



PHYSICS

BOOKS - JBD PUBLICATION

MODEL TEST PAPER - 07

Exercise

1. Femato is the unit of



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2. When a body moves with constant speed, it has no acceleration. (True / False)



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3. Is linear momentum a scalar or a vector quantity?



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4. Which one is conservative force ?

- A. frictional force
- B. graviational force
- C. electrostatic force
- D. both(B) and (C).

Answer:



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5. Is torque a scalar or a vector quantity?



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6. Define temperature of a system.



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7. Derive expression for pressure exerted by gas.



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8. What is the value of time period of a second's pendulum?



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9. Find the dimensions of universal gravitational constant.



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10. What do you mean by systematic error ?



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11. A car accelerates from rest for time t_1 at a constant rate α and then it retards at the constant rate β for time t_2 and comes to rest. Find the value of t_1 / t_2 .



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12. A horizontal force 600 N pulls two masses 10 kg and 20 kg lying on a frictionless table connected by a light string find tension in the string if the force is applied on 20 kg mass.





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13. Find the ratio of linear momenta of a lighter and a heavier body if their kinetic energies are equal.



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14. The angular frequency of body changes from 5 radian per second to 8 per second in 20 seconds. Find the angular displacement of the body during these 20 seconds.



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15. Compare 'g' and 'G'.



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16. Why bridges are declared unsafe after long use?



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17. Define cross product of two vectors and state its characteristics.



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18. What is banking of a road ,why is it done?

Find an expression for angle of banking.



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19. Prove that in an elastic collision the value of co-efficient of restitution is one.



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20. Explain Newton's laws of gravitation and hence deduce the definition of universal gravitational constant.



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21. Define critical velocity and find a relation for it. Also discuss the importance of Reynold's number.



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22. How much heat is required to convert 5 g of ice at $-5^{\circ}C$ into steam at $500^{\circ}C$ under normal pressure?



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23. What is heat engine, write its essential parts? Write its working and find an expression for its efficiency .



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24. Find the horse power of child if he can chew 10 grams ice in one minute.



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25. Define the molar specific heats fo a gas and find a relation between them.



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26. What is antinodal point?



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27. What is Doppler's effect? Derive a general expression for the apparent frequency when

both source and observer are in relative motion.



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28. State two application of beats.



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29. Derive Newton's formula for velocity of sound in air. Point out the error and hence

discuss Laplace's correction to find out the velocity of sound.



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30. Define surface tension.



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31. State and prove Bernoulli's theorem for liquid having streamline flow.



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32. Define Angle of contact.



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33. Explain different modes of transfer of heat from one place to the other place along with example.



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34. Define centre of mass of a rigid body.



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35. Find the expression for moment of inertia of a thin uniform rod about an axis passing through its one end and perpendicular to its length.



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36. What do you mean by centre of mass of a body? Find the position of centre of mass of a uniform rod.



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37. Prove that the time rate of change of the angular momentum of a particle is equal to the torque acting on it.



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