

PHYSICS

BOOKS - JBD PUBLICATION

Mock test paper 2

Exercise

1. Distance is aquantity.

A. 1

- B. 3
- C. 3
- D. 4

Answer:



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2. Ball-bearing converts sliding friction into rolling friction (yes/No)



3. Mass cannot be converted into energy.(True/

False)



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4. Light year is the unit of

A. time

B. distance

C. energy

D. power

Answer:



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5. What is the position vector of centre of mass of two particles of equal masses?



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6. Define thermal equilibrium.



7. Is S.H.M. always linear?



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8. Define degree of freedom.



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9. What are order of magnitude? Give two examples.



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10. Define one second.



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11. Can an object be at rest as well as in motion at the same time?



12. Define force from Newton's first law of motion.



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13. State the principle of conservation of angular momentum.



14. An elevator of total mass (elevator+ passenger) 3600 kg in moving up with a constant speed of 2 ms^{-1} . A frictional force of 1300 M opposes its motion. Determine the minimum power delivered by the motor to the elevator.



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15. Find the mass of earth (Given the radius of earth $R=6.4 imes10^6 m$).

16. Calculate the terminal velocity of air bubble of radius 10^{-5} m rising in water of viscosity $10^{-2}Nsm^{-2}$. Density of water 10^3kgm^{-3} and density of air is negligible as compared to water.



17. A passenger arriving in a new town wishes to go from the station to a hotel located 10

km away on a straight road from the station. A dishonest cabman takes him along a circuitous path 23 km long and reaches the hotel in 28 min. What is:- the average speed of the taxi,



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18. Does the nature of a vector change when it is multiplied by a scalar?



19. Two bodies of masses 10kg and 20 kg respecively kept on a smooth, horizontal surface are tied to the ends of a lght string. A horizontal force F= 600 N is applied to (i) A (ii) B along the direction of string. What is the tension in the string in each case?



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20. Derive an expression for the angle of bending of a cyclist on a curved track.



21. A lighter body and a heavier body have same K.E. Which one has greater momentum?



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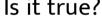
22. Mention some special features of Newton's law of gravitation.



23. Write short note note on critical velocity.



24. The molar specific heat of all gases is same. Is it true?





25. When a gas is suddenly compressed, temperature rises. Why?

26. Which waves do not require medium for propagation?



27. What are standing waves or stationary waves?Why are they so called?



28. What is simple harmonic motion and prove a simple pendulum oscillates simple harmonically? Also find a relation for its frequency.



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29. What is a simple pendulum? Obtin expression for its angular acceleration. When its bob is diplaced through an angle.



30. What is meant by saying that atmospheric pressure is 75 cm of mercury?



31. Define coefficient of viscosity. Give its unit.



32. What is one bar?



33. Define surface tension.



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34. Where does centre of mass of a triangular lamina lie?



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35. Prove the theorem of parallel axes.



36. State Theorem of perpendicular axis.



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37. What is rotational analogue of mass?



38. Show the moment of inertia of a solid abot its diameter is $\frac{2}{5}MR^2$



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39. Shakes is a unit of time (yes/no)



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40. Average speed and instantaneous speed are always equal.(True/ False)

41. Centripetal acceleration has no particular direction. (true/false)



42. For an elastic collision the value of coefficient restinction is:

A. - 1

B. 0

C. + 1

D. 0.5

Answer:



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43. What is the unit of radius gyration?



44. Write the relation between heat work when heat measured calories and work in Joule?



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45. How many degree of freedom for H_2 ?



46. In case of a moving source of sound approaching an observer.



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47. If $\overset{
ightharpoonup}{A}=2\hat{i}+3\hat{j} \ \ {
m and} \ \ \overset{
ightharpoonup}{B}=2\hat{i}+1\hat{j}, \ \ {
m find}$ the angle between $\overset{
ightharpoonup}{A} \ \ {
m and} \ \overset{
ightharpoonup}{B}.$



48. Why is a clean hole made when a bullet is fired at a glass window pane, while it is broken into pieces by a sstone thrown at it? Explain.



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49. Find the dimensins of gravitational potential energy.



50. A man of mass 60 kg stands on a weighing machine in a lift which is moving downwards with a uniform acceleration 2 m s^{-2} . What would be the reading of machine?



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51. Define kinetic energy?



52. State the principle of conservation of angular momentum.



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53. If a man weighs 250 N on the surface of earth, what will his wight half way down to the centre of earth which is sipposed to be spherical of uniform mass density.



54. Why it is easer to wash clothes in hot water soap solution?



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55. Define cross produced of two vectors and state its propertics.



56. Two buildings are 45 m apart. With what velocity must a ball be thrown horizontally from a window 50 m above the ground in one building so that it enters a window 5.9m above the gorund in the other builing.



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57. Define angle of friction and angle of repose. Find the relationship between them.



58. prove that in an elastic collision the relative velocity of approach before collision is equal to relative velocity of separation after collision.



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59. Derive Newton's law of gravitation from Kepler's law.



60. What is Stokes' law? Derive the relation by method of dimensions.



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61. A body cools from $60^{\circ}C \to 40^{\circ}C$ in 7 minutes. What will be its temperature after next 7 minutes. The temperature of surrounding is $10^{\circ}C$.



62. Define first law of themodynamics and expain its limitations.



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63. Write the postilates of kinetic theory of gases.



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64. Write one use of echo.



65. What is simple harmonic motion and prove a simple pendulum oscillates simple harmonically? Also find a relation for its frequency.



66. Write one use of beats.



67. What do you mean by wave motion, state its characteristics.



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68. Define latent heat.



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



70. What is the unit of pressure?



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71. Derive an expression for the rise of liquid in a capillary tube and show that the height of the liquid column supported is inversely proportional to the radius of the tube.



72. Define centre of mass.



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73. Define the theorem of parallel axes and apply it to find the moment of inertia of a uniform rod about an axis passing through one of its ends and perpendicular to its length.



74. Moment of inertia is:



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75. Define angular momentum and find its relation with moment of inertia.

