CARMEL SCHOOL , MADHUPUR
FIRST UNIT TEST 2025 – 2026

STD: X | Time: 1 hr

MATHEMATICS | M.M: 50

You will not be allowed to write during the first 15 minutes. This time is to be spent in reading the question paper. The time given at the head of the paper is the time allowed for writing the answer.

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**SECTION-A (Attempt all questions from this Section.)**

QUESTION 1: Choose the correct answer from the given option [12X1=12]

Q.(i) The reflection of a point (3, - 5) in the line x=m is point ( -5, -5), the value of m is -

(a) 3 (b) - 5 (c) - 1 (d) 4

Q.(ii) If $\tan\theta + \cot\theta = 5$ then find the value of $sec^2\theta + cosec^2\theta - 2$ is

(a) 23 (b) 25 (c) 21 (d) 27

Q .(iii) If the discriminant of quadratic equation $ax^2 + bx + c = 0$ is equal to zero , then two equal roots are (a) $\frac{-b}{2a}$ (b) $\frac{b}{2a}$ (c) $\frac{b}{a}$ (c) $\frac{-a}{2b}$

Q. (iv) The general form of linear in equation in one variable is

(a) ax+b $> 0, ax + b < 0, ax + b \geq 0, ax + b \leq 0$ where a,b$\in W$ a$\neq 0$

(b) ax+b $> 0, ax + b < 0, ax + b \geq 0, ax + b \leq 0$ where a,b$\in N$

© ax+b $> 0, ax + b < 0, ax + b \geq 0, ax + b \leq 0$ where a,b$\in I, a \neq 0$

(d) ax+b $> 0, ax + b < 0, ax + b \geq 0, ax + b \leq 0$ where a,b$\in R, a \neq 0$

Q.(v) $\begin{bmatrix} a+4 & 3b \\ 8 & -6 \end{bmatrix} = \begin{bmatrix} 2a+2 & b+2 \\ 8 & a-8b \end{bmatrix}$ the value of a – 2b is –

(a) 0 (b) - 1 (c) 1 (d) -2

Q. (vI) If $x^2 = 3x$ then

(a) x =0 (b) x =0 or x= 3 (c) x =3 (d) x =0 and x=3

Q.(vii) Rs P is deposited for n number of months in a recurring deposit account which pays interest at the rate of r % per annum. The nature and time of interest calculated is-

(a) compound interest for n numbers of months.

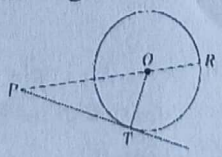
(b) simple interest for n numbers of months. © compound interest for one month

(d) simple interest for one month

Q. (viii) A fair die is thrown once. The probability of getting on even prime number is

**(a)** $\frac{1}{6}$ (b) $\frac{2}{3}$ (c) $\frac{1}{3}$ (d) $\frac{1}{2}$

Q.(ix) In figure, on a circle of radius 7 cm, tangent $PT$ is drawn from a point $P$ such that $PT$ =24 cm. If $O$ is the centre of the circle, then the length of $PR$ is




(a) 30 cm (b) 28 cm (d) 32 (d) 25

[P.T.O]

Q.(x) $\begin{bmatrix}12\\10\end{bmatrix} X = \begin{bmatrix}8 & -2\\1 & 4\end{bmatrix}$ then the order of the matrix X is-

(a) 1X1 (b) 2X1 (c) 1X2 (d) 2X2

Q. (xi) **Assertion (A):** $(1- \text{cosec}^2\theta)(1- \sec^2\theta) = 1$
**Reason (R):** $1+ \tan^2\theta = \sec^2\theta$ and $1 + \cot^2\theta = \text{cosec}^2\theta$.
(a) A is true, R is false. (b) A is false, R is true.
(c) Both A and R are true, and R is the correct reason for A.
(d) Both A and R are true, and R is incorrect reason for A.

Q. (xii) ***Assertion(A)***: The probability of an event that cannot happen or which is impossible, is equal to Zero ***Reason(R):*** The probability lies between 0 and 1. Hence it cannot be negative.

(a) Both A and R are true and R is the correct explanation for A
(b) Both A and R are true and R is not the correct explanation for A
(c) A is true but R is false (d) A is false but R is true

**QUESTION 2 : (a)**The point P (3, 4) is reflected to $p'$ in the x-axis and $o'$ is the image of O (origin) in the line $PP'$. Find: **[2X4=8]**

(i) the co-ordinates of P′ and O′, (ii) the length of segments PP′ and OO′.
(iii) the perimeter of the quadrilateral POP′O′

(b) Mr. Gupta opened a recurring deposited account in a bank. He deposited Rs 2500 per month for two years. At the time of maturity, he got Rs 67500.Find
(i) The total interest earned by Mr. Gupta. (ii) The rate of interest per annum

**SECTION –B (Attempt all question)**

QUESTION: 3 [3+3+4]

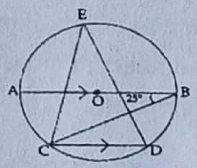
(a) If P is the solution set of $-3x + 4 < 2x - 3$, $x \in N$ and Q is the solution set of $4x - 5 < 12$, $x \in W$, find (i) $P \cap Q$ (ii) $Q - P$

(b) Prove that: $\frac{\sec A - \tan A}{\sec A + \tan A} = \frac{cos^2 A}{(1+sinA)^2}$

(c) Without solving find the value of m for which given equation has real and equal roots $x^2 + 2(m - 1)x + (m + 5) = 0$

QUESTION: 4 [3 +3+4]

**(a)**In the figure O is the center of a circle. Chord CD is parallel to the diameter AB. If $< ABC$ 25⁰, calculate $< CED$




**(b)** A box contains 5 apples, 6 oranges and x bananas. If the probability of selecting an apple from the box is $\frac{1}{3}$, find the number of bananas in the box .

**(c)** Find x and y if $\begin{bmatrix}-2 & 0\\3 & 1\end{bmatrix}\begin{bmatrix}-1\\2x\end{bmatrix} + 3\begin{bmatrix}-2\\1\end{bmatrix} = 2\begin{bmatrix}y\\3\end{bmatrix}$

QUESTION: 5 [3+3+4]

(a) If If a, b, c are the side of the right triangle where c is the hypotenuse , prove that the radius r of the circle which touches the side of the triangle is given by $r = \frac{a+b-c}{2}$

(b) Prove that : $\frac{sinA}{1+cotA} - \frac{cosA}{1+tanA} = \sin A - \cos A$

**(c)** A boat can cover 10 km up the stream and 5 km down the stream in 6 hours. If the speed of the stream is 1.5 km/hr. find the speed of the boat in still water.

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CARMEL SCHOOL MADHUPUR

FIRST UNIT TEST 2025-26

STD: - IX F.M:- 50

SUB: - HINDI TIME: - 1HR

विभाग 'अ'

1. निम्नलिखित में से किसी एक पत्र का उत्तर लिखिए। (10)

(क) छात्रावास में रहने वाले अपने भाईयाबहन को पत्र लिखकर 'समय के सदुपयोग' के महत्व पर प्रकाश डालिए।

(ख) अपने नगर के स्वास्थ्य अधिकारी को पत्र लिखकर चारों ओर व्याप्त गंदगी उसके दुष्परिणाम और उससे छुटकारा पाने के उपाय के बारे में बताइए।

2. निर्देशानुसार प्रश्नों के उत्तर लिखिए।

(क) निम्नलिखित शब्दों का तत्सम रूप लिखिए। (5)

(घी, बहू,अचरज, सीख, भाप)

(ख) निम्नलिखित शब्दों का विलोम रूपलिखिए। (5)

(अधम, आजाद, आय, उर्वर, ऐच्छिक)

(ग) निम्नलिखित शब्दों को शुद्ध करें। (5)

(परिक्षा , कवित्री, अतिथी, कृश्न, नदीयां)

विभाग 'ब'

3. निम्नलिखित में से किसी एक अवतरण का उत्तर लिखें। (25)

**पद्य भाग**

सात समंद, की मसिकरौं,लेखनी सब बनराय।
सब धरती कागदकरौं, हरि गुण लिखा नजाए।।

(क) 'सातसमंद' कहकर कवि क्या स्पष्ट करना चाहते हैं ?विस्तार से लिखिए।

(ख) 'हरि गुण लिखा ना जाए' कबीर ने ऐसा क्यों कहा?

(ग) कबीर दास जी का संक्षिप्त परिचय लिखें।

(घ) प्रस्तुत पाठ में कबीर ने क्या-क्या संदेश दिए हैं?

(ङ) निम्नलिखित शब्दों के अर्थ लिखिए।

(मसि, कागद, लेखनी, बनाराय, समंद)

**गद्य भाग**

4. "रुपया कमाने का यह कितना आसान तरीका है ।मैं सारा दिन मजदूरी करता हूं तब महीने भर बाद दसरुपए हाथ आतेहैं ।"

(क) इस कथन का वक्ता कौन है और वह क्या करता है ?वक्ता का परिचय दें।

(ख) "मैं सारा दिन मजदूरी करता हूं" यह विचार वक्ता के दिमाग में कब और क्यों आया ?

(ग) प्रस्तुत वाक्य में रुपया कमाने का आसान तरीका किसे बताया गया है और क्यों?

(घ) इस वाक्य (अवतरण) का उद्देश्य स्पष्ट कीजिए।

(ङ) लेखक सुदर्शन का पूरा परिचय लिखिए।

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CARMEL SCHOOL , MADHUPUR

FIRST UNIT TEST 2025 – 2026

STD: IX

Time: 1 hr

PHYSICS

M.M: 50

Q.No.I Choose the correct option. [7]

(i) Which one of the following is a derived Unit ?

(a) Metre (b) Kelv (c) Metre$^3$ (d) Mole

(ii) The strip of a Vernier callipers is used to measure :

(a) Length of a wire (b) Depth of a beaker (c) Internal diameter of a sphere (d) Diameter of a hollow sphere

(iii) The Pendulum used in a Clock is :

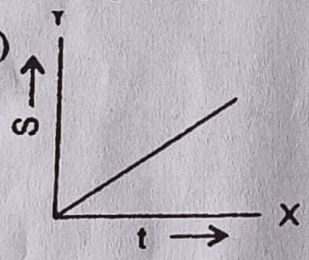
(a) Simple Pendulum (b) Compound pendulum. (c) Second pendulum. (d) None of these

(iv) For a particle in motion which of the following quantity can be zero at any given instant?

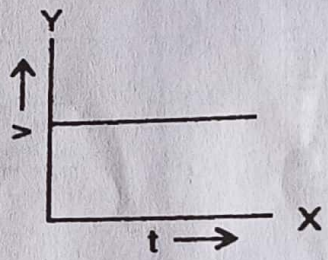
(a) Displacement (b) Distance (c) Speed (d) all of these

(v) The graph representing the state of rest of an object is :

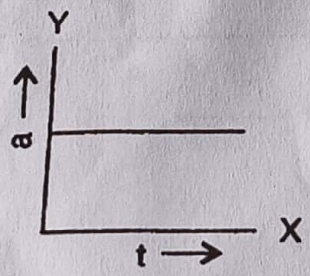
(a)



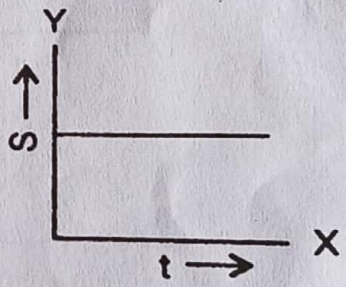

(b)




(c)




(d)




(vi) If a body is moving with a uniform retardation then its acceleration will be

(a) Positive. ( b) Negative. (c) Zero. (d) Cannot say

(vii) The unit of time is:

(a) Light year. (b) Parsec. (c) Leap year. (d) angstrom

Q.No.II Complete the following sentences:- [5]

(i) On the earth's surface, g is ,..... at the poles and ..... at the equator.

(ii) The time period of oscillation is .....,....,.... proportional to the square root of ..... due to gravity.

(iii) If the velocity of body..... with time, the motion is said to be retarded.

(iv) The slope of displacement time graph gives the .....

(v) Physical quantity= ,,.....× .....

Q.No.III (i) Write down the derived unit of the given physical quantities:- [8]

Force. Acceleration. Work or Energy. Density

(ii) What is backlash error? Why is it caused? How is it avoided?

(iii) Can displacement be zero if distance is not zero ? Give one example to explain your answer .

(iv) Mention four properties that must be satisfied to a Unit for Globally acceptable .

[P.T.O]

(Section – B) (Attempt all sections each section mark is as follows 1 , 2, 3)

Q.No.IV (a) What is fundamental and derived Unit ? Give three examples of each .

(b) Draw the velocity – time graphs for a body moving with.

(i) Uniform Velocity. (ii) Uniform acceleration

(c) A Body with an initial velocity of 18 km/h accelerates uniformly at the rate of 9cm/ $s^2$ over a distance of 200 m Calculate

(i) The acceleration in $m/s^2$. (ii) it's velocity

Q.No.V (a) Write down the prefix of the given value.

(i) 2.5 G Hz. (ii) 50 nm

(b) Define the terms and write its S.I unit

(i) Oscillation. (ii) Time period. (iii) Frequency. (iv) Amplitude

(c) The figure given below represents the displacement time .sketch of motion of two cars A and B. Find :

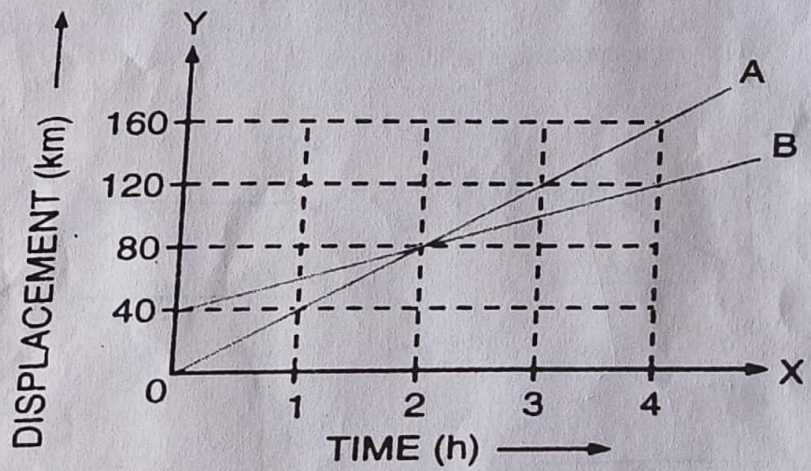



*Fig. 2.36*

(i) The distance by which the car B was initially ahead of car A .

(ii) The velocity of Car A and Car B .

(iii) The time in which car A catches car B.

Q.No.VI (a) When is a Vernier Callipers said to be free from Zero error?

(b) It takes time 8 minutes for light to reach from the sun to the earth surface. If speed of light is taken to be $3 \times 10^8$ m/s. Find the distance from the sun to the earth in km .

(c) Write down the factors affecting the time period of a simple pendulum.

Q.No.VII (a) What is meant by the terms retardation . Name it's S .I unit.

(b) Define the terms Speed and Velocity also write three difference between them .

(c) A car acquires a velocity of 72 km/ h in 10 s starting from rest. Calculate:

(i) the acceleration (ii) the average velocity and (iii) the distance travelled in this time

Q.No.VIII (a) What is scalar and vector quantity? Give three examples of each.

(b) Compare the time periods of two simple pendulums of length 1m and 16 m at a place.

(c) Derive the following questions for a uniformly accelerated motion:

(i ) $v = u + at$ (ii) $S = ut + \frac{1}{2} at^2$. (iii) $v^2 = u^2 + 2aS$

Where the symbols have their usual meanings.

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