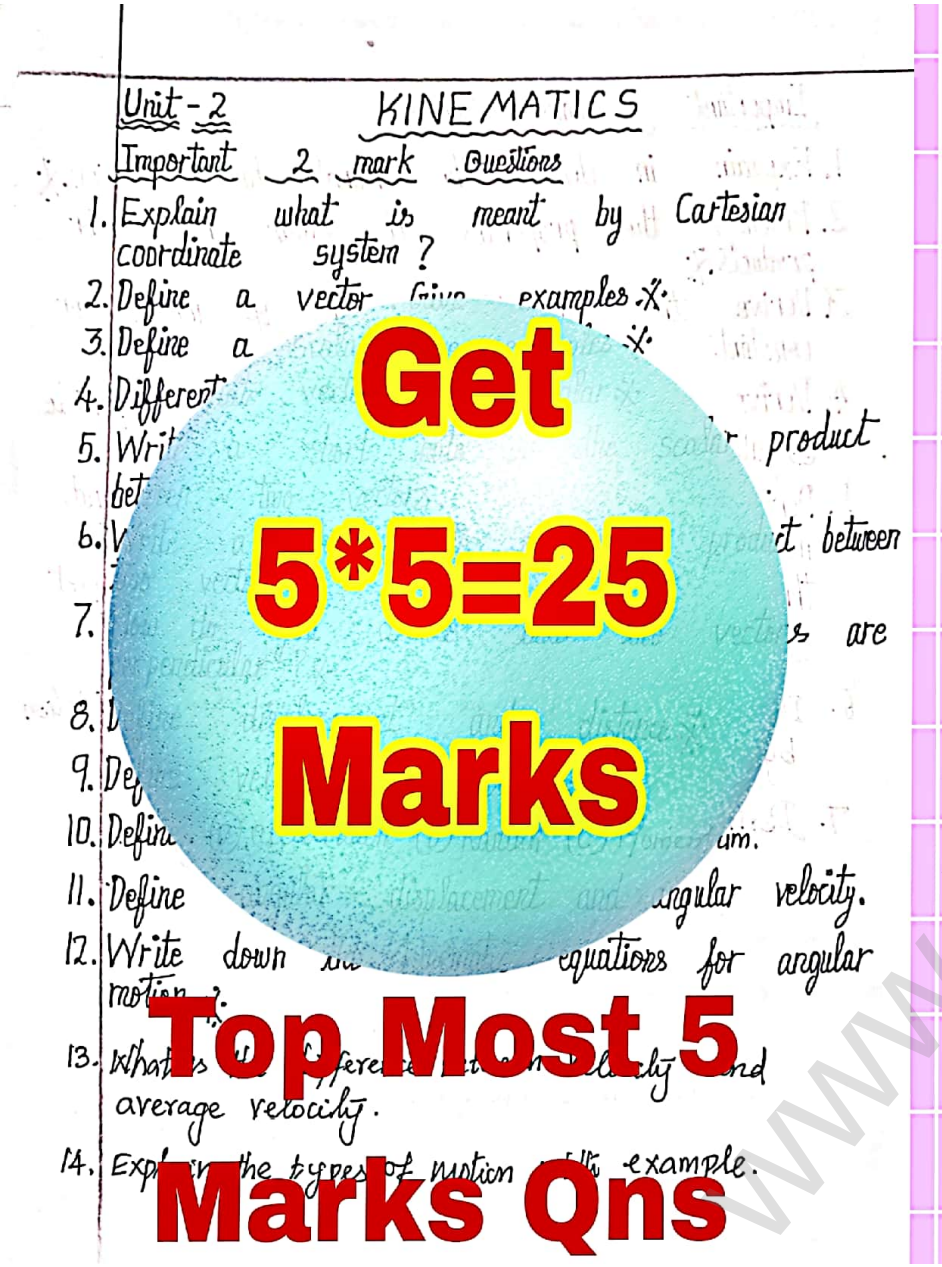

Get 5*5=25 Marks

Top Most 5 Marks Qns

11th Physics

Public Exam

Part IV ல் 5 Qns

Attend பண்ணலாம்

Important 5 Marks Questions:

1. Write a note on triangulation method and radar method to measure the larger distances.
2. Explain in detail the various types of Errors.
3. What do you mean by propagation of Errors? Explain the propagation of Errors in addition and difference.
4. Explain the principle of homogeneity of dimensions. What are it's uses? Give example.
5. Explain the propagation of errors in divisions.
6. Explain the propagation of errors in multipication.
7. Explain the Error Analysis.
8. What are the rules for counting significant figures.

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Important 5 mark Questions

1. Explain in detail the triangle law of addition.
2. Discuss the properties of scalar and vector products.
3. Derive the kinematic equations of motion for constant acceleration.
4. Derive the equations of motion for a particle (a) falling vertically (b) projected vertically
5. Derive the equation of motion, range and maximum height reached by the particle thrown at an oblique angle θ with respect to the horizontal direction.
6. Derive the Equations for Uniformly Accelerated Motion by Calculus method.
7. Derive the Equations for motion under gravity.

Conceptual Questions:

(13) Why it is not possible to push a car from inside?

(14) Why does a parachute descend slowly?

(15) When walking on ice one should take short steps. Why? ✗

Important 5 Marks Qns:

(1) Prove the law of conservation of linear momentum. Use it to find the recoil velocity of a gun when a bullet is fired from it. ✗

(2) Explain the motion of blocks connected by a string in i) Vertical motion ii) Horizontal motion. ✗

(3) Briefly explain the origin of friction. Show that in an inclined plane, angle of friction is equal to angle of repose. ✗

(4) What are concurrent forces? State Lami's theorem. ✗

(5) State Newton's three laws and discuss their significance (Applications) ✗

(6) Describe the method of measuring angle of repose. ✗

(7) Explain the need for banking of tracks. ✗

(8) Explain the similarities and differences of centripetal and centrifugal forces? ✗

(9) Explain the particle moving in an inclined plan.

Important 5 Marks Qns:

1. Explain with graphs the difference between work done by a Constant force and by a Variable force.
2. State and explain work energy principle, Mention any three examples for it.
3. Arrive at an expression for elastic Collision in One dimension and discuss various Cases.
4. What is inelastic collision? in which way it is different from elastic collision. Mention few examples in day to day life for inelastic collision.
5. Derive and Explain Work - Kinetic Energy Theorem.
6. Explain the Potential Energy near the Surface of the Earth.
7. Explain the motion in a Vertical Circle.
8. Derive an Expression for loss of Kinetic Energy in perfect inelastic collision.
9. Explain: Perfect inelastic Collision. (3 Marks)

Important 5 Marks:

1. Explain the types of equillibrium with suitable examples.
2. Discuss the Conservation of angular momentum with example.
3. State and prove Parallel axis theorem.
4. State and Prove Perpendicular axis theorem.
5. Discuss the rolling on inclined plane and arrive at the expression for the acceleration.
6. Explain why a cyclist bends while negotiating a curve road? Arrive at the expression for angle of bending for a given velocity.
7. Derive the expression for Moment of inertia of a rod about its center and perpendicular to the rod.
8. Derive the expression for Moment of inertia of a uniform ring about an axis passing through the center and perpendicular to the plane.
9. Derive the expression for Moment of inertia of a uniform disc about an axis passing through the center and perpendicular to the plane.

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Important 5 Marks:

1. Derive the expression for gravitational Potential energy.
2. Prove that at points near the surface of the Earth, the gravitational potential energy of the object is $U = mgh$.
3. Explain in detail the idea of weightlessness using lifts as an example.
4. Derive an expression for escape speed.
5. Explain the variation of g with lattitude.
6. Explain the variation of g with altitude.
7. Explain the variation of g with depth from the Earth's surface.
8. Derive the time period of satellite orbiting the Earth.
9. Derive an expression for energy of satellite.
10. Explain in detail the geostationary and Polar Satellites.

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(10) Derive the expression for Kinetic Energy in Rotation.

(11) Compare the Translational and Rotational Quantities

(12) Derive the expression for Kinetic Energy in Pure Rolling.

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Important 5 Marks:

① State Hooke's law and verify it with the help of an experiment.

② Explain the different types of modulus of elasticity.

③ Derive an expression for the elastic energy stored per unit volume of a wire.

④ Derive the expression for the terminal velocity of a sphere moving in a high viscous fluid using Stoke's force.

⑤ Derive the Poiseuille's formula for the volume of a liquid flowing per second through a pipe under streamlined flow.

⑥ What is Capillarity? obtain an expression for the surface tension of a liquid by capillary rise method.

⑦ Obtain an equation of continuity for a flow of fluid on the basis of conservation of mass.

⑧ State and prove Bernoulli's theorem for a flow of incompressible, non-viscous and streamlined flow of fluid.

⑨ a) Write the Practical applications of Capillarity (2M)
b) Write the Applications of Surface tension (3M)

⑩ a) Derive an expression for the terminal velocity of a sphere falling through viscous liquid (3M)
b) Write the applications of viscosity (3M)

⑪ State Stokes law and write the Practical applications of Stokes law.

Important 5 Marks:

1. What is Thermal expansion? Explain the three types of thermal expansion and obtain the relations between them. X
2. Discuss ideal gas laws X
3. Explain in detail the thermal expansion. X
4. Explain in detail Newton's law of cooling. X
5. Derive the Mayer's relation for an ideal gas. X
6. Derive the work done in an isothermal process X
7. Explain Wien's law and why our eyes are sensitive only to visible rays?
8. Derive the work done in an adiabatic process X
9. What are the limitations of the first law of thermodynamics.
10. Explain the second law of thermodynamics in terms of entropy.
11. Discuss the various modes of Heat transfer.

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Important five marks Qns:

1. Write down the postulates of kinetic theory of gases.
2. Derive the expression of pressure exerted by the gas on the walls of the container.
3. Describe the total degrees of freedom for monoatomic, diatomic and triatomic molecules.
4. Derive the ratio of two specific heat capacities of monoatomic, diatomic and triatomic molecules
5. Explain in detail the Maxwell-Boltzmann distribution function.
6. Describe the Brownian motion.
7. Explain the expression for mean free path of the gas.
8. Explain in detail the kinetic interpretation of temperature.
9. Write the applications of law of equipartition energy in specific heat of a gas.

Important 5 Marks Qns:

1. Describe simple Harmonic Motion as a projection of uniform circular motion.
2. What is meant by angular harmonic oscillation? compute the time period of angular harmonic oscillation. -X-
3. Write down the difference between simple harmonic motion and angular simple harmonic motion. -X-
4. Explain the horizontal oscillations of a spring. -X-
5. Describe the vertical oscillations of a spring. -X-
6. Write short notes on the oscillations of liquid column in U-tube. -X-
7. Discuss in detail the energy in simple harmonic motion. -X-
8. Explain in detail the four different types of oscillations. -X-
9. discuss the simple pendulum in detail.

Important 5 Marks Qns:

(1) Briefly Explain the difference between travelling waves and standing waves. -X-

(2) Describe the Newton's formula for velocity of sound waves in air and also discuss the Laplace's Correction. -X-

(3) Briefly explain the concept of Superposition Principle. -X-

(4) Discuss the law of transverse vibrations in Stretched Strings. -X-

(5) Explain how overtones are produced in a. (a) Closed organ pipe. (b) open organ pipe -X-

(6) What is a Sonometer? Give its Construction and working. Explain how to determine the frequency of tunning fork using Sonometer.

(7) Show that the velocity of a travelling wave produced in a string is $v = \sqrt{\frac{T}{\mu}}$

(8) What are stationary waves? Explain the formation of stationary waves and also write down the Characteristics of stationary waves. -X-

(9) How will you determine the velocity of sound using resonance air column apparatus? -X-

(10) Explain the velocity of longitudinal waves in an elastic medium.

(11) Write short notes on reflection of sound waves from plane and curved surfaces.

(12) Explain the Applications of reflection of sound waves. -X-

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