

Advanced MCQs on Amino Acids (Very Hard Level)

1. A biochemist is analyzing a peptide containing a bulky aromatic side chain that is hydrophobic and commonly abbreviated as "Phe". Which of the following statements most accurately describes this amino acid?

- A. It contains a thiol group capable of forming disulfide bonds and is abbreviated as Cys
- B. It is phenylalanine, has a benzyl side chain, and is encoded by the one-letter symbol F
- C. It is tyrosine, contains a hydroxyl group on the aromatic ring, and is abbreviated as Tyr
- D. It is tryptophan, contains an indole ring, and is abbreviated as Trp

2. A mutation replaces Gly with Val. Which is correct?

- A. Increased flexibility
- B. Less steric hindrance
- C. Increased hydrophobicity and bulk
- D. Charged side chain introduced

3. Correct basic amino acid match:

- A. Arginine – Arg – R
- B. Histidine – His – K
- C. Lysine – Lys – H
- D. Glutamine – Gln – Q

4. Met-Leu-Ile-Val segment is:

- A. Polar
- B. Hydrophobic core
- C. Acidic
- D. Disulfide forming

5. Optically inactive amino acid:

- A. Alanine
- B. Glycine
- C. Proline
- D. Serine

6. Cys property:

- A. H-bond
- B. Ionic bond
- C. Disulfide bond
- D. Hydrophobic

7. Correct classification:

- A. Asp – acidic
- B. Lys – acidic
- C. Glu – basic
- D. Arg – nonpolar

8. Trp contains:

- A. Methyl
- B. Indole ring
- C. COO-
- D. Sulfur

9. Hydroxyl amino acid:

- A. Ser
- B. Ala
- C. Val
- D. Leu

10. Helix breaker:

- A. Gly
- B. Pro
- C. Ala
- D. Val

11. Nonpolar correct:

- A. Leu
- B. Ser
- C. Asp
- D. Lys

12. Asp & Glu region:

- A. Positive
- B. Negative
- C. Hydrophobic
- D. Disulfide

13. Branched chain:

- A. Leu & Ile
- B. Gly & Ala
- C. Ser & Thr
- D. Asp & Glu

14. Sulfur no disulfide:

- A. Met
- B. Cys
- C. Ser
- D. Thr

15. Aromatic:

- A. Tyr
- B. Gly
- C. Ala
- D. Val

16. Most hydrophobic sequence:

- A. Ser-Gly-Asp
- B. Leu-Ile-Val-Phe
- C. Lys-Arg
- D. Asn-Gln

17. K code:

- A. Lys
- B. Leu
- C. Arg
- D. His

18. Aromatic + polar:

- A. Tyr
- B. Phe
- C. Trp
- D. Val

19. Polar uncharged:

- A. Asn
- B. Asp
- C. Lys
- D. Arg

20. Imino acid:

- A. Gly
- B. Pro
- C. Ala
- D. Ser

21. Gln is:

- A. Glutamine
- B. Glutamate
- C. Gly
- D. Ala

22. H-bonding:

- A. Ser
- B. Val
- C. Leu
- D. Ile

23. W code:

- A. Trp
- B. Tyr
- C. Phe
- D. His

24. Essential:

- A. Val
- B. Ala
- C. Gly
- D. Ser

25. Buffering aa:

- A. His
- B. Lys
- C. Arg
- D. Asp

26. Most hydrophobic:

- A. Ile
- B. Asp
- C. Lys
- D. Gln

27. Sulfur aa:

- A. Met
- B. Val
- C. Ala

D. Gly

28. Phenolic OH:

A. Tyr

B. Phe

C. Trp

D. Ala

29. Smallest:

A. Gly

B. Ala

C. Ser

D. Val

30. Flexible turns:

A. Gly

B. Val

C. Leu

D. Ile

31. E code:

A. Glu

B. Gln

C. Gly

D. Ala

32. Negative aa:

A. Asp

B. Lys

C. Arg

D. His

33. Disulfide:

A. Cys

B. Met

C. Ser

D. Thr

34. Branched:

A. Val

B. Gly

- C. Ala
- D. Ser

35. Aromatic hydrophobic:

- A. Phe
- B. Tyr
- C. Ser
- D. Asp

36. Polar uncharged:

- A. Thr
- B. Leu
- C. Val
- D. Ile

37. Most basic:

- A. Arg
- B. Asp
- C. Glu
- D. Ser

38. Surface H-bond:

- A. Ser
- B. Leu
- C. Val
- D. Phe

39. Ile is:

- A. Isoleucine
- B. Leucine
- C. Lysine
- D. Alanine

40. Most rigid:

- A. Pro
- B. Gly
- C. Ala
- D. Ser

Answer Key

1. B

2. C

3. A

4. B

5. B

6. C

7. A

8. B

9. A

10. B

11. A

12. B

13. A

14. A

15. A

16. B

17. A

18. A

19. A

20. B

21. A

22. A

23. A

24. A

25. A

26. A

27. A

28. A

29. A

30. A

31. A

32. A

33. A

34. A

35. A

36. A

37. A

38. A

39. A

40. A