PHYSICS

BOOKS - JEEVITH PUBLICATIONS PHYSICS (KANNADA ENGLISH)

ANNUAL EXAMINATION QUESTION PAPER NORTH- 2018

Part A

1. What are fundamental units ?

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2. Define centripetal acceleration .

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3. When is work done by a force postivie ?

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4. Express torque in vector form .

5. Give the relation between stress and strain .

6. State Pascal's Law .

7. What is magnus effect ?

8. Define heat capacity .

9. Mention the formulae for coefficient of performance of a refrigerator .

10. Define mean free path .

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11. What are fundamental units ?

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12. Define centripetal acceleration .

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13. When is work done by the force positive ?

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14. Express torque in vector form .

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15. Give the relation between stress and strain
.

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16. State Pascal's law.

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17. What is magnus effect ?

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18. Define heat capacity .

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19. Mention the formulae for coefficient of performance of a refrigerator .

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20. Define mean free path .

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Part B

1. Fundamental forces in nature

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2. Write the dimensional formula for Force

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3. Write the dimensional formula for Pressure

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4. Define displacement and acceleration .

5. Give the representation for scalar product and vector product of two vectors .

6. Mention any two methods of reducing friction .

7. Write the general conditions for equilibrium of a rigid body .

8. Explain the application of surface tension idea in case of action of detergents .

9. What is simple harmonic motion ? Give one example .

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10. Write any two fundamental forces is nature :

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Part C

1. Derive an expression for maximum height of a projectile .

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2. What is angle of banking ? Mention an expression for maximum safe speed of a vehicle on a level road and express the symbols .

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3. Distinguish between conservative and non-conservative forces .

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4. Write any five comparision between linear and rotational motion.

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5. State Kepler's law of planetary motion.

6. Give the expression for Young's modulus of elasticity pretaining to a stretched wire.

7. Prove that $\alpha_r = \dfrac{1}{T}$ for ideal gas .

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

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11. Distinguish between conservative and non-conservative forces .

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12. Compare the equations of linear motion with rotational motion .

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13. State Kepler's law of planetary motion.

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14. Derive an expression for Young modulus of a wire in terms of its radius .

15. Prove that $\alpha_r = \dfrac{1}{T}$ for ideal gas .

16. Mention any three assumption of kinetic theory of gases.

Part D

1. What is v-t graph? Derive the expression $x = V_0t + 1/2at^2$ using v-t graph.

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

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3. Define torque and angular momentum .

4. Derive the relation between torque and angular momentum .

5. Explain different stages of Carnot's cycle with P-V diagram .

6. Derive an expression for time period of oscillating bob of simple pendulum .

7. Mention the differences between progressive and stationary waves .

8. An aircraft executes a horizontal loop of radius 1 km with a steady speed of 900 kmph . Compare its centripetal acceleration with acceleration due to gravity .

9. A man weighing 49 kg carries a bag of 2 kg . He climbs to the top of a building 100 m tall in 5 minute . Calculate the work done by the man and the power he develops .

10. Calculate g at the bottom of a mine 8 km deep and at an altitude 32 km above the earth's surface . Radius of earth = 6.4×10^4 m and g on earth's surface = $9.8 m/s^2$.

11. 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 $45°C$ and

coefficient of thermal conductivity is $0.01 Js^{-1}m^{-1}K^{-1}$. 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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12. The apparent frequency of a note when an observer moves towards a stationary source with a velocity 20 m/s in 200 Hz . Calculate the actual frequency of a note . Calculate wavelength if velocity of sound is 350 m/s .

13. Show that $x = v_0 t + 1/2at^2$ by graphical

method.

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momentum in case of collision of two bodies.

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