. Mesoscopic phenomena

C. Microscopic phenomena

D. Sometimes mesoscopic sometimes microscopic

Answer: A

 Watch Video Solution

15. The scope of physics covers almost

A. 10^{-14}m (or even less) to 10^{26} m range of length

B. 10^{-22} s to 10^{18} s range of time

C. 10^{-30} kg to 10^{55} kg range of mass

D. All of these

Answer: D

 Watch Video Solution

16. Name two Indian physicists who have won Noble Prize in Physics.

A. Sir J.C. Bose

B. H.J. Bhaba

C. M.N. Saha

D. Sir C.V. Raman

Answer: D

 Watch Video Solution

17. Albert Einstein was awarded Nobel Prize for his work on

A. Special theory of relativity

B. General theory of relativity

C. Photoelectric effect

D. Mass-energy equivalence

Answer: C

Watch Video Solution

18. The India born and USA based Nobel Laureate Prof. Chandrasekhara is known for his work on

A. Study of cosmic rays

B. Development of relativistic theory of electron

C. Prediction of tachyons

D. Stability of stars and existence of a stable mass limit for white dwarfs

Answer: D

Watch Video Solution

19. Who gave quantum model of atom?

A. Rutherford

B. Bohr

C. Newton

D. Faraday

Answer: B

Watch Video Solution

20. The country, which awards the prestigious Nobel prize is

A. USA

B. UK

C. Sweden

D. Germany

Answer: C

Watch Video Solution

21. The scientific principle involved in supercomputers is

A. Electromagnetic induction

B. Thermodynamics

C. Superconductivity

D. Amplification by population inversion

Answer: C

 Watch Video Solution

22. The scientific principle involved in radio and TV broadcast is

A. Superconductivity

B. Propagation of electromagnetic waves

C. Electromagnetic induction

D. Amplification by population inversion

Answer: B

Watch Video Solution

23. It has been postulated that there may be some particle moving with speed greater than the speed of light. Such particles have been named as

A. Mesons

B. Pions

C. Tachyons

D. Leptons

Answer: C

Watch Video Solution

Watch Video Solution

24. The scientific principle involved in LASER is

A. Newton's laws of motion

B. Faraday's laws of induction

C. Coulomb's laws of induction

D. Amplification by population inversion

Answer: D

Watch Video Solution

25. If F_g, F_N, F_W and F_E be the gravitational, nuclear, weak and electromagnetic forces respectively, then arrange them in proper order as per their strength.

A. $F_g > F_N > F_W > F_E$

B. $F_g < F_W < F_E < F_N$

C. $F_E > F_N > F_W > F_g$

D. $F_w < F_g < F_E < F_N$

Answer: B

Watch Video Solution

26. Forces which obey inverse square law are

A. Gravitational forces

B. Electromagnetic forces

C. Nuclear forces

D. Both (1) & (2)

Answer: D

Watch Video Solution

27. Choose the correct statement.

A. Strong nuclear forces are charge independent

B. Weak nuclear forces are charge independent

C. GravitaionaI forces are charge independent

D. All of these

Answer: D

Watch Video Solution

28. Choose the correct statement.

A. Gravitational forces are attractive forces

B. Nuclear forces are attractive forces

C. Electromagnetic forces can be attractive as well as repulsive

D. All of these

Answer: D

 Watch Video Solution

29. Choose the correct statement.

A. Strong nuclear force is 100 times stronger than electrostatic force

B. Strong nuclear force is 10^{13} times stronger than weak nuclear force

C. Strong nuclear force is 10^{39} times stronger than gravitational force

D. All of these

Answer: D

Watch Video Solution

30. Choose the correct statement.

A. Range of strong nuclear force is $=10^{-15}$ m

B. Range of weak nuclear force is $=10^{-16}$ m

C. Gravitational and electromagnetic force have infinite range

D. All of these

Answer: D

Watch Video Solution

31. Choose the correct statement.

A. Strong nuclear force is mediated by the particle ’π-meson'

B. Weak nuclear force is mediated by the particle 'Boson'

C. Electromagnetic force is mediated by the particle 'photon' and gravitational force is mediated by the particle 'graviton'

D. All of these

Answer: D

 Watch Video Solution

32. Choose the correct statement.

A. Gravitational force is conservative

B. Electrostatic force is conservative

C. Nuclear force is non-conservative

D. All of these

Answer: D

 Watch Video Solution

33. Choose the correct statement.

A. Gravitational force is a central force

B. Electromagnetic force is a central force

C. Nuclear force is a non-central force

D. All of these

Answer: D

 Watch Video Solution

34. Choose the correct statement.

A. Gravitational force is not affected by lntervening medium

B. Electromagnetic force is affected by intervening medium

C. Nuclear force does not obey inverse square law

D. All of these

Answer: D

Watch Video Solution

35. Choose the correct statement.

A. Hans Lippershey y is associated with the discovery of telescope

B. Kepler is associated with the discovery of telescope

C. C.V. Raman is associated with the discovery of telescope

D. Hubble is associated with the discovery of telescope

Answer: A

 Watch Video Solution

36. Choose the correct statement.

A. C.V. Raman is associated will1 scattering of light by the molecules

B. Neil Bohr is associated with scattering of light by the molecules

C. S. Chandrashekhar is associated with scattering of light by the molecules

D. Heisenberg is associated with radioactivity

Answer: A

Watch Video Solution

37. Choose the correct statement

A. Scientific principle involved in refrigerator is laws of thermodynamics

B. Scientific principle involved in steam engine is laws of thermodynamics

C. Scientific principle involved in rocket propulsion is Newton's laws of motion

D. All of these

Answer: D

Watch Video Solution

38. Choose the correct statement

A. Newton unified celestial and terrestrial mechanics

B. Maxwell verified experimentally the predictions of the theory of 'electroweak force'

C. Glashow showed that electricity and magnetism are Inseparable aspects of

'electromagnetism'·

D. Rubia unified celestial and terrestrial mechanics

Answer: A

Watch Video Solution

39. Choose the correct statement

A. Law of conservation of linear-momentum is valid in the presence of an external

force also

B. For angular momentum of a system to remain constant, it is not necessary that external torque acting on it be zero.

C. Charge can be created and destroyed

D. A conservation law cannot be proved

Answer: D

 Watch Video Solution

40. Choose the correct statement.

A. Syrnmetry of nature w.r.t translation in time is equivalent to law of conservation of energy

B. Symmetry of nature w.r.t. translation in space is equivalent to law of conservation of linear momentum

C. Isotropy of space is equivalent lo law of conservation of angular momentum

D. All of these

Answer: D

Watch Video Solution

Assignment Section B

1. A : Quark-quark force is said to be fundamental force instead of strong nuclear force.

R : Nucleons consist of more fundamental particles known as quarks.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: A

Watch Video Solution

2. A : Gravitational force dominates terrestrial phenomena.

R : Matter is mostly electrically neutral and gravitational force are only of attractive nature.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: A

 Watch Video Solution

3. A: Gravitational force is always attractive but electromagnetic force can be attractive or repulsive:

R : Mass comes only in one variety (there is no negative mass) but charge comes in two varieties. (Positive and negative charge)

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: A

Watch Video Solution

4. A : If m and m_e are moving mass, rest mass of a body and c is velocity of light, then kinetic energy of the body is $E = (m - m_0)c^2$

R : Total energy of a body is sum of kinetic energy and rest mass energy.

A. If both Assertion & Reason are true and the reason is the correct explanation of

the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3).

D. If both Assertion and Reason are false statements, then mark (4).

Answer: A

Watch Video Solution