2025-26

Physics 9

Comprehensive Notes with Short Questions, Long Questions, MCQs, and Problems

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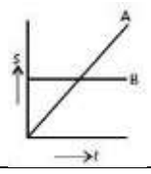
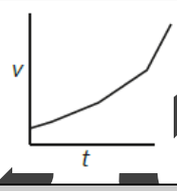
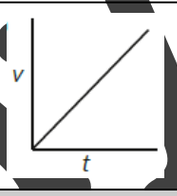
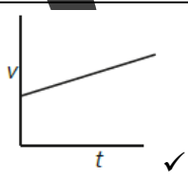
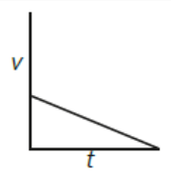
MCQs

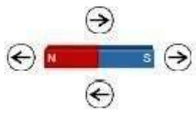
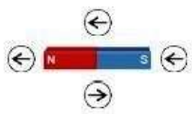
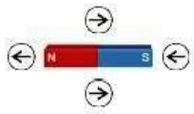
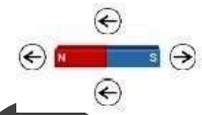
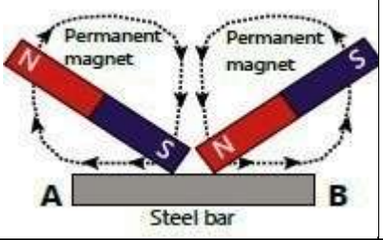
Sr. No.	Questions	A	B	C	D
1	The instrument that is most suitable for measuring the thickness of a few sheets of cardboard is:	metre rule	measuring tape	Vernier Callipers	micrometer screw gauge✓
2	One femtometre is equal to:	$10^{-9}\ m$	$10^{-15}\ m$✓	$10^{9}\ m$	$10^{15}\ m$
3	A light year is a unit of:	light	time	distance✓	speed
4	Which one is a non-physical quantity?	distance	density	colour✓	temperature
5	When using a measuring cylinder, one precaution to take is to:	check for the zero error	look at the meniscus from below the level of the water surface	take several readings by looking from more than one direction	position the eye in line with the bottom of the meniscus✓
6	Volume of water consumed by you per day is estimated in:	millilitre	litre✓	kilogram	cubic metre
7	A displacement can be used to measure:	mass of a liquid	mass of a solid	volume of a liquid	volume of a solid✓
8	Two rods with lengths $12.321\ cm$ and $10.3\ cm$ are placed side by side, the difference in their lengths is:	$2.02\ cm$	$2.0\ cm$	$2\ cm$	$2.021\ cm$✓
9	Four students measure the diameter of a cylinder with Vernier Callipers. Which of the following readings is correct?	$3.4\ cm$	$3.475\ cm$	$3.47\ cm$ ✓	$3.5\ cm$
10	Which of the following measures are likely to represent the thickness of a sheet of this book?	$6 \times 10^{-25}\ m$	$1 \times 10^{-4}\ m$✓	$1.2 \times 10^{-15}\ m$	$4 \times 10^{-2}\ m$
11	In a Vernier Callipers ten smallest divisions of the Vernier scale are equal to nine smallest divisions of the main scale. If the smallest division of the main scale is half millimetre, the Vernier constant is equal to:	$0.5\ mm$	$0.1\ mm$	$0.05\ mm$ ✓	$0.001\ mm$
12	The numerical ratio of displacement to distance is:	always less than one	always equal to one	always greater than one	equal to or less than one✓
13	If a body does not change its position with respect to some fixed point, then it will be in a state of:	rest✓	motion	uniform motion	variable motion
14	A ball is dropped from the top of a tower, the distance covered by it in the first second is:	$5\ m$ ✓	$10\ m$	$50\ m$	$100\ m$

15	A body accelerates from rest to a velocity of 144 kmh^{-1} in 20 $seconds$. The distance covered by it is:	$100\ m$	$400\ m$ ✓	$1400\ m$	$1440\ m$
16	A body is moving with constant acceleration starting from rest. It covers a distance S in 4 $seconds$. How much time does it take to cover one-fourth of this distance?	$1\ s$	$2\ s$ ✓	$4\ s$	$16\ s$
17	The displacement time graphs of two objects A and B are shown in the figure. Point out the true statement from the following: 	The velocity of A is greater than B✓	The velocity of A is less than B	The velocity of A is equal to that of B	The graph gives no information in this regard
18	The area under the speed–time graph is numerically equal to:	velocity	uniform velocity	acceleration	distance covered✓
19	Gradient of the speed–time graph is equal to:	speed	velocity	acceleration✓	distance covered
20	Gradient of the distance–time graph is equal to the:	speed✓	velocity	distance covered	acceleration
21	A car accelerates uniformly from 80.5 kmh^{-1} at $t = 0$ to 113 kmh^{-1} at $t = 9\ s$. Which graph best describes the motion of the car?			 ✓	
22	When we kick a stone, we get hurt. This is due to:	inertia	velocity	momentum	reaction✓
23	An object will continue its motion with constant acceleration until:	the resultant force on it begins to decrease.	the resultant force on it is zero. ✓	the resultant force on it begins to increase.	the resultant force is at right angle to its tangential velocity.
24	Which of the following is a non-contact force?	Friction	Air resistance	Electrostatic force✓	Tension in the string
25	A ball with initial momentum p hits a solid wall and bounces back with the same velocity. Its momentum p' after collision will be:	$p' = p$	$p' = -p$✓	$p' = 2p$	$p' = -2p$
26	A particle of mass m moving with velocity v collides with another particle of the same mass at rest. The velocity of the first particle after collision is:	v	$-v$	0 ✓	$-\frac{1}{2}$
27	Conservation of linear momentum is equivalent to:	Newton's first law of motion	Newton's second law of motion	Newton's third law of motion✓	None of these

28	An object with mass $5\,kg$ moves at constant velocity of $10\,ms^{-1}$. A constant force acts for $5\,s$ and gives it a velocity of $2\,ms^{-1}$ in opposite direction. Force acting is:	$5\,N$	$-10\,N$	$-12\,N$ ✓	$-15\,N$
29	A large force acts on an object for a short time. In this case, It is easy to determine:	magnitude of force	time interval	product of force and time ✓	none of these
30	A lubricant is usually introduced between two surfaces to decrease friction. The lubricant:	decreases temperature	acts as ball bearings	prevents direct contact of the surfaces ✓	provides rolling friction
31	A particle is simultaneously acted upon by two forces of 4 and 3 newtons. The net force on the particle is:	$1\,N$	between $1\,N$ and $7\,N$ ✓	$5\,N$	$7\,N$
32	A force F is making an angle of 60° with $x\text{-}axis$. Its $y\text{-}component$ is equal to:	F	$F\sin 60^\circ$ ✓	$F\cos 60^\circ$	$F\tan 60^\circ$
33	Moment of force is called:	moment arm	couple	couple arm	torque ✓
34	If F_1 and F_2, are the forces acting on a body and τ is the torque produced in it, the body will be completely in equilibrium, when:	$\sum F = 0$ and $\sum \tau = 0$ ✓	$\sum F = 0$ and $\sum \tau \neq 0$	$\sum F \neq 0$ and $\sum \tau = 0$	$\sum F \neq 0$ and $\sum \tau \neq 0$
35	A Shopkeeper sells his articles by a balance having unequal arms of the pans. If he puts the weights in the pan having shorter arm, then the customer:	loses ✓	gains	neither loses nor gains	not certain
36	A man walks on a tight rope. He balances himself by holding a bamboo stick horizontally. It is an application of:	law of conservation of momentum	Newton's second law of motion	principle of moments ✓	Newton's third law of motion
37	In stable equilibrium the centre of gravity of the body lies:	at the highest position	at the lowest position ✓	at any position	outside the body
38	The centre of mass of a body:	lies always inside the body	lies always outside the body	lies always on the surface of the body	may lie within, outside or on the surface ✓
39	A cylinder resting on its circular base is in:	stable equilibrium ✓	unstable equilibrium	neutral equilibrium	none of these
40	Centripetal force is given by:	rF	$rF\cos\theta$	$\frac{mv^2}{r}$ ✓	$\frac{mv}{r}$
41	Work done is maximum when the angle between the force F and the displacement d is:	0° ✓	30°	60°	90°
42	A joule can also be written as:	$kg\,ms^{-2}$	$kg\,ms^{-1}$	$kg\,m^2s^{-3}$	$kg\,m^2s^{-2}$ ✓

43	The SI unit of power is:	joule	newton	watt✓	second
44	The power of a water pump is $2\,kW$. The amount of water it can raise in one minute to a height of $5\,metres$ is:	$1000\,litres$	$1200\,litres$	$2000\,litres$	$2400\,litres$ ✓
45	A bullet of mass $0.05\,kg$ has a speed of $300\,ms^{-1}$. Its kinetic energy will be:	$2250\,J$ ✓	$4500\,J$	$1500\,J$	$1125\,J$
46	If a car doubles its speed, its kinetic energy will be:	the same	doubled	increased to three times	increased to four times✓
47	The energy possessed by a body by virtue of its position is:	kinetic energy	potential energy✓	chemical energy	solar energy
48	The magnitude of momentum of an object is doubled, the kinetic energy of the object will:	double	increase to four times✓	reduce to one-half	remain the same
49	Which of the following is not renewable energy source?	Hydroelectric energy	Fossil fuels✓	Wind energy	Solar energy
50	A wire is stretched by a weight w. If the diameter of the wire is reduced to half of its previous value, the extension will become:	one half	double	one fourth	four times✓
51	Four wires of the same material are stretched by the same load. Their dimensions are given below. Which of them will elongate most?	Length $1\,m$, diameter $1\,mm$	Length $2\,m$, diameter $2\,mm$	Length $3\,m$, diameter $3\,mm$	Length $4\,m$, diameter $0.5\,mm$✓
52	Two metal plates of area 2 and 3 square metres are placed in a liquid at the same depth. The ratio of pressures on the two plates is:	$1:1$ ✓	$\sqrt{2}:\sqrt{3}$	$2:3$	$4:9$
53	The pressure at any point in a liquid is proportional to:	density of the liquid	depth of the point below the surface of the liquid	acceleration due to gravity	all of the above✓
54	Pressure applied to an enclosed fluid is:	increased and applied to every part of the fluid	diminished and transmitted to the walls of container	increased in proportional to the mass of fluid and then transmitted to each part of the fluid	transmitted unchanged to every portion of the fluid and walls of containing vessel✓
55	The principle of a hydraulic press is based on:	Hooke's law	Pascal's law✓	Principle of conservation of energy	Principle of conservation of momentum

56	When a spring is compressed, what form of energy does it possess?	Kinetic	Potential✓	Internal	Heat
57	What is the force exerted by the atmosphere on a rectangular block surface of length $50\ cm$ and breadth $40\ cm$? The atmospheric pressure is $100\ kPa$.	$20\ kN$ ✓	$100\ kN$	$200\ kN$	$500\ kN$
58	How do the molecules in a solid behave?	Move randomly	Vibrate about their mean positions✓	Rotate and vibrate randomly at their own positions	Move in a straight line from hot to cold ends
59	What type of motion is of the molecules in a gas?	Linear motion	Random motion✓	Vibratory motion	Rotatory motion
60	Temperature of a substance is:	the total amount of heat contained in it	the total number of molecules in it	degree of hotness or coldness✓	dependent upon the intermolecular distance
61	Heat is the:	total kinetic energy of the molecules	the internal energy	work done by the molecules	the energy in transit✓
62	In Kelvin scale, the temperature corresponding to melting point of ice is:	zero	32	-273	$+273$ ✓
63	The temperature which has the same value on Celsius and Fahrenheit scale is:	-40 ✓	$+40$	$+45$	-45
64	Which one is a better choice for a liquid-in-glass thermometer?	Is colourless	Is a bad conductor	Expand linearly✓	Wets glass
65	One disadvantage of using alcohol in a liquid-in-glass thermometer:	it has large expansivity	it has low freezing point (-112℃)	it wets the glass tube✓	its expansion is linear
66	Water is not used as a thermometric liquid mainly due to:	colourless	a bad conductor of heat	non-linear expansion✓	a low boiling point (100℃)
67	A thermometer has a narrow capillary tube so that it:	quickly responds to temperature changes	can read the maximum temperature	gives a large change for a given temperature rise✓	can measure a large range of temperature
68	Which thermometer is most suitable for recording rapidly varying temperature?	Thermocouple thermometer✓	Mercury-in-glass laboratory thermometer	Alcohol-in-glass thermometer	Mercury-in-glass clinical thermometer
69	Which one of the following is not a magnetic material?	Cobalt	Iron	Aluminium✓	Nickel
70	Magnetic lines of force:	are always directed in a straight line	cross one another	enter into the north pole	enter into the south pole✓

71	Permanent magnets cannot be made by:	soft iron✓	steel	neodymium	alnico
72	Permanent magnets are used in:	circuit breaker	loudspeaker✓	electric crane	magnetic recording
73	A common method used to magnetise a material is:	stroking✓	hitting	heating	placing inside a solenoid having $A.C$ current
74	A magnetic compass is placed around a bar magnet at four points as shown in the figure below. Which diagram would indicate the correct directions of the field?			 ✓	
75	A steel rod is magnetized by the double touch stroking method. Which one would be the correct polarity of the AB magnet? 	 ✓			
76	The best material to protect a device from external magnetic field is:	wood	plastic	steel	soft iron✓
77	Physics is a branch of:	Social science	Life science	Physical science✓	Biological science
78	Which branch of science plays vital role in technology and engineering?	Biology	Chemistry	Geology	Physics✓
79	Automobile technology is based on:	acoustics	electromagnetism	optics	thermodynamics ✓
80	A user friendly software application of smart phone use:	laser technology	information technology✓	medical technology	electronic technology
81	The working of refrigeration and air conditioning involves:	electromagnetism	mechanics	climate science	thermodynamics ✓
82	What is the ultimate truth of a scientific method?	Hypothesis	Experimentation	Theory	Law✓
83	The statement "If I do not study for this test, then I will not get good grade" is an example of:	theory	observation	prediction✓	law
84	Which of the following are methods of investigation?	Observation	Experimentation	Research	All of these✓
85	A hypothesis:	may or may not be testable	is supported by evidence	is a possible answer to a question	all of these✓
86	A graph of an organized data is an example of:	collecting data	forming a hypothesis	asking question	analyzing data✓
87	The colour of a door is brown. It is an example of:	observation✓	hypothesis	prediction	law