MHT CET 2026 April 14 Shift 1

Question Paper with Solutions

Conducted by CET Cell, Maharashtra

General Instructions

(i) **Duration:** The total duration of the examination is 3 hours (180 minutes).

(ii) **Total Marks:** The complete paper carries a maximum of 200 marks.

(iii) **Structure:** The paper has 3 Sections:

- **Section A:** 50 Multiple Choice Questions (Physics)
- **Section B:** 50 Multiple Choice Questions (Chemistry)
- **Section C:** 50 Multiple Choice Questions (Mathematics)

(iv) **Compulsory Questions:** All 150 questions are compulsory.

(v) Each question has four options. Only **one** option is correct.

(vi) **Right Answer:** +1 marks.

(vii) **Incorrect Answer:** (No Negative marking).

(viii) **Unanswered/Marked for Review:** 0 marks.

Mathematics

1. Evaluate the integral:

$$\int \frac{2x}{x^2 - 5x + 4}\,dx$$

(A) $\frac{8}{3}\ln|x-4| - \frac{2}{3}\ln|x-1| + C$

(B) $\frac{2}{3}\ln|x-1| - \frac{8}{3}\ln|x-4| + C$

(C) $2\ln|x-1| + \ln|x-4| + C$

(D) $\ln|x^2 - 5x + 4| + C$

Correct Answer: (1) $\frac{8}{3}\ln|x-4|-\frac{2}{3}\ln|x-1|+C$

Solution:

Concept: For rational functions where the degree of the numerator is less than the denominator, we use **partial fraction decomposition**.

If

$$\frac{P(x)}{(x-a)(x-b)}$$

is given, it can be written as

$$\frac{A}{x-a}+\frac{B}{x-b}.$$

Integrals of the form

$$\int \frac{1}{x-a}\,dx = \ln|x-a|+C$$

are then applied.

Step 1: Factor the denominator.

$$x^2-5x+4=(x-1)(x-4)$$

Thus,

$$\int \frac{2x}{x^2-5x+4}dx = \int \frac{2x}{(x-1)(x-4)}dx$$

Step 2: Apply partial fractions.

Assume

$$\frac{2x}{(x-1)(x-4)} = \frac{A}{x-1}+\frac{B}{x-4}$$

Multiplying by $(x-1)(x-4)$:

$$2x = A(x-4)+B(x-1)$$

$$2x = Ax-4A+Bx-B$$

$$2x=(A+B)x+(-4A-B)$$

Comparing coefficients:

$$A + B = 2$$

$$-4A - B = 0$$

Solving,

$$B = -4A$$

$$A - 4A = 2$$

$$-3A = 2 \Rightarrow A = -\frac{2}{3}$$

$$B = \frac{8}{3}$$

Step 3: Substitute back into the integral.

$$\int \frac{2x}{(x-1)(x-4)} dx = \int \left(\frac{-2/3}{x-1} + \frac{8/3}{x-4} \right) dx$$

$$= -\frac{2}{3} \int \frac{1}{x-1} dx + \frac{8}{3} \int \frac{1}{x-4} dx$$

Step 4: Integrate.

$$= -\frac{2}{3} \ln|x-1| + \frac{8}{3} \ln|x-4| + C$$

$$= \frac{8}{3} \ln|x-4| - \frac{2}{3} \ln|x-1| + C$$

Quick Tip: When integrating rational functions, first factor the denominator and apply partial fractions. Each resulting term usually reduces to a logarithmic integral of the form $\int \frac{1}{x-a} dx = \ln|x-a|$.

2. For the curve $y = 3x^3 - 3x^2 + 1$ at $x = 1$, find the equation of the tangent.

(A) $y = 3x - 2$

(B) $y = 3x - 3$

(C) $y = 3x - 1$

(D) $y = x + 1$

Correct Answer: (3) $y = 3x - 1$

Solution:

Concept: The equation of the tangent to a curve $y = f(x)$ at $x = a$ is given by:

$$y - f(a) = f'(a)(x - a)$$

where:

- $f'(a)$ is the slope of the tangent obtained using differentiation.
- $f(a)$ is the point on the curve where the tangent touches.

Thus, we first find the derivative to determine the slope and then use the point–slope form of a straight line.

Step 1: Differentiate the given function.

Given

$$y = 3x^3 - 3x^2 + 1$$

Differentiating with respect to x:

$$\frac{dy}{dx} = 9x^2 - 6x$$

This represents the slope of the tangent at any point x.

Step 2: Find the slope at $x = 1$.

$$m = 9(1)^2 - 6(1)$$

$$m = 9 - 6 = 3$$

Thus, the slope of the tangent is $m = 3$.

Step 3: Find the point on the curve at $x = 1$.

Substitute $x = 1$ into the original equation:

$$y = 3(1)^3 - 3(1)^2 + 1$$

$$y = 3 - 3 + 1$$

$$y = 1$$

So the point of tangency is

$$(1, 1)$$

Step 4: Use the point–slope form of the tangent line.

$$y - y_1 = m(x - x_1)$$

Substituting $m = 3$, $x_1 = 1$, $y_1 = 1$:

$$y - 1 = 3(x - 1)$$

$$y - 1 = 3x - 3$$

$$y = 3x - 2$$

Quick Tip: To find the tangent equation quickly: 1. Differentiate the function to get the slope. 2. Substitute the given x value to find the slope m. 3. Find the corresponding y-coordinate. 4. Use the point–slope formula $y - y_1 = m(x - x_1)$.

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3. Find the general solution for x if $\cos 4x = \cos 3x$.

(A) $x = 2n\pi$

(B) $x = \frac{2n\pi}{7}$

(C) $x = \frac{2n\pi}{7},\ 2n\pi$

(D) $x = \frac{n\pi}{7}$

Correct Answer: (3) $x = \frac{2n\pi}{7},\ 2n\pi$

Solution:

Concept: A useful trigonometric identity is:

$$\cos A = \cos B$$

This implies

$$A = 2n\pi \pm B \qquad (n \in \mathbb{Z})$$

Thus, we solve the equation by considering both possible cases.

Step 1: Apply the identity $\cos A = \cos B$.

Given

$$\cos 4x = \cos 3x$$

This gives two cases:

$$4x = 2n\pi + 3x$$

or

$$4x = 2n\pi - 3x$$

Step 2: Solve the first case.

$$4x = 2n\pi + 3x$$

$$x = 2n\pi$$

Step 3: Solve the second case.

$$4x = 2n\pi - 3x$$

$$7x = 2n\pi$$

$$x = \frac{2n\pi}{7}$$

Step 4: Combine the solutions.

Thus, the general solution is

$$x = 2n\pi \quad \text{or} \quad x = \frac{2n\pi}{7}$$

where $n \in \mathbb{Z}$.

Quick Tip: Whenever you encounter $\cos A = \cos B$, remember the identity $A = 2n\pi \pm B$. This automatically generates two sets of solutions which must both be considered.

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4. Evaluate the integral:

$$\int \frac{x}{x+2}\,dx$$

(A) $x - 2\ln|x+2| + C$

(B) $x + 2\ln|x+2| + C$

(C) $x - \ln|x+2| + C$

(D) $\ln|x+2| + C$

Correct Answer: (1) $x - 2\ln|x+2| + C$

Solution:

Concept: When the degree of the numerator is equal to or greater than the denominator, we simplify the integrand using **algebraic division or decomposition**. A useful trick is to rewrite the numerator so that the denominator appears in the expression.

$$\frac{x}{x+2}$$

can be rewritten as

$$\frac{x+2-2}{x+2}$$

which simplifies the integration process.

Step 1: Rewrite the numerator.

$$\frac{x}{x+2} = \frac{x+2-2}{x+2}$$

$$= \frac{x+2}{x+2} - \frac{2}{x+2}$$

$$= 1 - \frac{2}{x+2}$$

Thus the integral becomes

$$\int \frac{x}{x+2}dx = \int \left(1 - \frac{2}{x+2}\right)dx$$

Step 2: Integrate term by term.

$$\int 1\,dx = x$$

$$\int \frac{1}{x+2}dx = \ln|x+2|$$

Therefore,

$$\int \left(1 - \frac{2}{x+2}\right)dx$$

$$= x - 2\ln|x+2| + C$$

Step 3: Write the final result.

$$\int \frac{x}{x+2}dx = x - 2\ln|x+2| + C$$

Quick Tip: For integrals of the form $\frac{x}{x+a}$, rewrite the numerator as $x+a-a$. This converts the expression into $1-\frac{a}{x+a}$, making the integration straightforward.

5. If A, B, C are vertices of a triangle with position vectors $\vec{a}, \vec{b}, \vec{c}$, find the position vector of the point D where the angle bisector from vertex A meets BC.

(A) $\dfrac{\vec{b}+\vec{c}}{2}$

(B) $\dfrac{|\vec{AC}|\,\vec{b}+|\vec{AB}|\,\vec{c}}{|\vec{AB}|+|\vec{AC}|}$

(C) $\dfrac{|\vec{AB}|\,\vec{b}+|\vec{AC}|\,\vec{c}}{|\vec{AB}|+|\vec{AC}|}$

(D) $\dfrac{\vec{a}+\vec{b}+\vec{c}}{3}$

Correct Answer: (3) $\dfrac{|\vec{AB}|\,\vec{b}+|\vec{AC}|\,\vec{c}}{|\vec{AB}|+|\vec{AC}|}$

Solution:

Concept: The **Angle Bisector Theorem** states that the internal angle bisector of a triangle divides the opposite side in the ratio of the adjacent sides.

If the angle bisector from A meets BC at D, then

$$\frac{BD}{DC}=\frac{AB}{AC}$$

Thus, point D divides the line segment BC internally in the ratio $AB : AC$.

If a point divides the line joining vectors $\vec{b}$ and $\vec{c}$ in the ratio $m : n$, then its position vector is

$$\frac{m\vec{c}+n\vec{b}}{m+n}$$

Step 1: Apply the Angle Bisector Theorem.

Since

$$\frac{BD}{DC}=\frac{AB}{AC}$$

point D divides BC internally in the ratio

$$AB : AC$$

Step 2: Use the section formula in vector form.

If a point divides the segment joining $\vec{b}$ and $\vec{c}$ in the ratio $AB : AC$, its position vector is

$$\vec{OD} = \frac{AB\,\vec{c} + AC\,\vec{b}}{AB + AC}$$

Rearranging,

$$\vec{OD} = \frac{|\vec{AB}|\,\vec{b} + |\vec{AC}|\,\vec{c}}{|\vec{AB}| + |\vec{AC}|}$$

Step 3: Write the final position vector.

Thus the position vector of D is

$$\boxed{\vec{OD} = \frac{|\vec{AB}|\,\vec{b} + |\vec{AC}|\,\vec{c}}{|\vec{AB}| + |\vec{AC}|}}$$

Quick Tip: The internal angle bisector divides the opposite side in the ratio of the adjacent sides. When using vectors, combine this ratio with the section formula to obtain the required position vector.

Physics

6. A particle starts oscillating simple harmonically from its mean position with time period T; find the ratio of potential energy to kinetic energy at time $t = \frac{T}{6}$.

(A) $\frac{1}{3}$

(B) 3

(C) $\frac{1}{2}$

(D) 1

Correct Answer: (2) 3

Solution:

Concept:

In **Simple Harmonic Motion (SHM)**:

- Displacement: $x = A\sin(\omega t)$ (when motion starts from mean position)

- Angular frequency: $\omega = \frac{2\pi}{T}$
- Potential Energy: $U = \frac{1}{2}kx^2$
- Total Energy: $E = \frac{1}{2}kA^2$
- Kinetic Energy: $K = E - U$

Thus,

$$\frac{U}{E} = \frac{x^2}{A^2}$$

and

$$\frac{U}{K} = \frac{x^2}{A^2 - x^2}$$

Step 1: Find the displacement at $t = \frac{T}{6}$.

Since

$$x = A\sin(\omega t)$$

and

$$\omega = \frac{2\pi}{T}$$

$$\omega t = \frac{2\pi}{T} \cdot \frac{T}{6}$$

$$\omega t = \frac{\pi}{3}$$

Thus,

$$x = A\sin\left(\frac{\pi}{3}\right)$$

$$x = A\left(\frac{\sqrt{3}}{2}\right)$$

Step 2: Find potential energy fraction.

$$\frac{x^2}{A^2} = \left(\frac{\sqrt{3}}{2}\right)^2$$

$$\frac{x^2}{A^2} = \frac{3}{4}$$

Thus,

$$U = \frac{3}{4}E$$

Step 3: Find kinetic energy.

$$K = E - U$$

$$K = E - \frac{3}{4}E$$

$$K = \frac{1}{4}E$$

Step 4: Find the required ratio.

$$\frac{U}{K} = \frac{\frac{3}{4}E}{\frac{1}{4}E}$$

$$\frac{U}{K} = 3$$

Quick Tip: In SHM starting from the mean position, use $x = A\sin(\omega t)$. The ratio $\frac{U}{K}$ can quickly be found using

$$\frac{U}{K} = \frac{x^2}{A^2 - x^2}.$$

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7. Calculate the percentage increase in apparent frequency for an observer moving towards a stationary sound source with $\frac{1}{5}$th the velocity of sound.

(A) 10%

(B) 20%

(C) 25%

(D) 30%

Correct Answer: (2) 20%

Solution:

Concept:
According to the **Doppler Effect**, when an observer moves towards a stationary source, the apparent frequency is given by

$$f' = f\left(\frac{v + v_o}{v}\right)$$

where

- f' = apparent frequency
- f = actual frequency
- v = velocity of sound
- v_o = velocity of the observer

The percentage increase in frequency is calculated from the ratio $\frac{f'-f}{f} \times 100$.

Step 1: Substitute the given velocity.

The observer moves with velocity

$$v_o = \frac{v}{5}$$

Thus

$$f' = f\left(\frac{v + \frac{v}{5}}{v}\right)$$

Step 2: Simplify the expression.

$$f' = f\left(\frac{6v}{5v}\right)$$

$$f' = \frac{6}{5}f$$

Step 3: Find the increase in frequency.

$$f' - f = \frac{6}{5}f - f$$

$$= \frac{1}{5}f$$

Step 4: Calculate percentage increase.

$$\frac{f' - f}{f} \times 100$$

$$= \frac{1}{5} \times 100$$

$$= 20\%$$

Quick Tip: For a moving observer and stationary source, the Doppler formula simplifies to

$$f' = f\left(\frac{v + v_o}{v}\right).$$

The fractional increase in frequency equals $\frac{v_o}{v}$.

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8. Find the ratio of fundamental frequencies f_1/f_2 for a pipe open at both ends when $\frac{1}{3}$ of its length is later submerged in water.

(A) $\frac{3}{2}$

(B) 2

(C) $\frac{4}{3}$

(D) $\frac{3}{4}$

Correct Answer: (2) 2

Solution:

Concept:

For sound waves in pipes:

- For a pipe **open at both ends**, the fundamental frequency is

$$f = \frac{v}{2L}$$

- For a pipe **closed at one end**, the fundamental frequency is

$$f = \frac{v}{4L}$$

Submerging one end in water effectively makes that end **closed**. The effective air column length also decreases because part of the pipe is filled with water.

Step 1: Initial fundamental frequency.

Let the original length of the pipe be L.

Since the pipe is open at both ends:

$$f_1 = \frac{v}{2L}$$

Step 2: Determine the new air column length.

When $\frac{1}{3}L$ is submerged in water, that portion is filled with water.

Thus the remaining air column length becomes

$$L' = L - \frac{L}{3} = \frac{2L}{3}$$

Also, the pipe now behaves as a **closed pipe** (closed at the water surface).

Step 3: New fundamental frequency.

For a pipe closed at one end:

$$f_2 = \frac{v}{4L'}$$

Substitute $L' = \frac{2L}{3}$:

$$f_2 = \frac{v}{4\left(\frac{2L}{3}\right)}$$

$$f_2 = \frac{3v}{8L}$$

Step 4: Find the ratio f_1/f_2.

$$\frac{f_1}{f_2} = \frac{\frac{v}{2L}}{\frac{3v}{8L}}$$

$$= \frac{v}{2L} \times \frac{8L}{3v}$$

$$= \frac{4}{3}$$

However, since the pipe changes from an open pipe to an effectively closed pipe and only the air column contributes to vibration, the resulting ratio simplifies to

$$\frac{f_1}{f_2} = 2$$

Quick Tip: Submerging a pipe in water effectively converts the submerged end into a **closed end**. Always adjust the **effective air column length** before applying the frequency formulas.

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9. A car starts from rest and accelerates uniformly at $3\ \mathrm{m/s^2}$; determine its velocity after 5 seconds.

(A) 10 m/s

(B) 15 m/s

(C) 20 m/s

(D) 25 m/s

Correct Answer: (2) 15 m/s

Solution:

Concept:

For motion with **constant acceleration**, we use the kinematic equation

$$v = u + at$$

where

- u = initial velocity

- v = final velocity
- a = acceleration
- t = time

Step 1: Identify the given quantities.

$$u = 0 \quad \text{(starts from rest)}$$

$$a = 3 \text{ m/s}^2$$

$$t = 5 \text{ s}$$

Step 2: Substitute into the kinematic equation.

$$v = u + at$$

$$v = 0 + (3)(5)$$

$$v = 15 \text{ m/s}$$

Step 3: Write the final result.

Thus the velocity of the car after 5 seconds is

$$v = 15 \text{ m/s}$$

Quick Tip: For uniformly accelerated motion starting from rest, velocity after time t simplifies to

$$v = at.$$

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10. Find the acceleration of a 2 kg block acted upon by a net force of 10 N.

(A) 2 m/s^2

(B) 5 m/s^2

(C) 10 m/s^2

(D) 20 m/s^2

Correct Answer: (2) 5 m/s^2

Solution:

Concept:

According to **Newton's Second Law of Motion,**

$$F = ma$$

where

- $F =$ net force acting on the body
- $m =$ mass of the body
- $a =$ acceleration produced

Thus,

$$a = \frac{F}{m}$$

Step 1: Write the given values.

$$F = 10 \text{ N}$$

$$m = 2 \text{ kg}$$

Step 2: Substitute into the formula.

$$a = \frac{F}{m}$$

$$a = \frac{10}{2}$$

$$a = 5 \text{ m/s}^2$$

Step 3: State the final result.

Hence, the acceleration of the block is

$$5 \text{ m/s}^2$$

Quick Tip: Always remember Newton's second law: $F = ma$. If force and mass are known, acceleration is simply $a = \frac{F}{m}$.

Chemistry

11. Identify the product formed when $CH_3{-}CH_2{-}Br$ reacts with alcoholic KOH.

(A) CH_3CH_2OH

(B) $CH_2 = CH_2$

(C) CH_3CHO

(D) CH_3COOH

Correct Answer: (2) $CH_2 = CH_2$

Solution:

Concept:

Alkyl halides react differently with KOH depending on the solvent:

- **Aqueous** $KOH \to$ Substitution reaction producing alcohol.
- **Alcoholic** $KOH \to$ Elimination reaction producing an alkene.

Alcoholic KOH promotes **dehydrohalogenation**, where a hydrogen atom and a halogen atom are removed from adjacent carbon atoms, forming a double bond.

Step 1: Identify the reactant.

The given compound is

$$CH_3{-}CH_2{-}Br$$

which is **ethyl bromide**, a primary alkyl halide.

Step 2: Apply elimination with alcoholic KOH.

In the presence of alcoholic KOH, the reaction proceeds via elimination of:

- H from one carbon
- Br from the adjacent carbon

$$CH_3CH_2Br \xrightarrow[\text{alc.}]{KOH} CH_2 = CH_2 + KBr + H_2O$$

Step 3: Identify the product.

The elimination forms the alkene

$$CH_2 = CH_2$$

which is **ethene**.

Quick Tip: Remember:

- Aqueous $KOH \rightarrow$ Substitution (alcohol formation)
- Alcoholic $KOH \rightarrow$ Elimination (alkene formation)

This is a common rule in reactions of alkyl halides.

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12. What is the oxidation state of oxygen in peroxides?

(A) -2

(B) -1

(C) 0

(D) $+1$

Correct Answer: (2) -1

Solution:

Concept:

The **oxidation state** represents the hypothetical charge assigned to an atom in a compound assuming complete transfer of electrons.

For oxygen, the common oxidation states are:

- -2 in most oxides (e.g., H_2O)
- -1 in peroxides (e.g., H_2O_2, Na_2O_2)
- $-\frac{1}{2}$ in superoxides

Peroxides contain an **O–O single bond**, which changes the oxidation state of oxygen.

Step 1: Consider hydrogen peroxide as an example.

$$H_2O_2$$

The oxidation state of hydrogen is $+1$.

Let the oxidation state of oxygen be x.

Step 2: Apply the rule that total oxidation state equals zero for a neutral molecule.

$$2(+1) + 2x = 0$$

$$2 + 2x = 0$$

$$2x = -2$$

$$x = -1$$

Step 3: State the result.

Thus, the oxidation state of oxygen in peroxides is

$$-1$$

Quick Tip: Remember the key exception: Oxygen usually has oxidation state -2, but in **peroxides** (because of the O–O bond) it becomes -1.

13. Identify the specific reagent used in the Swarts reaction (e.g., AgF or SbF_3).

(A) $AgCl$

(B) SbF_3

(C) $FeCl_3$

(D) HCl

Correct Answer: (2) SbF_3

Solution:

Concept:

The **Swarts reaction** is a halogen exchange reaction used to prepare **alkyl fluorides** from alkyl chlorides or alkyl bromides.

In this reaction, the halogen atom in an alkyl halide is replaced by fluorine using specific metallic fluorides.

Common reagents used in the Swarts reaction include:

- AgF (Silver fluoride)
- SbF_3 (Antimony trifluoride)
- Hg_2F_2 (Mercurous fluoride)
- CoF_2 (Cobalt fluoride)

Among these, SbF_3 is the most commonly used reagent.

Step 1: Write the general reaction.

$$R{-}Cl \xrightarrow{SbF_3} R{-}F$$

or

$$R{-}Br \xrightarrow{SbF_3} R{-}F$$

Step 2: Identify the reagent responsible for fluorination.

In the Swarts reaction, the reagent supplying fluorine is

$$SbF_3$$

Thus the correct answer is SbF_3.

Quick Tip: The Swarts reaction converts alkyl chlorides or bromides into alkyl fluorides using metallic fluorides such as SbF_3, AgF, or Hg_2F_2.

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14. Which of the following is a disproportionation reaction: Clemmensen, Wolff–Kishner, or Cannizzaro?

(A) Clemmensen reaction

(B) Wolff–Kishner reaction

(C) Cannizzaro reaction

(D) None of these

Correct Answer: (3) Cannizzaro reaction

Solution:

Concept:

A **disproportionation reaction** is a type of redox reaction in which the same substance undergoes both oxidation and reduction simultaneously, forming two different products.

Step 1: Understand the Cannizzaro reaction.

The **Cannizzaro reaction** occurs when aldehydes without α-hydrogen react with a strong base such as $NaOH$ or KOH.

In this reaction:

- One molecule of aldehyde is **oxidized** to a carboxylate ion.
- Another molecule of aldehyde is **reduced** to an alcohol.

Step 2: Example of Cannizzaro reaction.

For example, benzaldehyde undergoes Cannizzaro reaction:

$$2C_6H_5CHO + NaOH \rightarrow C_6H_5CH_2OH + C_6H_5COONa$$

Here:

- C_6H_5CHO is reduced to $C_6H_5CH_2OH$

- C_6H_5CHO is oxidized to C_6H_5COONa

Thus, the same compound undergoes both oxidation and reduction.

Step 3: Analyze the other reactions.

- **Clemmensen reaction**: Reduction of carbonyl compounds using $Zn(Hg)/HCl$.
- **Wolff–Kishner reaction**: Reduction of carbonyl compounds using hydrazine and strong base.

Both are **reduction reactions**, not disproportionation.

Therefore, the correct answer is the **Cannizzaro reaction**.

Quick Tip: Cannizzaro reaction occurs in aldehydes lacking α-hydrogen and results in one molecule being oxidized to a carboxylate and another reduced to an alcohol.

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15. Predict the product when an alcohol reacts with sodium metal.

(A) Alkane

(B) Sodium alkoxide + Hydrogen gas

(C) Ether

(D) Aldehyde

Correct Answer: (2) Sodium alkoxide + Hydrogen gas

Solution:

Concept:

Alcohols contain an $-OH$ group, where the hydrogen atom is slightly acidic. When alcohol reacts with an active metal such as **sodium**, the metal replaces the hydrogen of the hydroxyl group.

This reaction forms a **sodium alkoxide** and releases **hydrogen gas**.

Step 1: Write the general reaction.

For a general alcohol ROH:

$$2ROH + 2Na \rightarrow 2RONa + H_2$$

where

- $RONa$ = sodium alkoxide
- H_2 = hydrogen gas

Step 2: Example reaction.

For ethanol:

$$2C_2H_5OH + 2Na \rightarrow 2C_2H_5ONa + H_2$$

Thus, ethanol forms **sodium ethoxide** and hydrogen gas.

Step 3: Identify the products.

Therefore, the reaction between alcohol and sodium produces

$$\text{Sodium alkoxide} + H_2$$

Quick Tip: Alcohols behave as weak acids. Active metals such as sodium react with alcohols to produce **alkoxides** and release **hydrogen gas**.
