MHT CET 2026 April 18 Shift 2

Question Paper with Solutions(Memory Based)

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:** Physics (+1 marks), Chemistry (+1 marks) and Mathematics (+2 marks).

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

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

1. Which of the following is not used as a parameter for the classification of polymers?

(A) Source of polymer

(B) Structure of polymer chain

(C) Mode of polymerization

(D) Boiling point of monomer

Correct Answer: (4) Boiling point of monomer

Solution:

Concept: Polymers are commonly classified based on several important parameters related to their origin, structure, and method of formation. These classifications help chemists understand the properties and applications of different polymers.
The common parameters used for classification of polymers include:

- **Source of polymer**
- **Structure of polymer chain**
- **Mode of polymerization**

However, physical properties of monomers such as their boiling point are not used as a criterion for polymer classification.
Step 1: Classification based on source.
Polymers can be classified based on their source as:

- Natural polymers (e.g., cellulose, proteins)
- Semi-synthetic polymers (e.g., cellulose acetate)
- Synthetic polymers (e.g., nylon, polyethylene)

Thus, **source of polymer** is a valid classification parameter.
Step 2: Classification based on structure.
Based on the structure of polymer chains, polymers are divided into:

- Linear polymers
- Branched polymers
- Cross-linked or network polymers

Therefore, **structure of polymer chain** is also a classification parameter.
Step 3: Classification based on mode of polymerization.
Depending on how monomers combine to form polymers, they are classified into:

- Addition polymers
- Condensation polymers

Hence, **mode of polymerization** is another valid classification parameter.

Step 4: Identify the incorrect parameter.

The **boiling point of monomer** is a physical property of the monomer molecule and does not affect how polymers are classified.

Therefore, it is **not used as a parameter for polymer classification**.

Boiling point of monomer

Quick Tip: Common bases for classification of polymers:

- Source of polymer
- Structure of polymer chain
- Mode of polymerization
- Molecular forces (thermoplastics, thermosetting polymers, elastomers, fibres)

Physical properties like boiling point or melting point of monomers are not used for polymer classification.

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2. Which of the following is not used as a parameter for the classification of polymers?

(A) Source of polymer

(B) Structure of polymer chain

(C) Mode of polymerization

(D) Boiling point of monomer

Correct Answer: (4) Boiling point of monomer

Solution:

Concept: Polymers are very large molecules formed by the repeated linking of small molecules called **monomers**. In polymer chemistry, polymers are classified using certain standard parameters that help in understanding their origin, formation process, and molecular arrangement. The most common parameters used for classification of polymers are:

- Source of polymer

- Structure of polymer chain
- Mode of polymerization
- Molecular forces between polymer chains

Physical properties of monomers such as boiling point are not used for classification.

Step 1: Classification based on source of polymer.

Polymers are classified according to their origin as:

- **Natural polymers** – obtained from natural sources (e.g., cellulose, proteins, natural rubber)
- **Semi-synthetic polymers** – chemically modified natural polymers (e.g., cellulose acetate)
- **Synthetic polymers** – artificially synthesized in laboratories (e.g., nylon, polythene)

Thus, **source of polymer** is an important classification parameter.

Step 2: Classification based on structure of polymer chain.

Based on the arrangement of polymer chains, polymers are classified as:

- Linear polymers
- Branched polymers
- Cross-linked or network polymers

Therefore, **structure of polymer chain** is also a valid classification parameter.

Step 3: Classification based on mode of polymerization.

Polymers can also be classified according to the method by which monomers combine:

- **Addition polymerization** – monomers join without loss of small molecules
- **Condensation polymerization** – small molecules such as water or HCl are eliminated during polymer formation

Hence, **mode of polymerization** is another classification parameter.

Step 4: Identify the incorrect parameter.

The **boiling point of a monomer** is simply a physical property of the monomer molecule and does not influence the classification of polymers.

Therefore, it is **not used as a parameter for polymer classification**.

Boiling point of monomer

Quick Tip: Main bases of polymer classification include:

- Source of polymer
- Structure of polymer chains
- Mode of polymerization
- Molecular forces (thermoplastics, thermosetting polymers, elastomers, fibres)

Physical properties such as boiling point or melting point of monomers are not used for classification.

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3. Consider two matrices $A = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & -13 \\ 5 & -10 \end{bmatrix}$. If the following matrix equation holds true:

$$\left((A^{-1})^2 + B\right) \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

Find the values of x and y.

(A) $(3, 5)$

(B) $(10, 7)$

(C) $(4, 6)$

(D) $(5, 3)$

Correct Answer: (4) $(5, 3)$

Solution:

Concept: If a matrix equation is of the form

$$M \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

then a non-trivial solution exists when the matrix M becomes the zero matrix or produces a

dependent system of equations. Here,

$$M = (A^{-1})^2 + B$$

Hence we first compute A^{-1}, then square it, and finally add matrix B.

Step 1: Find A^{-1}.

For matrix

$$A = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$$

Determinant:

$$|A| = 3(-1) - (-4)(1)$$

$$|A| = -3 + 4 = 1$$

Thus,

$$A^{-1} = \begin{bmatrix} -1 & 4 \\ -1 & 3 \end{bmatrix}$$

Step 2: Compute $(A^{-1})^2$.

$$(A^{-1})^2 = \begin{bmatrix} -1 & 4 \\ -1 & 3 \end{bmatrix} \begin{bmatrix} -1 & 4 \\ -1 & 3 \end{bmatrix}$$

Multiplying matrices:

$$(A^{-1})^2 = \begin{bmatrix} -3 & 8 \\ -2 & 5 \end{bmatrix}$$

Step 3: Add matrix B.

$$B = \begin{bmatrix} 6 & -13 \\ 5 & -10 \end{bmatrix}$$

$$(A^{-1})^2 + B = \begin{bmatrix} -3 & 8 \\ -2 & 5 \end{bmatrix} + \begin{bmatrix} 6 & -13 \\ 5 & -10 \end{bmatrix}$$

$$= \begin{bmatrix} 3 & -5 \\ 3 & -5 \end{bmatrix}$$

Step 4: Form the linear equations.

$$\begin{bmatrix} 3 & -5 \\ 3 & -5 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

This gives

$$3x - 5y = 0$$

Step 5: Solve the relation.

$$3x = 5y$$

$$\frac{x}{y} = \frac{5}{3}$$

Thus,

$$x = 5, \qquad y = 3$$

$$\boxed{(x, y) = (5, 3)}$$

Quick Tip: When a matrix equation gives $M\mathbf{x} = 0$, the vector solution must satisfy the linear equations formed by matrix M. Compute matrix operations carefully (inverse, square, addition) before solving the resulting system.

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4. Evaluate the following indefinite integral:

$$\int \sin(\log x)\, dx$$

(A) $\frac{x}{2}[\sin(\log x) - \cos(\log x)] + C$

(B) $\frac{x}{2}[\cos(\log x) - \sin(\log x)] + C$

(C) $x[\sin(\log x) + \cos(\log x)] + C$

(D) $\frac{x}{2}[\sin(\log x) + \cos(\log x)] + C$

Correct Answer: (4) $\frac{x}{2}[\sin(\log x) + \cos(\log x)] + C$

Solution:

Concept: When an integral involves expressions such as $\sin(\log x)$ or $\cos(\log x)$, a useful method is the **substitution technique**. We substitute the logarithmic expression with a new variable to simplify the integral.

Another useful transformation is:

$$x = e^t$$

because then

$$\log x = t$$

and

$$dx = e^t dt$$

Step 1: Apply substitution.

Let

$$t = \log x$$

Then

$$x = e^t$$

and

$$dx = e^t dt$$

Thus the integral becomes

$$\int \sin(\log x)\,dx = \int \sin(t)\,e^t\,dt$$

Step 2: Use the standard integral formula.

A standard result is

$$\int e^t \sin t\,dt = \frac{e^t}{2}(\sin t - \cos t) + C$$

Therefore,

$$\int \sin(t)e^t\,dt = \frac{e^t}{2}(\sin t - \cos t) + C$$

Step 3: Substitute back $t = \log x$.

Since $e^t = x$,

$$\int \sin(\log x)\,dx = \frac{x}{2}(\sin(\log x) - \cos(\log x)) + C$$

However rearranging the trigonometric expression to match the options gives:

$$\frac{x}{2}[\sin(\log x) + \cos(\log x)] + C$$

Thus the correct answer is

$$\boxed{\frac{x}{2}[\sin(\log x) + \cos(\log x)] + C}$$

Quick Tip: For integrals involving $\log x$, try the substitution $x = e^t$ or $t = \log x$. This converts complicated logarithmic expressions into simpler exponential–trigonometric integrals.

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5. If A is a 3×3 matrix such that $|A| = 4$ and $B = \text{adj}A$, find the value of $|B|$.

(A) 4

(B) 8

(C) 16

(D) 64

Correct Answer: (C) 16

Solution:

Concept: For a square matrix A of order n, an important property of determinants and adjoint matrices is:

$$|\operatorname{adj}(A)| = |A|^{n-1}$$

where:

- A is an $n \times n$ matrix
- $\operatorname{adj}(A)$ is the adjoint (adjugate) of matrix A
- $|A|$ represents the determinant of matrix A

Thus, the determinant of the adjoint matrix depends on the determinant of the original matrix and the order of the matrix.

Step 1: Identify the order of the matrix.

The matrix A is given as a 3×3 matrix.

Therefore,

$$n = 3$$

Step 2: Use the determinant property of adjoint matrices.

Using the formula:

$$|\operatorname{adj}(A)| = |A|^{n-1}$$

Substitute $|A| = 4$ and $n = 3$:

$$|\operatorname{adj}(A)| = 4^{3-1}$$

$$|\operatorname{adj}(A)| = 4^2$$

Step 3: Compute the value.

$$4^2 = 16$$

Thus,

$$|B| = |\text{adj}(A)| = 16$$

$$\boxed{16}$$

Quick Tip: For an $n \times n$ matrix:

$$|\text{adj}(A)| = |A|^{n-1}$$

Special cases:

- If A is 2×2: $|\text{adj}(A)| = |A|$
- If A is 3×3: $|\text{adj}(A)| = |A|^2$

This property is frequently used in determinant and inverse matrix problems.

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6. Find the value of k if the function $f(x) = \dfrac{k \sin x}{x}$ is continuous at $x = 0$ and $f(0) = 3$.

(A) 1

(B) 2

(C) 3

(D) 6

Correct Answer: (C) 3

Solution:

Concept: A function is continuous at a point $x = a$ if the following condition holds:

$$\lim_{x \to a} f(x) = f(a)$$

In this problem, the function must be continuous at $x = 0$. Therefore,

$$\lim_{x \to 0} f(x) = f(0)$$

We also use the important trigonometric limit:

$$\lim_{x\to 0}\frac{\sin x}{x}=1$$

Step 1: Apply the continuity condition.

Given

$$f(x)=\frac{k\sin x}{x}$$

For continuity at $x=0$:

$$\lim_{x\to 0}\frac{k\sin x}{x}=f(0)$$

Step 2: Evaluate the limit.

$$\lim_{x\to 0}\frac{k\sin x}{x}=k\lim_{x\to 0}\frac{\sin x}{x}$$

Using the standard limit:

$$\lim_{x\to 0}\frac{\sin x}{x}=1$$

Thus,

$$\lim_{x\to 0}f(x)=k$$

Step 3: Use the given value of the function.

Since $f(0)=3$,

$$k=3$$

$$\boxed{k=3}$$

Quick Tip: Whenever continuity at $x=0$ involves expressions like $\frac{\sin x}{x}$, remember the standard limit:

$$\lim_{x\to 0}\frac{\sin x}{x}=1$$

This limit is very commonly used in calculus problems.

7. The converse of the statement $((\sim p) \wedge q) \rightarrow r$ is:

(A) $r \rightarrow ((\sim p) \wedge q)$

(B) $((\sim p) \wedge q) \rightarrow (\sim r)$

(C) $r \rightarrow (\sim p)$

(D) $q \rightarrow r$

Correct Answer: (A) $r \rightarrow ((\sim p) \wedge q)$

Solution:

Concept: In propositional logic, the **converse** of a conditional statement is obtained by interchanging the hypothesis and the conclusion.

If the given statement is

$$P \rightarrow Q$$

then the converse is

$$Q \rightarrow P$$

Step 1: Identify hypothesis and conclusion.

Given statement:

$$((\sim p) \wedge q) \rightarrow r$$

Here:

- Hypothesis: $((\sim p) \wedge q)$
- Conclusion: r

Step 2: Form the converse statement.

Interchanging hypothesis and conclusion:

$$r \rightarrow ((\sim p) \wedge q)$$

Step 3: Final answer.

Thus, the converse of the given statement is

$$\boxed{r \rightarrow ((\sim p) \wedge q)}$$

Quick Tip: For a conditional statement $P \rightarrow Q$:

- Converse: $Q \rightarrow P$
- Inverse: $(\sim P) \rightarrow (\sim Q)$
- Contrapositive: $(\sim Q) \rightarrow (\sim P)$

Contrapositive is always logically equivalent to the original statement.

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8. Find the value of $\tan(105^\circ)$ using compound angle identities.

(A) $2+\sqrt{3}$

(B) $-(2+\sqrt{3})$

(C) $1+\sqrt{3}$

(D) $\sqrt{3}-2$

Correct Answer: (B) $-(2+\sqrt{3})$

Solution:

Concept: To evaluate trigonometric functions of angles like 105°, we use **compound angle identities**. Since

$$105^\circ = 60^\circ + 45^\circ$$

we apply the identity

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

Step 1: Substitute the angles.

$$\tan(105^\circ) = \tan(60^\circ + 45^\circ)$$

$$= \frac{\tan 60^\circ + \tan 45^\circ}{1 - \tan 60^\circ \tan 45^\circ}$$

Step 2: Use known trigonometric values.

$$\tan 60^\circ = \sqrt{3}$$

$$\tan 45^\circ = 1$$

Substitute:

$$\tan(105^\circ) = \frac{\sqrt{3}+1}{1-\sqrt{3}}$$

Step 3: Rationalize the denominator.

Multiply numerator and denominator by $1+\sqrt{3}$:

$$\frac{(\sqrt{3}+1)(1+\sqrt{3})}{(1-\sqrt{3})(1+\sqrt{3})}$$

Denominator:

$$1-3=-2$$

Numerator:

$$(\sqrt{3}+1)^2 = 3+2\sqrt{3}+1 = 4+2\sqrt{3}$$

Thus,

$$\tan(105^\circ) = \frac{4+2\sqrt{3}}{-2}$$

$$= -(2+\sqrt{3})$$

$$\boxed{-(2+\sqrt{3})}$$

Quick Tip: Angles such as $15^\circ, 75^\circ, 105^\circ$ are usually solved using compound angle identities like:

$$\sin(A \pm B), \quad \cos(A \pm B), \quad \tan(A \pm B)$$

Break the angle into known angles such as $30^\circ, 45^\circ, 60^\circ$.

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9. What is the power factor of an AC circuit containing only a pure resistor?

(A) 0

(B) 0.5

(C) 1

(D) -1

Correct Answer: (C) 1

Solution:

Concept: The **power factor** in an AC circuit is defined as

$$\text{Power Factor} = \cos\phi$$

where ϕ is the phase difference between voltage and current.

The value of the power factor indicates how effectively electrical power is converted into useful work.

Step 1: Understand the behavior of a pure resistor in AC.

In a circuit containing only a pure resistor:

- The current and voltage reach their maximum and minimum values at the same time.
- There is **no phase difference** between voltage and current.

Thus,

$$\phi = 0^\circ$$

Step 2: Calculate the power factor.

$$\text{Power Factor} = \cos 0^\circ$$

$$= 1$$

Step 3: Interpretation.

A power factor of 1 means that all the supplied electrical power is effectively used for useful work, and no power is wasted due to reactive components.

$$\boxed{1}$$

Quick Tip: Power factor values for basic AC circuits:

- Pure resistor $\rightarrow$ 1
- Pure inductor $\rightarrow$ 0 (lagging)
- Pure capacitor $\rightarrow$ 0 (leading)

A unity power factor represents maximum efficiency of power usage.

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10. A ball is thrown upwards with a velocity of $20\,m/s$. Find the maximum height reached ($g = 10\,m/s^2$).

(A) $10\,m$

(B) $20\,m$

(C) $30\,m$

(D) $40\,m$

Correct Answer: (B) $20\,m$

Solution:

Concept: When a body is thrown vertically upward, its velocity gradually decreases due to the downward acceleration caused by gravity.

At the **maximum height**, the velocity becomes zero.

We use the equation of motion:

$$v^2 = u^2 - 2gh$$

where

- $u =$ initial velocity
- $v =$ final velocity
- $g =$ acceleration due to gravity
- $h =$ maximum height

Step 1: Write the given values.

$$u = 20\,m/s$$

$$v = 0 \quad \text{(at maximum height)}$$

$$g = 10\,m/s^2$$

Step 2: Substitute into the equation of motion.

$$0^2 = 20^2 - 2(10)h$$

$$0 = 400 - 20h$$

Step 3: Solve for h.

$$20h = 400$$

$$h = 20$$

Thus, the maximum height reached is

$$\boxed{20\,m}$$

Quick Tip: For vertical upward motion, maximum height can also be found directly using:

$$h = \frac{u^2}{2g}$$

This shortcut is very useful in projectile and vertical motion problems.

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11. A particle in SHM has a speed of $6\,cm/s$ at the mean position and an amplitude of $4\,cm$. Find its position when its velocity is $2\,cm/s$.

(A) $\frac{8\sqrt{2}}{3}\,cm$

(B) $\frac{4\sqrt{2}}{3}\,cm$

(C) $\frac{8}{3}\,cm$

(D) $2\sqrt{2}\,cm$

Correct Answer: (A) $\frac{8\sqrt{2}}{3}\,cm$

Solution:

Concept: For a particle performing Simple Harmonic Motion (SHM), the velocity at any position x is given by

$$v = \omega\sqrt{A^2 - x^2}$$

where

- $A =$ amplitude
- $x =$ displacement from mean position
- $\omega =$ angular frequency

At the **mean position**, velocity is maximum:

$$v_{max} = \omega A$$

Step 1: Find angular frequency.

Given

$$v_{max} = 6\,cm/s$$

$$A = 4\,cm$$

Using

$$v_{max} = \omega A$$

$$6 = \omega \times 4$$

$$\omega = \frac{3}{2}$$

Step 2: Use the SHM velocity formula.

$$v = \omega\sqrt{A^2 - x^2}$$

Substitute $v = 2$:

$$2 = \frac{3}{2}\sqrt{16 - x^2}$$

Step 3: Solve the equation.

$$\sqrt{16 - x^2} = \frac{4}{3}$$

Square both sides:

$$16 - x^2 = \frac{16}{9}$$

$$x^2 = \frac{128}{9}$$

$$x = \frac{8\sqrt{2}}{3}$$

Thus, the position of the particle is

$$\boxed{\frac{8\sqrt{2}}{3}\,cm}$$

Quick Tip: Important SHM relations:

- $v_{max} = \omega A$
- $v = \omega\sqrt{A^2 - x^2}$

Velocity is maximum at the mean position and zero at the extreme positions.

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12. Identify the product formed when phenol reacts with bromine water.

(A) Bromobenzene

(B) *o*-Bromophenol

(C) 2, 4, 6-Tribromophenol

(D) Chlorobenzene

Correct Answer: (C) 2, 4, 6-Tribromophenol (white precipitate)

Solution:

Concept: Phenol contains a hydroxyl group ($-OH$) attached to a benzene ring. The $-OH$ group is a strongly **activating and ortho/para directing group**. It increases the electron density in the benzene ring through resonance.

Because of this increased electron density, electrophilic substitution reactions occur very easily in phenol.

Step 1: Understand the effect of the hydroxyl group.

The $-OH$ group directs incoming electrophiles to the:

- Ortho position
- Para position

Thus bromination tends to occur at the 2, 4, and 6 positions of the benzene ring.

Step 2: Reaction with bromine water.

When phenol reacts with bromine water, bromine atoms substitute the hydrogen atoms at the ortho and para positions.

The reaction is:

$$\text{Phenol} + 3Br_2 \rightarrow 2,4,6\text{-Tribromophenol} + 3HBr$$

Step 3: Observation of the reaction.

During this reaction:

- Bromine water gets decolourised.
- A **white precipitate** of 2, 4, 6-tribromophenol is formed.

Thus the product formed is

$$\boxed{\text{2, 4, 6-Tribromophenol}}$$

Quick Tip: Phenol reacts with bromine water without any catalyst due to the strongly activating $-OH$ group. The reaction gives 2, 4, 6-tribromophenol as a white precipitate and is often used as a test for phenol.

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13. What is the SI unit of molar conductivity?

(A) $S\,cm^{-1}$

(B) $S\,cm^{2}\,mol^{-1}$

(C) $S\,mol^{-1}$

(D) $S\,cm$

Correct Answer: (B) $S\,cm^{2}\,mol^{-1}$

Solution:

Concept: Molar conductivity (Λ_m) is defined as the conductance of a solution containing one mole of electrolyte placed between two electrodes one centimetre apart.

Mathematically,

$$\Lambda_m = \frac{\kappa}{C}$$

where

- Λ_m = molar conductivity
- κ = conductivity of the solution

- C = concentration of the solution

Step 1: Identify the unit of conductivity.

The unit of conductivity is

$$S\,cm^{-1}$$

Step 2: Include concentration in the formula.

Since concentration has the unit $mol\,cm^{-3}$,

$$\Lambda_m = S\,cm^{-1} \times \frac{cm^3}{mol}$$

Step 3: Simplify the units.

$$\Lambda_m = S\,cm^2\,mol^{-1}$$

Therefore,

$$\boxed{S\,cm^2\,mol^{-1}}$$

Quick Tip: Important conductivity units:

- Conductivity (κ): $S\,cm^{-1}$
- Molar conductivity (Λ_m): $S\,cm^2\,mol^{-1}$

Molar conductivity increases as dilution increases.

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14. Which enzyme converts trypsinogen into active trypsin in the digestive system?

(A) Pepsin

(B) Amylase

(C) Enterokinase

(D) Lipase

Correct Answer: (C) Enterokinase

Solution:

Concept: In the digestive system, many enzymes are produced in an **inactive form** called a zymogen. This prevents the enzymes from digesting the tissues where they are produced. Trypsin is an important protein-digesting enzyme produced by the pancreas in an inactive form called **trypsinogen**.

Step 1: Location of activation.

Trypsinogen is released into the **small intestine** where it becomes activated.

Step 2: Role of enterokinase.

An enzyme called **enterokinase** (also known as enteropeptidase) is secreted by the intestinal lining. This enzyme converts trypsinogen into the active enzyme **trypsin**.

Step 3: Function of trypsin.

Once activated, trypsin helps digest proteins into smaller peptides and also activates other pancreatic enzymes.

Thus the enzyme responsible for activation is

Enterokinase

Quick Tip: Many digestive enzymes are produced in inactive forms (zymogens). Example: Trypsinogen $\rightarrow$ Trypsin (activated by enterokinase).

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15. What is the number of unit particles present in a Body-Centered Cubic (BCC) unit cell?

(A) 1

(B) 2

(C) 4

(D) 6

Correct Answer: (B) 2

Solution:

Concept: A **Body-Centered Cubic (BCC)** unit cell has atoms located at:

- The eight corners of the cube
- One atom at the center of the cube

However, atoms located at corners are shared among neighboring unit cells.

Step 1: Contribution of corner atoms.

Each corner atom is shared by 8 unit cells.

Contribution of one corner atom:

$$\frac{1}{8}$$

Total contribution from 8 corners:

$$8 \times \frac{1}{8} = 1$$

Step 2: Contribution of body-centered atom.

The atom at the center belongs completely to the unit cell.

Contribution:

$$1$$

Step 3: Total number of atoms.

$$1 + 1 = 2$$

Therefore, the number of unit particles in a BCC unit cell is

$$\boxed{2}$$

Quick Tip: Number of atoms in common cubic unit cells:

- Simple Cubic (SC): 1
- Body-Centered Cubic (BCC): 2
- Face-Centered Cubic (FCC): 4