

MRD-9th
PHYSICS Paper-IX (26)

ہر سوال کے سامنے چار دائرے دیئے گئے ہیں، صرف صحیح جواب والا دائرہ بھر دیں۔
۲ دائروں کو شیڈ (بھرنے) کے لیے نیلے یا کالے رنگ کا مارکر استعمال کریں۔
۳ جواب میں ایک سے زائد دائرے بھرنے سے جواب غلط تصور ہو گا۔

Time: 20 Minutes

SECTION-A

Marks: 12

Q1: Choose the correct option i.e, A,B,C or D?

1. The number 0.0008 can be written in scientific notation as.
☐ 8×10^{-3} ☐ 8×10^{-4} ☐ 8×10^{-6} ☐ 8×10^{-7}
2. The speed time graph is a straight line parallel to time axis. This statement shows that the object is.
☐ Stationary ☐ Moving with uniform velocity
☐ Moving with variable velocity
☐ Moving with uniform acceleration
3. A net force of 500N acts on a body of mass 10kg. The acceleration produced in the body (in m/s^2) is.
☐ 50N ☐ 100N ☐ 200N ☐ 500N
4. Force of the same magnitude acts on two bodies of masses 50kg and 100kg. The inertia is more for:
☐ 50kg body ☐ 100kg body
☐ Both bodies have same inertia
☐ Inertia is independent of mass
5. The condition of magnitudes 20N each acting along different lines in opposite directions on a body will produces a resultant force of.
☐ $\sum F = 0$ only ☐ $\sum F = 0$ only
☐ $\sum p = 0$ ☐ $\sum F = 0$ and $\sum F = 0$
6. Two forces of magnitudes 20N each acting along different lines in opposite directions on a body will produce a resultant force of.
☐ 0N ☐ 20N ☐ 10N ☐ 100N
7. F_{12} and F_{21} are the gravitational forces exerted by two bodies of masses 3kg and 5kg on each other. Identify the correct relation in the following.
☐ $F_{12} < F_{21}$ ☐ $F_{12} > F_{21}$ ☐ $F_{12} = -F_{21}$ ☐ $F_{12} = 3F_{21}$
8. The component of force perpendicular to displacement does.
☐ Positive work ☐ Negative work
☐ Positive and maximum work ☐ Zero work
9. The energy consumed by a 1000W heater in 5 hours is.
☐ 1kwh ☐ 5kwh ☐ 10kwh ☐ 20kwh

10. The young's modulus of a material depends on.
☐ Applied stress ☐ Strain
☐ Nature of material ☐ Original length
11. The property of material that changes uniformly with changes in temperature is called.
☐ Heat ☐ Thermometric property
☐ Internal energy ☐ Thermometer
12. Identify poor conductor of heat among the following.
☐ Iron ☐ Brass ☐ Silver ☐ Water

MRD-9th

PHYSICS 9th (Full Course)

Note: Time allowed for Section-B & Section-C is 2:40 hours.

SECTION-B

Marks: 32

Q2: Write short note to any EIGHT of the following parts. All parts carry equal marks.

1. What is physical quantity? List the names of any three derived physical quantities along with their units.
2. Differentiate between speed and velocity with suitable examples. Under what condition is average and instantaneous velocity of a body equal?
3. A body of mass 2kg is moving in a circle of radius 4m with constant speed. If the centripetal force acting on the body is 100N, calculate its speed.
4. State the law of conservation of linear momentum. Express this law for the collision of two bodies of masses m_1 and m_2 .
5. A vector F makes an angle θ with x-axis in a coordinate system. Show that its vertical components is given by $F_y = F \sin \theta$.
6. Differentiate between dynamic translational equilibrium and dynamic rotational equilibrium with examples.
7. What is artificial satellite? Name the force that keeps satellite in its circular orbit. Why does it not fall to the earth?
8. Prove that kinetic energy of a body of mass m , moving with velocity v , is given by $E_k = \frac{1}{2}mv^2$.
9. An electric bulb provides 160J of light energy when 800J electrical energy is supplied to it. Calculate its efficiency.
10. Define the terms stress, strain, young's modulus and elastic limit of a material.
11. Define thermal conductivity. Explain how temperature differences, length and cross sectional area affect the thermal conductivity of a solid material.

SECTION-C

Marks: 21

Note: Answer any THREE questions. All questions carry equal marks.

Q3: (a) Assuming uniform acceleration, derive the equation of motion

$S = Vt + \frac{1}{2}at^2$ using graphical analysis of motion.

(b) A stone is dropped from the top of a cliff. It hits the ground after 8s. How high is the cliff?

Q4: (a) Calculate mass of the earth using Newton's law of universal gravitation.

(b) Define gravitational field and gravitational field strength. Why was the concept of gravitational field introduced?

Q5: (a) State Pascal principle and explain how a small force F_1 can be magnified into large force F_2 by hydraulic lift using Pascal principle.

(b) Calculate the pressure exerted by water at a depth of 300m below the surface of water. (density of water = 1000kg/m^3).

Q6: (a) Define heat capacity, specific heat capacity, specific latent heat of fusion and specific latent heat of vaporization.

(b) Discuss three factors affecting the rate of evaporation.