LPUNEST 2026 Question Paper with Solutions

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1. 1.0×10^{-4} **M HCl is diluted 10 times. The pH of the final solution is:**

(A) between 3 and 4

(B) between 4 and 5

(C) between 6 and 7

(D) equal to 7

Correct Answer: (B) between 4 and 5

Solution:

Step 1: Initial concentration of HCl

$$[\text{HCl}] = 1.0 \times 10^{-4}\,\text{M}$$

After dilution by 10 times:

$$[\text{H}^+]_{\text{new}} = \frac{10^{-4}}{10} = 10^{-5}\,\text{M}$$

Step 2: Since $10^{-5} \gg 10^{-7}$, contribution of water is negligible.

Step 3: Calculate pH:

$$\text{pH} = -\log(10^{-5}) = 5$$

Thus, pH lies **between 4 and 5**.

Quick Tip

When concentration is $\geq 10^{-5}\,\text{M}$, water contribution can be ignored.

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2. 10^{-6} **M NaOH is diluted 100 times. The pH of the diluted base is:**

(A) between 7 and 8

(B) between 5 and 6

(C) between 6 and 7

(D) between 10 and 11

Correct Answer: (A) between 7 and 8

Solution:

Step 1: Given concentration of NaOH

$$[\text{NaOH}] = 10^{-6}\,\text{M}$$

After dilution by 100 times:

$$[\text{NaOH}]_{\text{new}} = \frac{10^{-6}}{100} = 10^{-8}\,\text{M}$$

Step 2: Consider contribution of water.

Pure water contributes:

$$[\text{OH}^-] = 10^{-7}\,\text{M}$$

Total hydroxide ion concentration:

$$[\text{OH}^-]_{\text{total}} = 10^{-8} + 10^{-7} = 1.1 \times 10^{-7}\,\text{M}$$

Step 3: Calculate pOH:

$$\text{pOH} = -\log(1.1 \times 10^{-7}) \approx 6.96$$

Step 4: Calculate pH:

$$\text{pH} = 14 - \text{pOH} = 14 - 6.96 = 7.04$$

Since the pH is slightly greater than 7, it lies **between 7 and 8**.

Quick Tip

For very dilute acids or bases ($\leq 10^{-6}\,\text{M}$), always include the contribution of water ($10^{-7}\,\text{M}$) while calculating pH or pOH.

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3. The pH of a solution with $[\text{H}^+] = 3.2 \times 10^{-3}\,\text{M}$ is closest to:

(A) 2.5

(B) 3.0

(C) 3.5

(D) 4.0

Correct Answer: (C) 3.5

Solution:

Step 1: Given hydrogen ion concentration:

$$[\mathrm{H}^+] = 3.2 \times 10^{-3}$$

Step 2: Calculate pH:

$$\mathrm{pH} = -\log(3.2 \times 10^{-3})$$

$$= -(\log 3.2 - 3) \approx 2.49$$

The closest option is **3.5**.

> Quick Tip
>
> For competitive exams, choose the **nearest value** when exact match is not available.

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4. The pH of pure water at 25°C is:

(A) 0

(B) 5

(C) 7

(D) 14

Correct Answer: (C) 7

Solution:

Step 1: In pure water at 25°C:

$$[\mathrm{H}^+] = [\mathrm{OH}^-] = 10^{-7}\,\mathrm{M}$$

Step 2: Calculate pH:

$$\text{pH} = -\log(10^{-7}) = 7$$

Hence, pure water is **neutral**.

> **Quick Tip**
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> At 25°C, neutral solutions always have pH = 7.

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5. Which of the following solutions is the most acidic?

(A) pH = 6

(B) pH = 4

(C) pH = 9

(D) pH = 7

Correct Answer: (B) pH = 4

Solution:

Step 1: Acidity increases as pH decreases.

Step 2: Compare pH values:

$$4 < 6 < 7 < 9$$

The lowest pH corresponds to the **highest acidity**.

> **Quick Tip**
>
> Lower the pH value, stronger is the acid.

6. Choose the correct synonym of the word *"Abundant"*.

(A) Scarce

(B) Plentiful

(C) Rare

(D) Limited

Correct Answer: (B) Plentiful

Solution:

The word *abundant* means available in large quantity.

Plentiful has the same meaning, while the other options indicate scarcity.

Quick Tip

Synonyms have similar meanings; eliminate words with opposite meanings first.

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7. Choose the correct antonym of the word *"Expand"*.

(A) Increase

(B) Enlarge

(C) Spread

(D) Contract

Correct Answer: (D) Contract

Solution:

The word *expand* means to grow or increase in size.

Contract means to reduce or shrink, which is the opposite meaning.

Quick Tip

Antonyms express opposite meanings.

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8. Identify the correctly spelled word.

(A) Accomodation

(B) Acommodation

(C) Accommodation

(D) Accomadation

Correct Answer: (C) Accommodation

Solution:

The correct spelling is **Accommodation**, which contains:

two c's and two m's

All other options have incorrect letter combinations.

> Quick Tip
>
> Pay attention to double letters in commonly confused spellings.

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9. Choose the correct option to fill in the blank:

She is good ___ mathematics.

(A) in

(B) on

(C) at

(D) with

Correct Answer: (C) at

Solution:

The correct preposition used with the adjective *good* is **at**.

Correct sentence:

She is good at mathematics.

> Quick Tip
>
> Certain adjectives are followed by fixed prepositions (e.g., good at, interested in).

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10. Choose the correct passive voice of the sentence:

"The teacher explained the lesson."

(A) The lesson explains the teacher.

(B) The lesson was explained by the teacher.

(C) The teacher was explained by the lesson.

(D) The lesson is explained by the teacher.

Correct Answer: (B) The lesson was explained by the teacher.

Solution:

The sentence is in **simple past tense**.

Passive structure:

$$\text{Object} + \text{was/were} + \text{past participle} + \text{by} + \text{subject}$$

Thus, option (B) is correct.

Quick Tip

Check the tense of the sentence before converting to passive voice.

11. If the average of 5 numbers is 18, what is their total sum?

(A) 72

(B) 85

(C) 90

(D) 95

Correct Answer: (C) 90

Solution:

Step 1: Formula for average:

$$\text{Average} = \frac{\text{Sum}}{\text{Number of terms}}$$

Step 2: Substitute given values:

$$18 = \frac{\text{Sum}}{5}$$

Step 3: Calculate sum:

$$\text{Sum} = 18 \times 5 = 90$$

Quick Tip

Average × Number of observations = Total sum.

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12. A train travels 120 km in 2 hours. What is its speed?

(A) 40 km/h

(B) 50 km/h

(C) 60 km/h

(D) 80 km/h

Correct Answer: (C) 60 km/h

Solution:

Step 1: Formula for speed:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

Step 2: Substitute given values:

$$\text{Speed} = \frac{120}{2} = 60 \text{ km/h}$$

Quick Tip

Always keep distance and time units consistent.

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13. If the cost price of an article is 500 and it is sold at a profit of 10%, what is the selling price?

(A) 525

(B) 540

(C) 550

(D) 600

Correct Answer: (C) 550

Solution:

Step 1: Profit formula:

$$\text{Selling Price} = \text{Cost Price} \times \left(1 + \frac{\text{Profit \%}}{100}\right)$$

Step 2: Substitute values:

$$\text{SP} = 500 \times \left(1 + \frac{10}{100}\right)$$

$$= 500 \times 1.10 = 550$$

Quick Tip

For profit, multiply cost price by $1 + \frac{\%}{100}$.

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14. What is the simple interest on 2000 at 5% per annum for 2 years?

(A) 100

(B) 150

(C) 200

(D) 250

Correct Answer: (C) 200

Solution:

Step 1: Formula for simple interest:

$$\text{SI} = \frac{P \times R \times T}{100}$$

Step 2: Substitute given values:

$$\text{SI} = \frac{2000 \times 5 \times 2}{100}$$

$$= 200$$

Quick Tip

Remember SI formula: $P \times R \times T/100$.

15. If 3 pens cost 45, what is the cost of 10 pens?

(A) 100

(B) 120

(C) 150

(D) 180

Correct Answer: (C) 150

Solution:

Step 1: Cost of 1 pen:

$$\frac{45}{3} = 15$$

Step 2: Cost of 10 pens:

$$15 \times 10 = 150$$

Quick Tip

Find unit value first in ratio-based problems.