BOARD OF INTERMEDIATE EDUCATION (AP)

HALF YEARLY EXAMINATIONS - 2021

JUNIOR INTER PHYSICS

MODEL PAPER - 2 (English Version)

Time: 3 Hours   **Max.Marks: 60**

SECTION - A

Note: i) Very short answer type questions.   **10 × 2 = 20**

ii) Answer All questions.

iii) Each question carries 2 marks.

1. What is the contribution of S.Chandra Shekar to Physics?

2. State the number of significant figures in the following.

a) 6729   b) 0.024

3. How can systematic errors be minimised or eliminated?

4. Two forces of magnitudes 3 units and 5 units acts at 60° with each other. What is the magnitude of their resultant?

5. Define unit vector and null vector.

6. What happens to the coefficient of the friction if the weight of the body is doubled?

7. Why does the car with a flattened tyre stop sooner than the one with inflated tyre?

8. Which physical quantity is remains constant i) in an elastic collision ii) in an inelastic collision?

9. Find the vector product of $3\bar{i} - 4\bar{j} + 5\bar{k}$ and $-2\bar{i} + \bar{j} - 3\bar{k}$.

10. The distance of a galaxy from the earth is of the order of 10^{25} m.

Calculate the order of magnitude of the time taken by light to reach us from the galaxy.

SECTION - B

Note: i) Short answer type questions.   **6 × 4 = 24**

ii) Answer any Six questions.

iii) Each question carries 4 marks.

11. A motorist drives north for 30 minutes at 85 kmph and then stops for 15 min. He continues travelling north and covers 130 km in 2 hours. What is his total displacement and average velocity?

12. State parallelogram law of vectors. Derive an expression for the magnitude and direction of the resultant vector.

13. Show that the maximum height reached by a projectile launched at an angle of 45° is one quarter of its range.

14. Mention the methods used to decrease friction.

15. Define vector product. Explain the properties of vector product with two examples.

16. Find the centre of mass of three particles at the vertices of an equilateral triangle. The masses of the particles are 100 g, 150 g, 200 g respectively. Each side of the equilateral triangle is 0.5 long.

17. Define angular acceleration and torque. Establish the relation between angular acceleration and torque.

18. Calculate the time needed for a net force of 5 N to change the velocity of a 10 kg mass by 2 m/s.

SECTION - C

Note: i) Long answer type questions. $2 \times 8 = 16$

ii) Answer any Two questions.

iii) Each question carries 8 marks.

19. What are collisions? Explain the possible types of collisions. Develop the theory of one dimensional elastic collision.

20. Define simple harmonic motion. Show that the motion of (point) projection of a particle performing uniform circular motion, on any diameter is simple harmonic.

21. Derive the equation for the kinetic energy and potential energy of a simple harmonic oscillator and show that the total energy of a particle in SHM is constant at any point on its path.

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