



PHYSICS

BOOKS - JEEVITH PUBLICATIONS PHYSICS (KANNADA ENGLISH)

SUPER MODEL QUESTION PAPER 1

Question Paper 1 For Practice Part A

1. Give any two examples for a dimensional constant.



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2. State lami's theorem.



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3. What is meant by a conservative force?

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4. What is meant by axis of rotation ?

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5. What is elastic limit?

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6. How does liquid pressure depend on the depth of a point below the surface of a liquid

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7. How does surface tension of liquid vary with temperature?



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8. What is meant by regelation?



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9. Represent an isobaric process graphically.



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10. How many degrees of freedom are there in there in the translatory motion of atoms?



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Question Paper 1 For Practice Part B

1. Name any two symmetries which help in unifying the forces of nature.

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2. A physical quantity 'Q' is given by $Q = \frac{A^2 B^{3/2}}{C^4 D^{1/2}}$. The percentage error in A, B, C, D, E are 1 %, 2 %, 4% , 2 % respectively . Calculate the minimum and maximum percentage errors in 'Q'

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3. Define relative velocity of one body with respect to another.



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4. Show that $a = r\omega$.

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5. Give any two examples of reducing the impulse.

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6. When are the moments of a force, minimum and maximum on a body ?

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7. Give an expression for the terminal speed of a small spherical object in a homogenous surrounding fluid.

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8. Represent KE and PE of a particle executing SHM graphically.

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Question Paper 1 For Practice Part C

1. Define average velocity of a particle. Represent the same in vector form.

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2. State and explain Newton's first law of motion.

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3. Obtain an expression for common velocity and loss in the kinetic energy for a moving body m_1 colliding against another at rest.

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4. State the conditions of equilibrium of a system of coplanar forces.

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5. State and explain Newton's law of gravitation.

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6. A wire 4 m long and 0.3 mm in diameter is stretched by a force of 100 N. If extension in the wire is 0.3 mm, then calculate the potential energy stored in the wire.

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7. Show that $\alpha = \frac{\beta}{2}$ where symbols have their usual meaning.

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8. Estimate the size of diamond molecule given its atomic mass 12.01u and density $2.22 \times 10^3 \text{ kgm}^{-3}$.

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Question Paper 1 For Practice Part D

1. Show that $x = ut + \frac{1}{2}at^2$ graphically, where symbols have their usual meaning

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2. Obtain an expression for common velocity and loss in the kinetic energy for a moving body m_1 colliding against another at rest.

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3. State and explain the theorem of parallel axis with an example

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4. Derive Mayer's equation from the I law of thermodynamics.



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5. Show that only odd harmonics are present in the closed pipe system.



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6. A cyclist is riding with a speed of 27 km/h . As he approaches a circular turn on the road of radius 80 m , he applies brakes and reduces his speed at the constant rate of 0.50 m/s^{-2} every second. What is the magnitude and direction of the net acceleration of the cyclist on the circular turn?



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7. A 10 kg block (M_1) is on a smooth horizontal table. The block is connected to a second block of mass 4 kg (M_2) by a massless flexible taut chord that passes over a frictionless pulley. The 4 kg block is 0.5 m above the floor. The two blocks are released from rest. With what speed does the 4 kg block hit the ground?



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8. In a sub - stage launch of a satellite, the first stage brings the satellite to a height of 150 km and the second stage gives it the necessary critical speed to put it in a circular orbit around the Earth , which stage requires more expenditure of fuel ?

(Given

$$M_E = 6.0 \times 10^{24} \text{ kg}, R = 6.4 \times 10^6 \text{ m}, G = 6.67 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2} \text{) .}$$



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9. Initial ice layer on a pond is 10 mm. What time will it take to form an addition of 5 mm on it? Given K of ice = $1.6 \text{ W m}^{-1} \text{ K}^{-1}$, temperature = -10° C and density of water = 10^3 kg m^{-3}

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10. A train standing at the outer signal of a railway station blows a whistle of frequency 400 Hz 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 10 m s^{-1} ?

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

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Question Paper 2 For Practice Part A

1. What is a dimensional formula ? Give an example for a physical quantity.

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