# PHYSICS

# BOOKS - JBD PUBLICATION

# MODEL TEST PAPER -05

**Exercise**

**1.** Weight of a body is measured in kilogram.

(Yes / No).

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**2.** A zero vector has no magitude but only

............ .

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**3.** Newton's third law of motion is the real law

of motion.(true / False)

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**4.** Which of the following forces are not conservative in nature?

A. gravitational

B. magnetic

C. frictional

D. electrostatic.

Answer:

**5.** Is it must that there is some mass at the center of mass?

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**6.** Two systems are said to be in thermal equilibrium with each other, if they are at the same_____.

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**7.** Write the value of Avogadro's number.

**8.** Define longitudinal wave.

**9.** If one of the rectangular components of 100

N is 50 N,find the other component.

**10.** A gramophone disc rotates at 60 revolutions per minute. A coin of mass 13 g is placed at the disc at a distance of 8.0 cm from the centre. Calculate centrifugal force on the coin.

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**11.** An elevator can carry a maximum load of 1800 kg (elavator + passengre) is moving up with a constant speed of $2ms^{-1}$ .The

frictional force opposing the motion is 4000 N.Determine the minimum power dilivered by the motor to the elevator in watts as well as in horse power.

**12.** If a body is moving with a constant angular velocity ,is it alo moving with a uniform linear velocity?

**13.** Why is G called universal gravitational constant ?

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**14.** Why springs are made of steel and not of copper?

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**15.** What is the role of physics in our daily life?

**16.** Check the relation, $\dfrac{1}{2}mv^2 = F.\,S$ Using dimensional analysis ,where every letter has its usual meaning.

**17.** A projectile is fired with velocity making an angle $\theta$ with the horizontal. Show that it follows a parabolic trajectory. Obtain an

expression for the maximum height attained by it.

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**18.** Write an expression for the centripetal force.

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**19.** Discuss potential energy of a coiled spring.

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**20.** Define escape velocty. Obtain an expression for the escape velocity of a body from the surface of earth.

**21.** Define surface energy. Find the relation between surface energy and surface tension.

**22.** Find the amount of heat required to convert 10 g ice at $-10°C$ into steam at $300°C$.

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**23.** State first law of thermodynamics.

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**24.** The temperature of water falling from a dam gets increased by $0.1°C$.Find the height of dam.

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**25.** What are resonant vibrations?

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**26.** Find the relations for the first harmonic produced by an open end organ pipe and a closed end organ pipe.

**27.** What determines the natural frequency of a body?

**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.** Define force of Adhesion.

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**30.** Find an expression for the heat which flows from one pont to the other point of a conductor and hence define co-efficient of thermal conductivity of the conductor.

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**31.** Define Snell's law. What is refractive index? Write its mathematical formula.

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**32.** 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.

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**33.** Define a rigid body.

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**34.** Define centre of mass.

**35.** What is the position of centre of mass of a uniform disc?

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