



PHYSICS

BOOKS - JEEVITH PUBLICATIONS

PHYSICS (KANNADA ENGLISH)

**ANNUAL EXAMINATION QUESTION
PAPER (WITH ANSWERS) NORTH -2017**

Part A

1. Give the number of significant figure in $2.64 \times 10^{24} Kg$.



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2. Which component of velocity is constant in a Projectile motion ?



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3. What is elastic collision?



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4. Express torque in terms of moment of inertia and angular acceleration.



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5. Write the value of escape speed of a body from surface of the earth.



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6. Name SI unit of stress.



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7. State Pascal's law.



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8. Define Latent heat.



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9. Mention the degree of freedom for diatomic gas molecules without vibration.



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10. When does a stationary wave form?



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Part B

1. What is reductionism? Give an example.



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2. Mention any two uses of dimensional analysis.



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3. Distinguish between path length and Displacement.



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4. Mention an expression for centripetal acceleration and explain the terms.



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5. Given any two advantages of friction.



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



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7. State Clausius and Kelvin Plank's statements of II law of thermodynamics.



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8. Write any two characteristics of Simple Harmonic Motion.



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Part C

1. Deduce the expression for horizontal range of a projectile. For what angle of projection does horizontal range become maximum?



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



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3. Show that the instantaneous power is dot product of force and velocity.



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



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5. State and explain Bernoulli's Principle.



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6. Write any three properties of thermal radiation.



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7. Write any three assumptions of Kinetic theory of an ideal gas



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8. What is Doppler effect? Write any two applications of it.



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1. Show that $v^2 = v_0^2 + 2ax$ graphical method.



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2. State and prove conservation of linear momentum in case of collision of two bodies.



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



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4. Obtain the expression for total energy of a circularly orbiting satellite.



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5. Derive the equation for work done in case of isothermal process.



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6. Arrive an expression for time period of simple pendulum.



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7. Bullet is fired in horizontal direction from top of a tower 19.6m tall. If the bullet fall 500 m away from the base of the tower, Calculate the velocity of the bullet.



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8. Calculate the power of an engine in terms of H.P (Horse power) which needed to lift 1000 kg of coal in 30 minute from a coal mine 100 m deep. (given $g = 9.8m / s^2$)





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9. A Motor revolving at 1200 rpm slows down uniformly to 900 rpm in 2 sec. Calculate the angular acceleration of the motor and number of revolution it makes during this time.



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10. Temperature inside of room is 298 K and outside it is 283 K. How much heat will leave the room in 10 min through the glass window

2 m long, 1 m wide and 0.004 m thick ? (given

Thermal conductivity of glass

$$K = 1 \text{ JS}^{-1} \text{ mt}^{-1} \text{ K}^{-1} \text{) .}$$



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11. A wave travelling along a string is described by $y(x, t) = 0.5 \sin (80x - 3t)$ in which numerical constants are in S.I. unit. Calculate the amplitude, wave length, time period and frequency .



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