



PHYSICS

BOOKS - JEEVITH PUBLICATIONS

PHYSICS (KANNADA ENGLISH)

ANNUAL EXAMINATION QUESTION

PAPER SOUTH-2018

Part A

1. What is the basis of cesium atomic clock ?



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



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3. Define inertia.



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4. State work -energy theorem .



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5. Mention the relation between torque and angular momentum of a particle .



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6. What are elastomers ?



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7. State Bernoulli's principle .



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8. How does viscosity of a liquid changes with rise in temperature ?



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9. What is the significance of first law of thermodynamics?



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10. How does an average kinetic energy of gas molecules depends on the absolute temperature ?



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1. Write any two fundamental forces in nature :



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2. Mention any two sources of systematic errors .



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3. Distinguish between path length and Displacement.



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4. Define the terms

Null vector or Zero vector



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5. What is a unit vector ?



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6. Classify the nature of flow of liquid on the basis of Reynold's number .



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



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8. What are free oscillations and forced oscillations ?



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9. What are longitudinal waves and transverse waves ?



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1. Obtain an expression for
time of flight



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2. What is friction?



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3. What is collision ? Distinguish between
elastic collision and inelastic collision .



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4. State Kepler's law of planetary motion.



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



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6. Show that the volume coefficient of an ideal gas at constant pressure equals T^{-1} where T is the absolute temperature



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7. Mention any three assumptions of kinetic theory of gases.



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8. Discuss modes of vibration of air column in a closed pipe.



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Part D

1. What is uniform circular motion ? Obtain an expression for centripetal acceleration .



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



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3. Obtain an expression for total energy of a satellite revolving in circular orbit around a planet .



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



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5. From a balloon ascending with a velocity of $9.8ms^{-1}$, a stone was dropped and it reached the ground in 11s . How high was the balloon when the stone was dropped and with what velocity did it hit the ground ? (g $9.8ms^{-2}$) .



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6. A pump on the ground floor of a building can pump up water to fill a tank of volume 30 m^3 in 15 min . If the tank is 40 m above the ground and efficiency of the pump is 30% . How much power is consumed by the pump ? (Density of water 10^3 kgm^{-3} , $g = 9.8 \text{ ms}^{-2}$) .



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7. A dental drill accelerates from rest to 900 rpm in 2 sec . What is the angular acceleration

? How many revolutions does it makes in coming to full speed ?



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8. Find the time for which layer of ice 5 cm thick on the surface of a pond will increase its thickness by 0.1 cm when temperature of the surrounding air is $-20^{\circ}C$.



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9. Two cars are approaching each other on a straight road and moving with a velocity of 60 kmph. If the sound produced in one car is of frequency 500 Hz, what will be the frequency of sound as heard by a person sitting in another car ? When the car has crossed and moving away from each other , what will be the frequency of sound as heard by the same period ? (speed of sound in air is 332m s^{-1})



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