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M M A HIGHER SECONDARY SCHOOL-PAPPANADU

STD:XI-B&D | VOLUME-1 MODEL QUESTION PAPER-1 | TIME:3.00 HOURS

SUB: PHYSICS | (UNIT:1-5) | MARKS:70

I) CHOOSE THE CORRECT ANSWER: 15×1=15

1. Force acting on the particle moving with constant speed is

a) always zero b) need not be zero c) always non zero d) cannot be concluded

2.Two equal masses m_1 and m_2 are moving along the same straight line with velocities 5 ms^{-1} and -9 ms^{-1} respectively. If the collision is elastic, then calculate the velocities after the collision of m_1 and m_2, respectively.

a) -4 ms^{-1} and 10 ms^{-1} b) 10 ms^{-1} and 0 ms^{-1} c) -9 ms^{-1} and 5 ms^{-1} d) 5 ms^{-1} and 1ms^{-1}

3. If the force is proportional to square of velocity, then the dimension of proportionality constant is

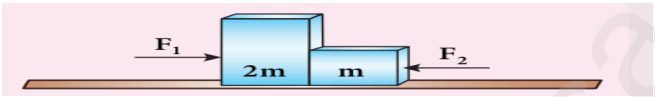
a) $[MLT^{0}]$ b) $[MLT^{-1}]$ c) $[ML^{-2}T]$ d) $[ML^{-1}T^{0}]$

4. The potential energy of a system increases, if work is done

a) by the system against a conservative force b) by the system against a non-conservative force

c)upon the system by a conservative force d) upon the system by a non-conservative forceOne

5.Two blocks of masses m and 2m are placed on a smooth horizontal surface as shown. In the first case only a force F_1 is applied from the left. Later only a force F_2 is applied from the right. If the force acting at the interface of the two blocks in the two cases is same, then F_1:F_2 is



a) 1:1 b b) 1:2 c) 2:1 d) 1:3

6. If a person moving from pole to equator, the centrifugal force acting on him

a) increases b) decreases c) remains the same d) increases and then decreases

7. One kilowatt hour (1 kWh) is

a) 3.6 MJ b) $36x10^5$ WS c)$3.6x10^6$ J d) All the above

8. Round of the following number 19.95 into three significant figures

a) 19.9 b) 20.0 c) 20.1 d) 19.5

9. Which one of the following physical quantities cannot be represented by a scalar?

a) Mass b) length c) momentum d) magnitude of acceleration

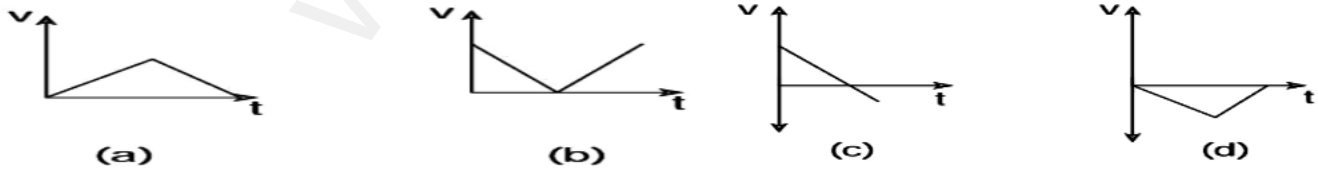
10.The device is used for measuring the mass of an atom and molecules is

a) spring balance b) torsional balance c) common balance d) mass spectrograph

11. A couple produces,

a) pure rotation b) pure translation c) rotation and translation d) no motion

12. A ball is projected vertically upwards with a velocity v. It comes back to ground in time t. Which v-t graph shows the motion correctly?



13. The coefficient of restitution for a perfectly elastic collision is

a) 1 b) 0 c) infinity d) – 1

14. A particle is moving with a constant velocity along a line parallel to positive X-axis. The magnitude of its angular momentum with respect to the origin is,

a) zero b) increasing with x c) decreasing with x d) remaining constant

15. The SI unit of torque is

a) Nm^{-1} b) Nm c) Nm^{-2} d) Nm^2

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Kindly send me your questions and answerkeys to us : Padasalai.Net@gmail.com

II) ANSWER ANY SIX QUESTIONS:Q.NO:24 IS COMPULSORY: 6×2=12

16. What is radius of gyration?
17. Define precision and accuracy.
18. State Newton's third law.
19. Explain the characteristics of elastic and inelastic collision.
20. Define acceleration.
21. If a stone of mass 0.25 kg tied to a string executes uniform circular motion with a speed of 2 ms^{-1} of radius 3 m, what is the magnitude of tensional force acting on the stone?
22. Define a vector. Give examples.
23. How will you measure the diameter of the Moon using parallax method?
24. Water in a bucket tied with rope is whirled around in a vertical circle of radius 0.5 m. Calculate the minimum velocity at the lowest point so that the water does not spill from it in the course of motion. (g = 10 ms^{-2})

III) ANSWER ANY SIX QUESTIONS:Q.NO:33 IS COMPULSORY: 6×3=18

25. Write a note on triangulation method measure large distance.
26. Write the differences between conservative and Non-conservative forces.
27. Find the rotational kinetic energy of a ring of mass 9 kg and radius 3 m rotating with 240 rpm about an axis passing through its centre and perpendicular to its plane.
28. Using free body diagram, show that it is easy to pull an object than to push it.
29. What are the limitations of dimensional analysis?
30. Discuss any six properties of scalar product.
31. State and explain Lami's theorem.
32. What is the difference between sliding and slipping?
33. Suppose an object is thrown with initial speed 10 m s^{-1} at an angle π/4 with the horizontal, what is the range covered? Suppose the same object is thrown similarly in the Moon, will there be any change in the range? If yes, what is the change? (The acceleration due to gravity in the Moon g_{moon} = 1/6 g).

IV) ANSWER ALL THE QUESTIONS: 5×5=25

34. (a) Derive the kinematic equations of motion for constant acceleration.

[OR]

(b) Explain why a cyclist bends while negotiating a curve road? Arrive at the expression for angle of bending for a given velocity.

35. (a) What do you mean by propagation of errors? Explain the propagation of errors in addition and multiplication.

[OR]

(b) Arrive at an expression for power and velocity. Give some examples for the same.

36. (a) Explain the need for banking of tracks.

[OR]

(b) Explain in detail the triangle law of addition.

37. (a) State and prove parallel axis theorem.

[OR]

(b) Explain the principle of homogeneity of dimensions. Give example.

38. (a) State and explain work-energy principle. Mention any three examples for it.

[OR]

(b) Prove the law of conservation of linear momentum. Use it to find the recoil velocity of a gun when a bullet is fired from it.

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