



# PHYSICS

**BOOKS - JEEVITH PUBLICATIONS**

**PHYSICS (KANNADA ENGLISH)**

**ANNUAL EXAMINATION QUESTION  
PAPER WITH ANSWER SOUTH 2019**

**Part A**

**1. Write the dimensional formula for Force**



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2. Write the SI unit of power.



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3. What is a projectile motion ?



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4. Write relation between angular velocity and linear velocity,



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5. Give the expression for acceleration due to gravity at an altitude above the surface of the Earth.



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6. Define stress.



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7. Define angle of contact.



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8. Write ideal gas equation for one mole of gas.



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9. State Zeroth law of thermodynamics.



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## Part B

1. State law of equipartition of energy.



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2. Write any two fundamental forces in nature :



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3. Mention any two uses of dimensional analysis.



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4. A body gets displacement of 5m in 2s, what is the average velocity?



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5. Define scalar product of two vectors.



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6. Define coefficient of kinetic friction.



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7. Define specific heat of a substance



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8. Write any two differences between isothermal process and adiabatic process.



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## Part C

1. Define frequency and period of oscillation.



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2. Derive the expression for centripetal acceleration.



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3. Deduce  $F = ma$ , using Newton's Second law of Motion.



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4. State work energy theorem with proof.



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5. Show that kinetic energy of rotating body is

$$\frac{1}{2} I \sigma^2$$



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6. State Kepler's law of planetary motion.



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7. Calculate  $\frac{C_p}{C_v}$  for monatomic gas.



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8. Write stress-strain curve for a metal. What is proportional limit and yield point ?



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9. State and explain Bernoulli's Principle.



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**10.** Show that  $x = v_0t + 1/2at^2$  by graphical method.



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**11.** State and explain law of conservation of momentum with proof.



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



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2. Explain working of Carnot's heat engine.



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3. Derive an expression for energy of a body which is in S.H.M



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4. What is Doppler effect of sound? Derive expression for apparent frequency of sound. When source is moving away from stationary listener.



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5. A body is projected at an angle of  $30^\circ$  with the horizontal and with a velocity of  $39.2\text{ms}^{-1}$ . Find ,

A. Time of flight B. Range ( R) C. Maximum height ( H)



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6. A body of mass 5 kg moving with a velocity of  $6\text{ms}^{-1}$  collide with another body of mass 2 kg which is at rest. Afterwards they move in the same direction as before. If the velocity of

the body of mass  $2 \text{ kg}$   $10 \text{ m s}^{-1}$  , find the velocity and kinetic energy to the body of mass  $5 \text{ kg}$ .



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7. Find the potential energy of a system of four particles each of mass  $5 \text{ kg}$  placed at the vertices of a square of side  $2 \text{ m}$ .



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8. Two metal rods made up of iron ( $K_1 = 79Wm^{-1}K^{-1}$ ) and brass ( $K_2 = 109Wm^{-1}K^{-1}$ ) are of identical shape and size. These are fused at the junction. If the temperature at the free end of iron is at a steam point and brass at ice point then calculate the temperature at the junction, when the steady state is attained.



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9. A wave travelling along a string is described by  $Y(x, t) = 0.005 \sin(80x - 3t)$  in which the numerical constants are in SI units. Calculate (i) amplitude (ii) the wavelength and (iii) the period and frequency of the wave.



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