Step Academy official

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STUDENT NAME	
PAPER CODE	18304
TIME ALLOWED	
Paper Date	

CLASS	9th
SUBJECT	Physics
TOTAL MARKS	
Paper Type	

Choose the correct answer.

I While of the following numbers show 4 significant digits.

(A) 9000.8 **(B)** 4 **(C)** 5174.00 **(D)** 0.001248

II Amount of a substance in terms of numbers is measured in.

(A) Gram **(B)** Kilogram **(C)** Newton **(D)** Mole

III The number of significant figures in 0.00650s are.

(A) 2 **(B)** 3 **(C)** 5 **(D)** 6

IV
Least count of screw gauge is 0.01 mm. If main scale reading of screw gauge is zero and third line of its circular scale coincides with datum line then the measurement on the screw gauge is.

(A) 0 mm **(B)** 3 mm **(C)** 0.03 mm **(D)** 0.3 mm

V 0.2 mm in units of meters is.

(A) 0.0002 m **(B)** 2×10^4 m **(C)** Both A & B **(D)** None of these

VI Which of following prefix represents largest value?

(A) Mega **(B)** Pico **(C)** Peta **(D)** Kilo

VII Which of the following is a base unit?

(A) Pascal **(B)** Coulomb **(C)** Meter per second **(D)** Mole

VIII Micro meter can be used to measure.

(A) Current **(B)** Force **(C)** Length **(D)** Mass

IX 9.483×10^3 m is the standard form of

(A) 94.83 m **(B)** 9.483 m **(C)** 948.3 m **(D)** 9483 m

X The numbers having one significant digit is.

(A) 1.1 **(B)** 6.0 **(C)** 7.1 **(D)** 6×10^2

XI

Which one of the following unit is not a derived unit?

(A) Pascal **(B)** Kilogram **(C)** Newton **(D)** Watt

XII Ratio of millimeter to micrometer is.

(A) 1000 m **(B)** 0.001 meter **(C)** 1000 **(D)** 0.001

XIII Change in position of a body from initial to final point is called.

(A) Distance **(B)** Displacement **(C)** Speed **(D)** Velocity

XIV Ball dropped freely from a tower reaches ground in 4 s, the speed of impact of ball is.

(A) 0 m/s **(B)** 2.45 m/s **(C)** 19.6 m/s **(D)** 39.2 m/s

XV Area under speed-time graph is equal to _____ of moving body.

(A) Distance **(B)** Change in velocity **(C)** Uniform velocity **(D)** Acceleration

XVI
A car is moving with velocity of 10 m/s. If it has acceleration of 2 m/s^2 for 10 seconds. What is final velocity of the car?

(A) 30 m/s **(B)** 20 m/s **(C)** 10 m/s **(D)** 15 m/s

XVII If a cyclist has acceleration of 2 m/s^2 for 5 seconds, the change in velocity of the cyclist is.

(A) 2 m/s **(B)** 10 m/s **(C)** 20 m/s **(D)** 15 m/s

XVIII When the slope of a body's displacement-time graph increases, the body is moving with.

(A) Increasing velocity **(B)** Decreasing velocity **(C)** Constant velocity **(D)** All of these

XIX
A rider is training a horse. Horse moves 60 meters towards right in 3 seconds. Then it turns back and travels 30 meters in 2 seconds. Find its average velocity.

(A) 6 m/s **(B)** 18 m/s **(C)** 35 m/s **(D)** 0 m/s

XX
A cyclist is travelling in a westward direction and produces a deceleration of 8 m/s^2 to stop. The direction of its acceleration is towards.

(A) North **(B)** East **(C)** South **(D)** West

XXI
A girl walks 3 km towards west and 4 km towards south. What is the magnitude of her total distance and displacement respectively?

(A) 7 km, 7 km **(B)** 1 km, 7 km **(C)** 7 km, 1 km **(D)** 7 km, 5 km

XXII In 5 s a car accelerates so that its velocity increases by 20 m/s. The acceleration is.

(A) 0.25 m/s^2 **(B)** 4 m/s^2 **(C)** 25 m/s^2 **(D)** 100 m/s^2

XXIII Slope of distance-time graph is.

(A) Velocity **(B)** Acceleration **(C)** Speed **(D)** Displacement

XXIV Motion of a screw of rotating fan is.

(A) Circular motion **(B)** Vibratory motion **(C)** Random motion **(D)** Rotatory motion

XXV SI unit of linear momentum is.

(A) $kgm^{-1}s^{-1}$ **(B)** kgm^2s^{-2} **(C)** N m **(D)** kg m s^{-1}

XXVI Inertia of a body is related to which of the following quantities.

(A) Mass **(B)** Force **(C)** Weight **(D)** Friction

XXVII N kg^{-1} is equivalent to.

(A) m s^{-1} **(B)** m s^{-2} **(C)** kg m s^{-1} **(D)** kg m s^{-2}

XXVIII A force of 5N is applied to a body weighting 10N. Its acceleration in m/s^2 is.

(A) 0.5 **(B)** 2 **(C)** 5 **(D)** 50

XXIX

A bucket having some water is revolved in vertical circle. Water does not spill out, even the bucket is upside down, due to.

(A) Weight of water **(B)** Centrifugal force on water **(C)** Inertia of water **(D)** Action and Reaction balance each other

XXX

A force acts on a body for 2 seconds and it produces 50 kg m/s change in its momentum. The force acting on the body is.

(A) 100 N **(B)** 50 N **(C)** 25 N **(D)** 2 N

XXXI Thrust force is a consequence of which law of motion.

(A) First **(B)** Second **(C)** Third **(D)** Fourth

XXXII At the fairground, the force that balances your weight is.

(A) Gravitational force **(B)** Centripetal force **(C)** Electrostatic force **(D)** Frictional force

XXXIII Net force on the body falling in air with uniform velocity is equal to _____.

(A) Weight of the body **(B)** Are resistance on the body **(C)** Difference of weight of body and air resistance on it **(D)** Zero

XXXIV The force which moves the car is.

(A) Force developed by engine **(B)** Force of friction between road tyre **(C)** Uniform velocity **(D)** Water split on the road

XXXV When a hanging carpet is beaten by stick. Dust flies off the carpet. It is mainly due to.

(A) Action force on carpet **(B)** Reaction force by carpet **(C)** Inertia of dust **(D)** Rate of change of momentum of carpet

XXXVI Change in momentum of a body is equal to.

(A) (force) (velocity) **(B)** (force)(time) **(C)** (mass)(time) **(D)** force

XXXVII
The reason that a car moving on a horizontal road gets thrown out of the road while taking a turn is.

(A) The reaction of the ground **(B)** Rolling friction between tyre and road **(C)** Lack of sufficient centripetal force **(D)** Gravitational force

XXXVIII
A tightrope walker is carrying a long pole while walking across a rope. The stability of the walker is affected if the pole is.

(A) Long and placed vertically **(B)** Long and placed horizontally **(C)** Short and placed vertically **(D)** Short and placed horizontally

XXXIX
If a body is at rest or moving with uniform rotational velocity, then torque acting on the body will be.

(A) Maximum **(B)** Minimum **(C)** Zero **(D)** Infinite

XL A uniformly rotating fan is said to be in.

(A) Static equilibrium only **(B)** Both in static and dynamic equilibrium **(C)** Not in equilibrium **(D)** Dynamic equilibrium only

XLI
A seesaw balances perfectly with two children of equal weight sitting at equal distances from the fulcrum. If one child moves closer to the fulcrum.

(A) The seesaw remains balanced

(B) The seesaw tips towards the child who moved closer

(C) The seesaw tips towards the child who stayed further away

(D) The seesaw topples

XLII For an object moving with terminal velocity, its acceleration.

(A) Increases with time **(B)** Decreases with time **(C)** Is zero **(D)** First increase then decreases

XLIII A body in equilibrium must not have.

(A) Speed **(B)** Quantity of motion **(C)** Velocity **(D)** Acceleration

XLIV
A satellite of mass 'm' is revolving around the earth with an orbital speed 'V' . If mass of satellite is doubled, its orbital speed will become.

(A) Double **(B)** Half **(C)** One fourth **(D)** Remain the same

XLV The force that always changes direction of velocity and not its magnitude is called.

(A) Gravitational force **(B)** Electric force **(C)** Centripetal force **(D)** Friction

XLVI
You throw a weighted fishing net into a calm lake. As the net sinks, it opens fully underwater, spreading out its mesh evenly. Compared to the moment it left your hand, where is the net's center of mass now?

(A) Higher in the water column

(B) Lower in the water column

(C) At the same depth but slightly shifted horizontally

(D) Unchanged from its position when thrown

XLVII
When line of action of the applied force passes through its pivot point then moment of force acting on the body is.

(A) Maximum **(B)** Minimum **(C)** Zero **(D)** Infinite

XLVIII The correct order of comparison for the terminal speeds of a raindrop, snowflake and hailstone is.

(A) Raindrop > Snowflake > Hailstone

(B) Hailstone > Raindrop > Snow flake

(C) Snowflake > Raindrop > Hailstone

(D) Raindrop = Snowflake = Hailstone

XLIX Divers wear special suits in order to protect them from.

(A) Low pressure **(B)** High pressure **(C)** Low temperature **(D)** High temperature

L A mass of 2 kg is hung by spring, which displaces it through 5 cm. The spring constant is.

(A) 400 N/m **(B)** 40 N/m **(C)** 4 N/m **(D)** 4000 N/m

LI Atmospheric pressure is commonly measured using a.

(A) Hygrometer **(B)** Barometer **(C)** Nanometer **(D)** Thermometer

LII Pressure of 1 mm Hg is equal to.

(A) 1.316×10^{-3} atm **(B)** 1 atm **(C)** 133.29 atm **(D)** 1.316×10^{5} atm

LIII The pressure exerted by a man on the surface of earth will be smaller when he.

(A) Sleeps on the ground **(B)** Stands on both feet **(C)** Sits on the ground **(D)** Stands on one leg

LIV
A girl of mass 50 kg wear heels with an area of 2 cm^2 in contact with the ground. The pressure she exerts on ground is.

(A) 4×10^{-5} Pa **(B)** 245×10^{4} Pa **(C)** 4×10^{-4} Pa **(D)** 4×10^{5} Pa

LV SI unit of pressure is.

(A) Bar **(B)** Newton **(C)** Psi **(D)** Pascal

LVI Hooke's law hold good up to.

(A) Proportional limit **(B)** Yield limit **(C)** Elastic limit **(D)** Plastic limit

LVII The atmospheric pressure will be smaller at.

(A) Islamabad **(B)** Peshawar **(C)** Lahore **(D)** Murree

LVIII
Materials which does not regain its original shape after removal of the load producing deformation are termed as.

(A) Elastic materials **(B)** Plastic materials **(C)** Rigid materials **(D)** Hooke's materials

LIX In a stationary fluid, the local pressure of the fluid vary.

(A) With depth only **(B)** Horizontally only **(C)** Both with depth and along horizontal direction **(D)** Neither with depth nor along horizontal direction

LX A ball is thrown downward with an initial velocity, its

(A) E_k increases & E_p decreases **(B)** E_k decreases & E_p increases **(C)** Both E_k & E_p increases **(D)** Both E_k & E_p decreases

LXI A practical engine cannot have an efficiency equal to.

(A) 0 **(B)** 0.5 **(C)** 0.8 **(D)** 1

LXII

A weight lifter of power 1960 watt lifts a load of mass "M" from the ground to a height of 2 m in 3 second. "M" is.

(A) 100 kg **(B)** 200 kg **(C)** 300 kg **(D)** 400 kg

LXIII Kinetic energy and potential energy are two basic forms of.

(A) Nuclear energy **(B)** Electric energy **(C)** Magnetic energy **(D)** Mechanical energy

LXIV Joule (J) is the unit of work is equal to.

(A) Newton **(B)** kg ms^{-2} **(C)** Watt second **(D)** Newton second

LXV The SI unit of power

(A) Joule **(B)** Watt **(C)** Newton **(D)** Energy

LXVI
A car, an elephant and a cricket ball have same kinetic energies. Which of these have greater speed?

(A) Car **(B)** Elephant **(C)** Cricket ball **(D)** All have same speed

LXVII Power is a.

(A) Scalar quantity **(B)** Vector quantity **(C)** Fixed quantity **(D)** Fundamental quantity

LXVIII A body of weight 100 N is lifted to height 10 meter in 2 seconds. What is its potential energy?

(A) 100 J **(B)** 500 J **(C)** 1000 J **(D)** 2000 J

LXIX A heavy and a lighter object have same momenta. The object with greater kinetic energy is.

(A) Lighter **(B)** Heavy **(C)** Same kinetic energy **(D)** Either a or b

LXX 1 hp = _____ W.

(A) 756 W **(B)** 716 W **(C)** 736 W **(D)** 746 W

LXXI A force is acting on body but causes no displacement. The work down on the body is.

(A) Positive **(B)** Negative **(C)** Zero **(D)** Infinite

LXXII
A 4 kg body is thrown vertically upward from the ground with a velocity of 5 ms^{-1}. If friction is neglected its kinetic energy just before hitting the ground is.

(A) 25 J **(B)** 50 J **(C)** 75 J **(D)** 100 J

LXXIII How many phases of mater are there?

(A) 1 **(B)** 2 **(C)** 3 **(D)** 4

LXXIV Which of the following in not a form of internal energy?

(A) A kinetic energy of the particles

(B) Potential energy of the particles

(C) Chemical energy of the bonds between the particles

(D) Light energy

LXXV Thermometer, which is most suitable for measuring rapid changing temperatures, is.

(A) Constant volume gas thermometer

(B) Resistance thermometer

(C) Liquid in glass thermometer

(D) Thermocouple

LXXVI When an ideal gas is expanded keeping its temperature constant, its internal energy.

(A) Increases **(B)** Decreases **(C)** Remains the same **(D)** Cannot be determined

LXXVII
Mercury has uniform linear expansion in liquid in glass thermometers. A liquid in glass thermometer has a mercury level of 2 cm at melting point of ice and a mercury level of 6 cm at boiling point of water. What is the distance between every 1^0 C division on Celsius scale of thermometer?

(A) 0.04 cm **(B)** 0.06 cm **(C)** 0.08 cm **(D)** 1.00 cm

LXXVIII What happens to the arrangement of particles when a solid is heated and turns into a liquid?

(A) Particles become more closely packed

(B) Particles move farther apart

(C) Particles start vibrating in fixed positions

(D) Particles change their state from solid to gas

LXXIX Which Statement describes the particles structure of gases?

(A) Particles are tightly packed and have strong bonds

(B) Particles have moderate kinetic energy and move randomly

(C) Particles are arranged in a repeating pattern

(D) Particles have fixed positions and low kinetic energy

LXXX Gases and liquids are categorized as.

(A) Liquids **(B)** Gases **(C)** Fluids **(D)** Solids

LXXXI In which of the materials, particles have only vibrational motion?

(A) Solid **(B)** Liquids **(C)** Gas **(D)** Plasma

LXXXII What is mass of a liquid of density 50 kg m^{-3} in a container of volume 5 m^3?

(A) 200 kg **(B)** 225 kg **(C)** 250 kg **(D)** 275 kg

LXXXIII Which of the following can increase the sensitivity of liquid in glass thermometer?

(A) Use a bigger bulb which contains more amount of liquids

(B) Use a longer capillary tube

(C) Using long specific its

(D) Changes colour on temperature

LXXXIV Which state of matter has particles that are highly compressible and can fill any container?

(A) Solid **(B)** Liquid **(C)** Gas **(D)** Plasma

LXXXV If a bar magnet is cut in half it will become.

(A) a monopole **(B)** magnetized **(C)** the same magnet **(D)** magnet of less strength

LXXXVI Which one is the quickest method to magnetize a material?

(A) strike with hammer **(B)** moving into magnetic field **(C)** stroking the opposite pole **(D)** putting inside a current carrying coil

LXXXVII
When two current carrying wires in the same direction are placed parallel near each other, due to magnetic field produced by each wire they.

(A) repel each other **(B)** attract each other **(C)** have no effect on each other **(D)** stop moving the current through them

LXXXVIII Earth's magnetic field intensity is.

(A) constant every ware **(B)** very high at equator **(C)** very low at poles **(D)** varies place to place

LXXXIX Magnetic field lines.

(A) are farthest at poles **(B)** intersect each other **(C)** are closed **(D)** do not pass in vacuum

XC Which of the following material is ferromagnetic?

(A) silver **(B)** copper **(C)** aluminum **(D)** nickel

XCI
A sensitive magnetic material is to shielded by the external magnetic field. It should be kept inside a box of.

(A) wood **(B)** plastic **(C)** steel **(D)** soft iron

XCII The cause of the Earth's magnetic field is.

(A) rotational motion of Earth **(B)** spinning of Earth **(C)** pull of the sun **(D)** motion of ions in the core

XCIII The Brach of Physics that is most important when studying how glasses help people see.

(A) Thermodynamics **(B)** Electromagnetism **(C)** Mechanics **(D)** Optics

XCIV When studying how air conditioners cool your house, then it is.

(A) Thermodynamic **(B)** Electromagnetism **(C)** Nuclear Physics **(D)** Optics

XCV The branch of Physics that deals with the particles such as neutrons and protons.

(A) Solid State Physics **(B)** Plasma Physics **(C)** Electricity **(D)** Nuclear Physics

XCVI Which branch of science plays an important role in engineering?

(A) Biology **(B)** Chemistry **(C)** Physics **(D)** Life science

XCVII Physics is one of the branches of.

(A) Physical sciences **(B)** Biological sciences **(C)** Social science **(D)** Life science

XCVIII Material which is the best one for making an electromagnet.

(A) soft iron **(B)** nickel **(C)** cobalt **(D)** steel

XCIX Which thermometer uses voltage to measure temperature of a hot body?

(A) Thermocouple **(B)** Resistance thermometer **(C)** Liquid in glass thermometer **(D)** Gas thermometer

C A box is taken to the second floor of a building by doing some work. This work converts to.

(A) Kinetic energy **(B)** Potential energy **(C)** Heat energy **(D)** Sound energy

Write short answers of the following questions.

1 . How physics plays an important role in our life?

2 .
What base quantities are involved in these derived physical quantities; force, pressure, power and charge.

3 . Justify that displacement is a vector quantity while energy is a scalar quantity.

4 . Differentiate between mechanical stop watch and digital stop watch.

5 . What precaution should be kept in mind while taking measurement using measuring cylinder?

6 . How random error can be reduced?

7 . How many kilometers are there in 25 micrometers?

8 . Express the following measurements using prefixes. (a) 27.5×10^{-10} m (b) 0.00023×10^{-2} s

9 .
In a park, children are enjoying a ride on Ferris wheels as shone. What kind of motion the big wheel has and what kind of motion the riders have?

10 . A stone tied to string is whirling in circle, what is direction of its velocity at any instant?

11 . Can a car moving towards right have direction of acceleration towards left?

12 .

Which controls in the car can produce acceleration or deceleration in it?

13 .
A stone tied to string is whirling in circle, what is direction of its velocity at any instant?


14 . How you will define the instantaneous speed?

15 .
When a motor cyclist hit a stationary car, he may fly off the motor cycle and driver in the car may get neck injury. Explain.

16 . Why it is not safe to apply brakes only on the front wheel of a bicycle?

17 .
Action and reaction are equal but opposite in direction. These forces always act in pair. Do they balances each other? Can bodies move under action - reaction pair.

18 .
How would you use Newton's 3rd law of motion and law of conservation of momentum to explain motion of rocket?

19 . Where will your weight be greater, near earth or near moon? What about mass?

20 .
A robotic car of 15 kg is moving with 25 m/s. Brakes are applied to stop it. Brakes apply constant force of 50 N. How long does the car take to stop?

21 . A girl of mass 30 kg is running with velocity of 4 m/s. Find her momentum.

22 .
Consider a situation where you swing a ball connected to a string in a circle. How does the tension in the string vary as the ball moves across different points in its circular path, and what forces are involved?

23 .
Why is a pencil standing on its tip unstable, and what factors affect the stability of an object balanced on a point?

24 . Why a moving bicycle is easier to balance? Relate this to the principles of rotational motion.

25 .
Explain why it's easier to push a car on flat tyres than inflated ones. What happens to the frictional force between the tyres and the road?

26 .
If you drop a feather and a bowling ball from the same height, which one will reach the terminal velocity first? Which one of them will hit the ground first?

27 . Why is it important for communication satellites in geostationary orbit to maintain a specific speed?

28 .

How are we able to break a metal wire by bending it repeatedly?

29 .
While walking on a trampoline. Do you feel more pressure when you stand still or jump up and down? Why does pressure change with movement?

30 .
If you blow up a balloon and then tie it closed, why does it stay inflated even though you stop blowing? How does pressure play a role here?

31 . If a liquid has density twice the density of mercury, what will be height of liquid column in barometer?

32 . How much force should be applied on an area of 20 cm^2 to get a pressure of 4500 Pa?

33 .
Water column in a beaker is 70 cm. Find the pressure of water in beaker. Take density of water as 1000 kg/m^3.

34 . A car is moving with a constant speed along a straight road. Is there any work done on the car?

35 . A car has Kinetic energy 'E_k'. What will be the effect on its kinetic energy if its velocity is doubled?

36 .
A bullet is fired from gun, bullet penetrates into sand wall and it stops. Where does its kinetic energy used?

37 . An energy saver bulb has efficiency of 80%. What does it mean?

38 . A particle energy has efficiency less than 1. Does it violate conservation of energy principle?

39 . What horsepower (hp) is required to pump up 2500 kg of water to 100 m height in 5 minutes?

40 .
A 2.0 kg rock is dropped from 20 m tall building. What is the kinetic and gravitational potential energy when the rock has fallen 15 m.

41 . Calculate the work done in pushing a box with 150 N through distance of 5m.

42 .
Two liquids A and B have densities 1 g/mL and 1.2 g/mL respectively. When both liquids are poured into a container one liquid floats on top of the other. Which liquid is on top, and why?

43 . How is plasma the fourth state of matter? Give a reason.

44 . Can we increase internal energy of a substance without increasing its temperature?

45 .
Mercury is replaced with alcohol in liquid in glass thermometer. Discuss the possible change in sensitivity and range of thermometer?

46 .
Why thermocouple thermometer is suitable to measure high temperatures good for measuring high temperatures but a liquid in glass thermometer is not?

47 .
One student claims to have constructed a more sensitive liquid in glass thermometer. How can her claim be verified?

48 . A 70 cm , 10 cm , 30 cm plastic box has mass of 2500 g. Find the density of plastic.

49 . Can two magnetic field lines intersect each other? Justify you answer.

50 .
A proton is also a charged particle and spins like an electron. Why its effect is neglected in study of magnetism?

51 . Why the Earth spins about its geographical axis instead of its magnetic axis? Explain.

52 . What is the difference between paramagnetic field of an electromagnet materials?

53 .
Draw magnetic field lines of two solenoids placed near each other (1) facing same poles to each other. (2) facing opposite poles to each other.

54 . Define the terms theory and law.

55 . What is the difference between classical mechanics and quantum mechanics?

56 . Which part of the study is not handled by the classical study of Physics?

57 . Define Biophysics. Also give two example.

58 . Define Optics. Also give two example.

59 . Define Nuclear Physics. Also give two example

60 . Define Computational Physics. Also give two example.

Write detailed answers of the following questions.

1 .
What are physical quantities? Distinguish between base physical quantities and derived physical quantities. Give at least three examples to show that derived physical quantities are derived from base physical quantities.

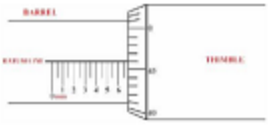
2 .
Differentiate between scalars and vectors. Justify that distance, speed, mass and energy are scalars while displacement, velocity, acceleration and force are vectors.

3 .
What is screw gauge? What is its pitch and least count? How is it used to measure thickness of thin copper wire?

4 .
What is screw gauge? What is its pitch and least count? How is it used to measure thickness of thin copper wire?

5 . Define Error. Differentiate between random and systematic error. How can these errors be reduced?

6 .
Look at the figure of screw gauge, let a small steel ball is place between its thimble and anvil then: (a) What is its main scale reading? (b) What is coinciding division of circular scale? (c) Calculate the total diameter of ball?



7 .
Differentiate between rest and motion. With the help of example, show that rest and motion are relative to observer?

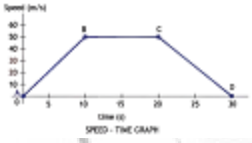
8 .
Differentiate between speed and velocity. Also define average speed, uniform and variable speeds, average velocity, uniform and variable velocities, acceleration and its types.

9 .
What are scalars and vectors? Give examples. How are vectors represented symbolically and graphically?

10 . Draw distance-time graphs for rest, uniform speed, increasing speed and decreasing speed.

11 .
If two stones of 10kg are dropped from a 1 km high tower. Which will hit the ground with greater velocity? Which will hit the ground first? (Neglect the air resistance)

12 .
Consider the following speed time graph. Tell (a) Which part of the graph is showing acceleration, decoration and zero acceleration? (b) Calculate covered distance from 10 seconds to 20 seconds from the graph.



13 .
In 10 seconds, a cyclist increases its speed from 5 km/h to 7 km/h, while a car moves from rest to 20 km/h in same time. Calculate and compare acceleration in each case.

14 . State Newton's 3rd law of motion. Explain with examples from daily life.

15 . Define isolated system. State law of conservation of linear momentum. Explain with example.

16 .
A boy is holding of mass 2 kg. How much force is he applying on the book? If he moves it up with acceleration of 3 m/s^2, How much should he apply total force in the book?

17 .
Define and Explain center of gravity. Where will be center of gravity of these regular shape bodies; circular plate, rectangular and square shaped plate, triangular shaped plate, cylinder, sphere (also draw figures to support your answer). Differentiate between center of mass and center of gravity.

18 .

Propose how the stability of an object can be improved. Illustrate the applications of stability of physics in real life.

19 . Differentiate between like and unlike parallel forces.

20 .
Define force of friction. What causes friction? What are the advantages and disadvantages of friction? Explain with examples. How can friction be reduced.

21 .
Define centripetal force. Describe the motion of a body in a circular path under the action of centripetal force.

22 .
A car weighing 1200 kg enters a round about with a diameter of 60 meters at a speed of 25 km/h. Calculate the centripetal force acting on the car as it navigates the curve.

23 . Define elasticity and elastic limit. Show that a force may produce change in size and shape solids.

24 . Draw and explain force-extension graph for elastic solids.

25 .
Explain the term atmospheric pressure. With the help of an example, show that atmospheric pressure is applied equally in all directions?

26 .
State and Explain Pascal's law? Describe working principle of hydraulic lift using Pascal's law? What do you mean by force multiplier?

27 .
A hydraulic car lifter lifts a car of mass 1000 kg when we apply force of 50 N on small piston. Radius of its small piston is 20 cm. Find the radius of its large piston.

28 . Define work and its S.I. units.

29 . Define mechanical energy? What are its different Types?

30 .
Define potential energy? What are its different types? Define gravitational potential energy. Derive its expression.

31 .
Explain renewable and non-renewable energy sources with examples. Write down advantages and disadvantages of each in reference to their availability and environmental impact.

32 . Define and Explain efficiency of a machine. Why efficiency of machines can never be unity or 100%?

33 .
Define density. Describe methods to determine densities of regular and irregular-shaped solids, liquids and gases.

34 . Define and Explain internal Energy of a substance.

35 .

Explain sensitivity, range and linearity of the thermometer in detail.

36 .
A cube of iron has a side length of 10 cm. What is volume of this cube? Mass of this iron cube is half kilogram. This cube has cavity inside it. Find the volume of the cavity.

37 . Explain three types of magnetic materials.

38 . Explain how birds and other migrating animal use Earth's magnetic field to navigate.

39 . Discuss the importance of Physics in our daily life

40 . Explain the terms, hypothesis, theory and law with examples.