Class 11 Sample Paper 2024

AGLASEM.COM



aglasem.com

Practice Paper (Session: 2023-24)

Class: XI **Subject: Physics**

Duration:3 h **Maximum Marks:70**

General Instructions:

(1) There are 33 questions in all. All questions are compulsory.
(2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
(3) All the sections are compulsory.
(4) Section A contains sixteen questions, twelve MCQ and four Assertion Reasoning based of 1 mark each, Section B contains five questions of two marks each, Section C contains seven questions of three marks each, Section D contains two case study based questions of four marks each and Section E contains three long answer questions of five marks each.
(5) There is no overall choice. However, an internal choice has been provided in one question in Section B, one question in Section C, one question in each Case study based questions in Section D and all three questions in Section E. You have to attempt only one of the choices in such questions.
(6) Use of calculators is not allowed.

	खंड - A Section – A All questions are compulsory.
1	Which of the following changes, when a particle is moving with uniform velocity- a. Speed b. Velocity c. Acceleration d. Position vector
2	What is the power utilised when work of 1000 J is done in 2 seconds? a. 100 W b. 200 W c. 20 W d. 500 W

schools.aglasem.com

aglasem.com

3	Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground. a. 121.20 J b. 147.15 J c. 227.31 J d. 182.21 J
4	The temperature of a wire is doubled. Young's modulus of elasticity- a) will become four times b) will also double c) will remain the same d) will decrease
5	If the displacement of an object is zero, then what can we say about its distance covered? (a) It is negative (b) It is must be zero (c) It cannot be zero (d) It may or may not be zero
6	**3 × 10^8 m s^-1 has significant figures-** **a. 9** **b. 1** **c. 11** **d. 5**
7	The work performed on an object does not depend upon a the displacement. b the force applied. c the angle at which the force is applied to the displacement d initial velocity of the object.
8	**A rigid body is in mechanical equilibrium if** **a. it is in translational equilibrium.** **b. it is in rotational equilibrium.** **c. Both of the above** **d. None of the above**
9	**In pure translational motion at any instant of time, all particles of the body have the** **a. same velocity**

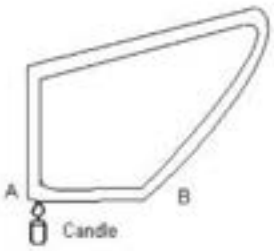
schools.aglasem.com

aglasem.com

	b. Different velocity c. Both above possible d. None of the above
10	In SI system the fundamental units are- a. metre, kilogram, second, ampere, Kelvin, mole and candela b. metre, kilogram, second, coulomb, joule, mole and candela c. metre, Newton, second, ampere, Kelvin, mole and candela d. metre, Tesla, second, Watt, Kelvin, mole and lux
11	Choose the wrong statement from the following- a) Small droplets of a liquid are spherical due to surface tension b) Oil rises through the wick due to capillarity c) In drinking the cold drinks through a straw ,we use the phenomenon of capillarity d) Gum is used to stick two surfaces . In this process we use the property of Adhesion.
12	The symbol to represent "Amount of Substance" is _____ a. K b. A c. S d. mol
	Directions: These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses. (a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion. (b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion. (c) If the Assertion is correct but Reason is incorrect. (d) If both the Assertion and Reason are incorrect.
13	Assertion:A vector quantity is a quantity that has both a magnitude and a direction and obeys the vector law of addition. Reason: Some physical quantities that are represented by scalars are displacement, velocity, acceleration and force.

schools.aglasem.com

aglasem.com

14	Assertion : Two particles of different mass, projected with same velocity at same angles. The maximum height attained by both the particles will be the same. Reason : The maximum height of the projectile is independent of particle mass.
15	Assertion : The scalar product of two vectors can be zero. Reason : If two vectors are perpendicular to each other, their scalar product can be zero.
16	Assertion : The maximum horizontal range of the projectile is proportional to square of velocity. Reason : The maximum horizontal range of the projectile is always equal to maximum height attained by projectile.
	Section – B All questions are compulsory.In case of internal choice,attempt any one.
17	a) Why do small bubbles have excess pressure? b) Water in a closed tube is heated with one arm vertically placed above an arc lamp. The water will begin to circulate along the tube in the anti clockwise direction. Is it true or false?Give a reason. 
18	Shipra went from her home to school 2.5km away. On finding her home closed she returned to her home immediately. What is her net displacement? What is the total distance covered by her?
19	Define the term centripetal force along with its formula .Give one example. OR Explain why (a) a horse cannot pull a cart and run in empty space

schools.aglasem.com

aglasem.com

	(b) it is easier to pull a lawnmower than to push it (c) a cricketer moves his hands backwards while holding a catch
20	A projectile is fired with a velocity u making an angle Θ with the horizontal.Derive expression for time of maximum height and time of flight.
21	During an experiment, an ideal gas is found to obey an additional law VP^2 = constant. The gas is initially at a temperature T and volumeV . When it expands to a volume 2V , what does the new temperature become?
	Section – C **All questions are compulsory.In case of internal choice,attempt any one.**
22	Find the length of a simple pendulum, which ticks in seconds? OR A body describes simple harmonic motion with an amplitude of 5 cm and a period of 0.2 s. Find acceleration and velocity of the body when the displacement is a)5 cm b) 3 cm
23	The sign of work done by a force on a body is important to understand. State carefully if the following quantities are positive or negative. (a) Work done by a man in lifting a bucket out of a well by means of a rope tied to the bucket. (b) Work done by the gravitational force in the above case. (c) Work done by friction on a body sliding down an inclined plane.

schools.aglasem.com

aglasem.com

24	a)Pick out the only vector quantity from the physical quantities given below- Temperature, pressure, impulse, time, power, total path b) If the two vectors A and B are acting along the same direction ,Find the magnitude of their resultant.
25	Define bulk modulus of a material. The spherical ball contracts in volume by 0.1% when subjected to a uniform normal pressure of 100 atmospheres to calculate the bulk modulus of material of the ball?
26	What happens to the potential energy when a. two protons are brought close together. b. One proton and one electron are brought close together? Answer both above with reason.
27	a) Why are bridges declared unsafe after long use? b) Why are springs made of steel not of copper?
28	At what distance from the mean position, is the kinetic energy in a simple harmonic oscillator equal to potential energy?
	Section – E Case Study All questions are compulsory.In case of internal choice,attempt any one.
29	Heat transfer is defined as the movement of heat across the border of the system due to a difference in temperature between the system and its surroundings. The temperature difference exists between the two systems, heat will find a way to transfer from the higher to the lower temperature. (i)When heat is transferred by molecular collision, it is referred to as heat transfer by: a)convection b)conduction c)radiation

schools.aglasem.com

aglasem.com

d)convection and radiation

(ii)At what factor heat absorbed by radiation by the body depends on?

a)distance between body

b)source of heat

c)its colour

d)all of the above

(iii) The sea breeze caused by:

a)conduction

b)convection

c)radiation

d)none of these

(iv) Thermal conductivity of air with rise in temperature:

a)increase

b)decrease

c)constant

d)none of these

OR

Mass transfer takes place in-

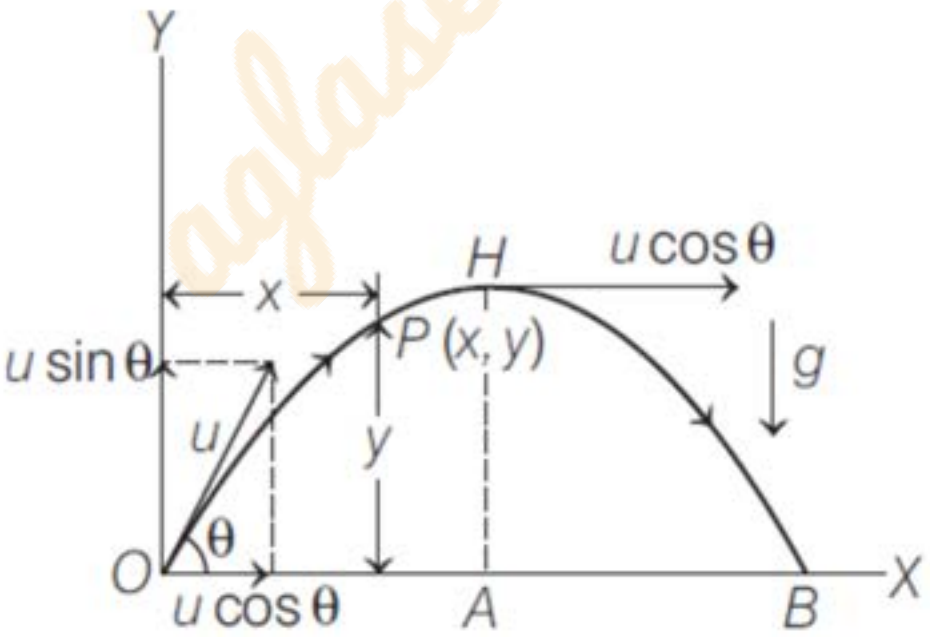
a)conduction

b)convection

aglasem.com

schools.aglasem.com

aglasem.com

	c)radiation d) Convection and radiation
30	When an object is thrown obliquely near the surface of the earth it will take a curved path under constant acceleration that is directed towards the centre of the earth. The path taken by the particle is called a projectile and the direction of motion is called projectile motion. When a particle is projected, the only force acting on the particle is the acceleration due to gravity.The path followed by a projectile is called its trajectory, which is shown below. When a projectile is projected obliquely, then its trajectory is as shown in the figure below-  i) A bullet is dropped from the same height when another bullet is fired horizontally. They will hit the ground a. Simultaneously b. Depends on the observer c. One after the other d. None of the above

schools.aglasem.com

aglasem.com

ii) A stone is just released from the window of a train moving along a horizontal straight track. The stone will hit the ground following

a. Hyperbolic path
b. Straight path
c. Circular path
d. Parabolic path

iii) The maximum range of gun on horizontal terrain is 16 km. If g = 10 m/s^2. What must be the muzzle velocity of the shell?

a. 400 m/s
b. 100 m/s
c. 200 m/s
d. 50 m/s

iv) In the projectile motion, if air resistance is ignored, the horizontal motion is at

(a) constant acceleration

(b) constant velocity

(b) variable acceleration

(d) constant retardation

OR

When do we get maximum range in a simple projectile motion?

(a) When θ = 45°

(b) When θ = 60°

(c) When θ = 90°

(d) When θ = 0°

Section – E

All questions are compulsory.In case of internal choice,attempt any one.

schools.aglasem.com

aglasem.com

31	a) Why does the temperature of a gas rise when the gas is suddenly compressed? Explain on the basis of the kinetic theory of gases. b) Why do molecules of air in a room not fall and settle on the ground under the action of gravity? OR a) When volume of a given mass of a gas is reduced at constant temperature, the gas pressure increases. How will you explain this fact on the basis of the kinetic theory of gases ? b) A certain mass of gas is enclosed in a container. When the temperature of the gas is raised, its pressure rises. How will you explain this on the basis of the kinetic theory of gases?
32	Assuming that the Earth's orbit is a circle of radius 1.5 x10^8 km. Calculate the mass of the sun. OR The change in the value of g at a height h above the Earth is same as at a depth d below it. If h and d are compared to the radius of the earth. What is the ratio (h/d) ?
33	a) Show that the coefficient of area expansions, (ΔA/A)/ΔT, of a rectangular sheet of the solid is twice its linear expansivity, α1. b) A blacksmith fixes an iron ring on the rim of the wooden wheel of a bullock cart. The diameter of the rim and the iron ring are 5.243 m and 5.231 m respectively at 27 °C. To what temperature should the ring be heated so as to fit the rim of the wheel? OR a)Explain why : (i) a body with large reflectivity is a poor emitter (ii) a brass tumbler feels much colder than a wooden tray on a chilly day b) The coefficient of volume expansion of glycerin is 49 x10^–5 K–1. What is the fractional change in its density for a 30 °C rise in temperature ?

schools.aglasem.com
AglaSem Earn while Learn Program. Send your papers and get paid.
Contact: support@aglasem.com
aglasem.com