PHYSICS

BOOKS - JEEVITH PUBLICATIONS PHYSICS (KANNADA ENGLISH)

PU BOARD MODEL QUESTION PAPER (WITH ANSWERS)

Exercise Part A

1. Mention the method of determining the mass of planets, stars etc.

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2. What is the minimum number of vectors required to give zero resultants?

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3. What is the value of one kilowatt hour (kWh) in joules?

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4. Define linear momentum of a system of particles.

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5. State Hooke's law.

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6. Write the equation of continuity for the flow of incompressible fluids.

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7. Give an importance of Reynold's number.

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8. State the principle of calorianetry.

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9. State Zeroth law of thermodynamics.

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10. Define degrees of freedom. Write the number of degrees of freedom for (i) monoatomic gas and (ii) diatomic gas.

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Exercise Part B

1. Name the two Physicists who achieved the unification of electricity and magnetism.

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2. Mention any two uses of dimensional analysis.

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3. A player throws a ball vertically upwards. What is the direction of acceleration during upward motion? What is the velocity at the highest point of its motion.

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4. Define the terms : unit vector and equal vectors.

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5. Mention two methods of reducing friction.

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6. State the principle of moments for a lever.

Give an example of lever.

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7. Define surface tension. Why there is no surface tension in gases ?

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8. What is a periodic motion? Give an example.

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Exercise Part C

1. What is centripetal acceleration ? Write the expression for the centripetal acceleration and explain the terms.

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2. Derive $\overrightarrow{F} = m\overrightarrow{a}$ where the symbols have their usual meanings.

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3. Prove that change in kinetic energy of a paticle is equal to the work done on it by a variable force.

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4. State and explain parallel axis theorem and perpendicular axis theorem.

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5. Arrive at the expression for escape speed of the body from the surface of earth.

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6. Draw Stress - Strain curve. Show Yield point and Fracture point.

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7. Mention three factors on which flow by conduction in a bar depends.

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8. Derive an ideal gas equation by using gas laws.

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Exercise Part D

1. What is v-t graph? Derive the expression $x = V_0 t + 1/2 a t^2$ using v-t graph.

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2. Derive an expression for potential energy of a spring and show that spring force is a conservation force.

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3. What is centre of mass of a body ? Obtain an expression for the positive vector of a centre of mass of two particle system.

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4. Define latent heat of fusion and latent of vapourisation. Explain the variation of temperature with heat (energy) for water at one atmosphere with a graph.

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5. What are beats? Give the theory of beats.

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6. What is a heat engine? Explain its working with schematic diagram.

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7. A cricket ball is thrown at a speed of $56ms^{-1}$ in a direction, making an angle 30° with the horizontal, Calculate.

(a) Maximum height,

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8. A cricket ball is thrown at a speed of $56ms^{-1}$ in a direction, making an angle 30° with the horizontal, Calculate.

(b) total time taken by the ball to return to the earth

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9. A cricket ball is thrown at a speed of $56ms^{-1}$ in a direction, making an angle 30° with the horizontal, Calculate.

the distance from thrower to the point where the ball returns to the earth.

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10. A well 20 m deep and 7m in diameter is full of water. Calculate the work done in pumping the whole of water up to ground level.

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11. If the mass of the earth is 100 times that of the moon and its diameter 5 times that of moon, compare the weight of a body on the surface of the moon with its weight on the surface of the earth.

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12. A cubical ice box of thermocol has each side 30 cm and thickness 5 cm , 4 kg of ice is put in the box , if outside temperature is $45^{\circ}C$ and coefficient of thermal conductivity is $0.01Js^{-1}m^{-1}K^{-1}$. Calculate the mass of ice left after 6 hrs . Take latent heat of fusion of ice as $335 \times 10^{3}JK^{-1}$

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13. A train standing a the outer signal of a railway station blows a whistle of frequency 400Hz in still air .

What is the frequency of the whistle for a platform observer when the train

(i) approaches the platform with a speed of $10ms^{-1}$?

(ii) recedes from the platform with a speed of $10ms^{-1}$?

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14. A train standing a the outer signal of a railway station blows a whistle of frequency 400Hz in still air . when the train

(i) approaches the platform with a speed of $10ms^{-1}$?

(ii) recedes from the platform with a speed of $10ms^{-1}$?

What is the speed of sound in each case ? The speed of sound in still air can be taken as $340ms^{-1}$

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