

NEW STANDARD ACADEMY

Exam :
Date : 31-07-2023

NEET - JEE
CLASS : 9TH (M)

Marks: 60
Time: 3 HRS

PHYSICS

1. State Newton's first law of motion.
2. State the law of conservation of momentum.
3. It is required to increase the velocity of a scooter of mass 80 kg from 5 to 25 ms^{-2} in 2 seconds. Calculate the force required.
4. Calculate the force required to impact to a car, a velocity of 30 ms^{-1} in 10 seconds. The mass of the car is 1,500 kg.
5. A 1,000 kg vehicle moving with a speed of 20 ms^{-1} is brought to rest in a distance of 50 m, (i) Find the acceleration; (ii) Calculate the unbalanced force acting on the vehicle; (iii) The actual force applied by the brakes may be slightly less than that calculated. Why?. Give reason.
6. A truck starts from rest and rolls down a hill with constant acceleration. It travels a distance of 400 m in 20 s. Find its acceleration. Find the force acting on it if its mass is 7 metric ton.
7. A boy of mass 60 kg running at 3 m/s jumps on to a trolley of mass 140 kg moving with a velocity of 1.5 m/s in the same direction. What is their common velocity?

CHEMISTRY

1. What happens to the rate of diffusion if the temperature is increased?
2. Why is Kelvin scale of temperature regarded as better scale than Celsius?
3. Name two processes from which it may be concluded that the particles of a gas move continuously.
4. What are two types of matter on the basis of composition?
5. Name the types of mixtures.
6. Write the name of any two compounds which sublime on heating.

BIOLOGY

1. List two similarities between mitochondria and plastids.
2. What is the function of cell wall and plasma membrane?
3. How are new cells reproduced?
4. Write the various functions of all types of epithelial tissues?
5. How is ligament different from tendons?
6. What is the function of connective tissue?

7. What is a cardiac muscle?. Mention its features too.

MATHEMATICS

1. Find two irrational numbers lying between 0.1 and 0.12.
2. If $\sqrt{5} = 2.236$ and $\sqrt{6} = 2.449$, find the value of $\frac{1+\sqrt{2}}{\sqrt{5}+\sqrt{3}} + \frac{1-\sqrt{2}}{\sqrt{5}-\sqrt{3}}$.
3. If $p = 3 - 2\sqrt{2}$, determine $p^2 + \frac{1}{p^2}$.
4. Draw the graph of the following linear equations
(i) $x + y = 4$ (ii) $x - y = 2$ (iii) $y = 3x$
5. The coach of a cricket team buys 7 bats and 6 balls for Rs. 3800. Later, he buys 3 bats and 5 balls for Rs. 1750. Find the cost of each bat and each ball.
6. Half the perimeter of a rectangular garden, whose length is 4 m more than its width, is 36 m.
7. Find the value of $1 - a^2 + 14ab - 4ab^2$.
8. Let A and B are the remainders when the polynomial $y^3 + 2y^2 - 5ay - 7$ and $y^3 + ay^2 - 12y + 6$ are divided by $y + 1$ and $y - 2$ respectively. If $2A + B = 6$, find the value of a.
9. Apply the division algorithm to find the quotient and remainder on dividing $p(x)$ by $g(x)$ as given below
 $p(x) = x^4 - 3x^2 + 4x + 5$, $g(x) = x^2 + 1 - x$
10. Plot the points A(-5, 2), B(3, -2), C(-4, -3) and D(6, 0) on a graph paper.