Padasalai's
Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

- **Padasalai's NEWS - Group**
https://t.me/joinchat/NIfCqVRBNj9hhV4wu6_NqA

- **Padasalai's Channel - Group**
https://t.me/padasalaichannel

- **Lesson Plan - Group**
https://t.me/joinchat/NIfCqVWwo5iL-21gpzrXLw

- 12th Standard - Group
https://t.me/Padasalai_12th

- 11th Standard - Group
https://t.me/Padasalai_11th

- 10th Standard - Group
https://t.me/Padasalai_10th

- 9th Standard - Group
https://t.me/Padasalai_9th

- 6th to 8th Standard - Group
https://t.me/Padasalai_6to8

- 1st to 5th Standard - Group
https://t.me/Padasalai_1to5

- TET - Group
https://t.me/Padasalai_TET

- PGTRB - Group
https://t.me/Padasalai_PGTRB

- TNPSC - Group
https://t.me/Padasalai_TNPSC

Time : 2.30 hrs

CLASS : XI

Marks : 70

I. Choose the correct answer

15x1=15

1. The dimensional formula of Planck's constant h is   a) $[ML^2T^{-1}]$ b) $[ML^2T^{-3}]$ c) $[MLT^{-1}]$ d) $[ML^3T^{-3}]$

2. The dimension of $(\mu_o \varepsilon_o)^{\frac{1}{2}}$ is   (a) length (b) time (c) velocity (d) force

3. Which one of the following physical quantities cannot be represented by a scalar?
   (a) Mass   (b) length (c) momentum (d) magnitude of acceleration

4. If a particle has negative velocity and negative acceleration, its speed   (a) increases (b) decreases (c) remains same (d) zero

5. 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

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. If the linear momentum of the object is increased by 0.1%, then the kinetic energy is increased by
   (a) 0.1 %   (b) 0.2%   (c) 0.4%   (d) 0.01%

8. If the potential energy of the particle is $\alpha - \frac{\beta}{2}x^2$, then force experienced by the particle is
   (a) $F = \frac{\beta}{2}x^2$ (b) $F = \beta x$ (c) $F = \beta x$ (d) $F = -\frac{\beta}{2}x^2$

9. What is the work done by a force of 30 N in lifting a load of 2kg to a height of 10m
   (a) 0.1 %   (b) 0.2%   (c) 0.4%   (d) 0.01%

10. One horse power is equal to ---- Watt   (a) 764W   (b) 746W   (c) 674W   (d) 476W

11. One calorie is equal to ---- Joule   (a) 4.186 J   (b) 1.486J   (c) 486J   (d) 476J

12. The Coefficient of static friction of Ice&Ice --   (a) 1.0   (b) 0.1   (c) 0.7   (d) 0.10

13. What is the unit of impulse---?   (a) Nm^{-1} (b) Nm^{-2} (c) Nm (d) N^2m

14. The Moon is orbiting the Earth approximately once in 27 days, what is the angle transversed by the Moon per day?
   (a) $13^0 3^1$ (b) $13^0 4^1$ (c) $12^0 3^1$ (d) $14^0 3^1$

15. The largest practical unit of mass is   (a) Shake   (b) KW   (c) CSL   (d) Newton

II. Answer the following one or two sentences (any6).Q.NO.20 is compulsory.

6X2=12

16. What is absolute error?

17. How will you measure the diameter of the Moon using parallax method?

18. How do you deduce that two vectors are perpendicular?

19. Define acceleration.

20. What are the resultants of the vector product of two given vectors given by $\vec{A} = 4\hat{\imath} - 2\hat{\jmath} + \hat{k}$ and $\vec{B} = 5\hat{\imath} + 3\hat{\jmath} - 4\hat{k}$?

21. State Newton's third law.

22. Define one newton.

23. Define law of conservation of energy.

24. Define power. Write its unit and dimensional formula.

III. Short answer question.(any 6)   Q.NO.20 is compulsory

6x3=18

25. What are the limitations of dimensional analysis?

26. Write short notes on RADAR method to measure larger distances?

27. Write a short note on vector product between two vectors.

28. Define displacement and distance.

29. What is the meaning by 'pseudo force'?

30. Using free body diagram, show that it is easy to pull an object than to push it.

31. Define Coefficient of restitution.

32. Define various types of potential energy .

33. What is elastic and inelastic collision?Give an example.

IV. Answer the following questions in one paragraph:

2x5=10

34. Obtain an expression for the time period T of a simple pendulum. The time period T depends on mass 'm' of the bob (ii) length'l' of the pendulum and (iii) acceleration due to gravity g at the place where the pendulum is suspended.

(Constant k = 2π)(OR)

The force F acting on a body moving in a circular path depends on mass of the body (m), velocity (v) and radius (r) of the circular path. Obtain the expression for the force by dimensional analysis metho (Take the value of k=1)

35. Discuss the properties of scalar and vector products.   (OR)

Derive the kinematic equations of motion for constant acceleration.

36. Explain the motion of blocks connected by a string in

    i) Vertical motion ii) Horizontal motion. (OR)

Write the difference between Centrifugal and centripetal forces.

37.Write the differences between conservative and Non-conservative forces.

    Give two examples each.State and explain work kinetic energy principle(OR)

What is inelastic collision? In which way it is different from elastic collision. Mention few examples day to day life for inelastic collision.

38.Consider a bob attached to a string, hanging from a stand. It oscillates as

a) Identify the forces that act on the bob?

b) What is the acceleration experienced by the bob?.
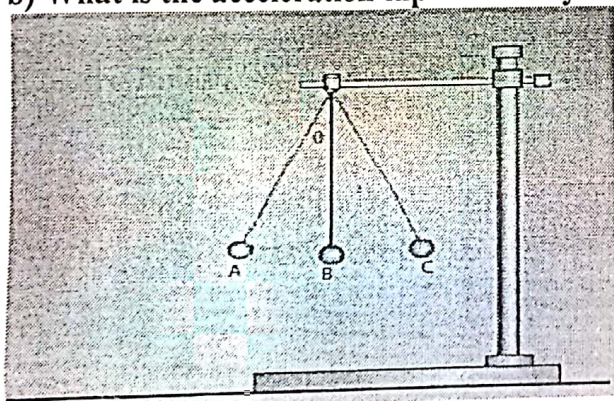
(OR)

Derive the expression for centripetal acceleration.

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