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THIRUNELVELI DISTRICT.
SECOND MID TERM TEST - NOVEMBER 2018
STANDARD - XI

TIME: 1.15 hrs   **PHYSICS**   MARKS:35

PART - I

I.   **Answer the following Questions by choosing correct option.**   10 x 1 = 10

1. The center of mass of a system of particles does not depend upon
   a) position of particles   b) relative distance between particles
   c) masses of particles   d) force acting on particles

2. The ratio of the acceleration for a solid sphere (mass M and radius R) rolling down an incline of angle θ without slipping and slipping down the incline without rolling.
   a) 5 : 7   b) 2 : 3   c) 2 : 5   d) 7 : 5

3. A fly wheel has kinectic energy 360J while rotating at an angular speed. 30 rad/s. It's moment of inertia.
   a) 0.6 kgm²   b) 0.8 kgm²   c) 0.15 kgm²   d) 0.75 kgm²

4. A body of mass 2kg in moving parallel to the X axis with velocity 2ms⁻¹. Then angular momentum of the body at a point (2i + 2j) m will be
   a) 6 kgm²s⁻¹ along "+z" axis   b) 6kgm² s⁻¹ along "-z" axis
   c) 8 kgm² s⁻¹ along "+z" axis   d) 8kgm² s⁻¹ along "-z" axis

5. The gravitational potential energy of the moon with respect to Earth is
   a) always positive   b) always negative
   c) can be positive (or) negative   d) always zero

6. If the mass and radius of the Earth are both doubled then the acceleration due to grarity g.
   a) remaining same   b) $\frac{g}{2}$ c) 2g   d) 4g

7. If a person moves from chennai to trichy his weight.
   a) increases   b) decreases
   c) remains same   d) increases and decreases

8. The ratio of the mean distances of the planets from the sun are $\frac{1}{2} : 1 : \frac{3}{2}$ then the square of time periods are in the ratio of
   a) 1 : 1 : 1   b) 1 : 8 : 27   c) 1 : 27 : 8   d) 27 : 8

9. If a wire is stretched to double of its original length. Then the strain in the wire is
   a) 1   b) 2   c) 3   d) 4

10. Eight rain drops of equal size are falling through air with steady velocity of 20cms⁻¹. If the drops coalesced into a single drop, then its terminal velocity is
    a) 80cms⁻¹   b) 100cms⁻¹   c) 120cms⁻¹   d) 140cms⁻¹

PART - II

II. **Answer any three Questions**
   Answer Q no: 12 compulsory.

3 x 2 = 6

11. Give any two examples of torque in day today life,

12. Mention any two physical significance of moment of inertia?

13. State Newton universal law of gravitation.

14. What is the difference between gravitation potential and gravitational potential energy.

15. A wire of length 2m with the area of cross - section 10^{-6} m² is used to suspend a load of 980N calculate the stress and strain of the wire.

PART - C

III. **Answer any three Questions.**
   Answer Qn: No: 18 Compulsory.

3 x 3 = 9

16. Explain any three types of equilibrium with examples?

17. State pascal's law?

18. A cyclist - while negotiating a circular path with speed 10ms⁻¹ is found to bend an angle by 30° with vertical. what is the radius of the circular path? (Given g = 10)

19. Why weight of body becomes zero at the centre of earth?

20. What is Reynold's number? Give its significance.

PART - D

IV. **Answer all the Questions.**

2 x 5 = 10

21. State and prove parallel axis theorem.

[Or]

   (a) Explain the variation of "g" with altitude   [2]
   (b) Explain the variation of g with depth.   [3]

22. Drive an expression of escape speed?

[Or]

   (a) Metal cube of side 0.20m is subjected to a shearing force of 4000N. The top surface is displaced through 0.50cm with respect to the bottom calculate the shear modulus of elasticity of the metal?

   (b) Which one of those is more elastic steel (or) rubber

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