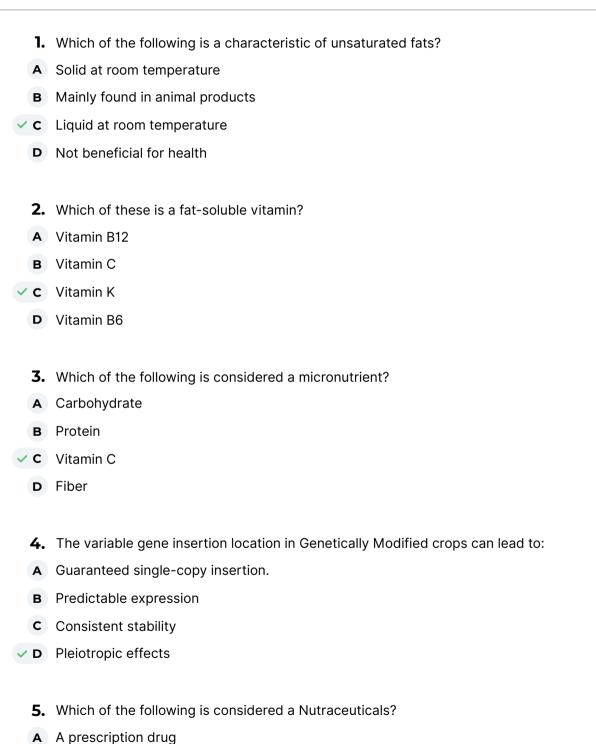
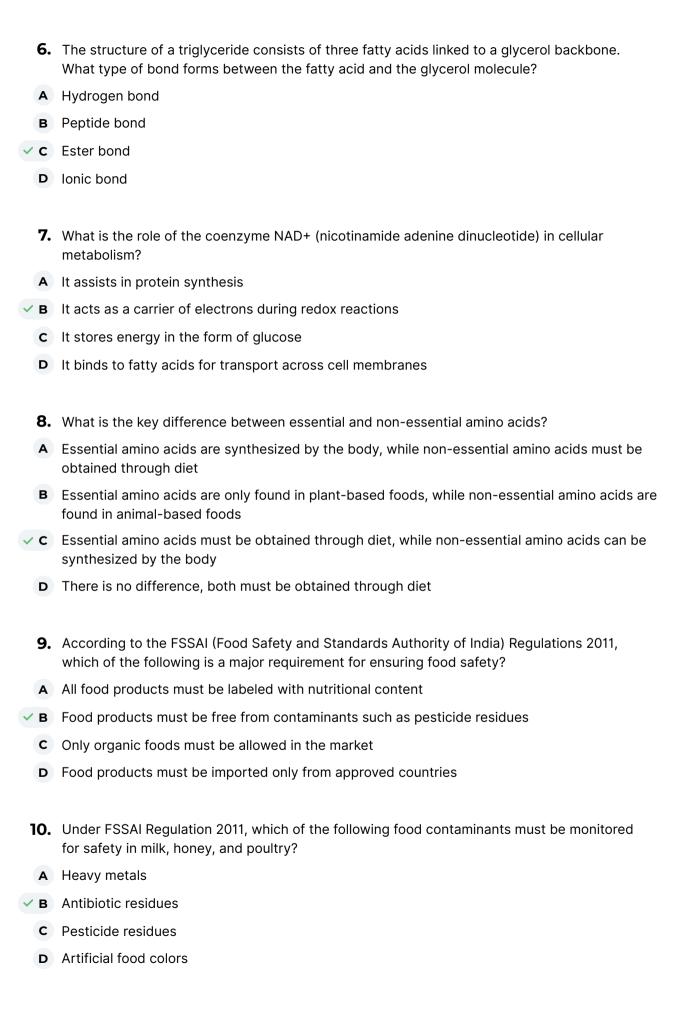


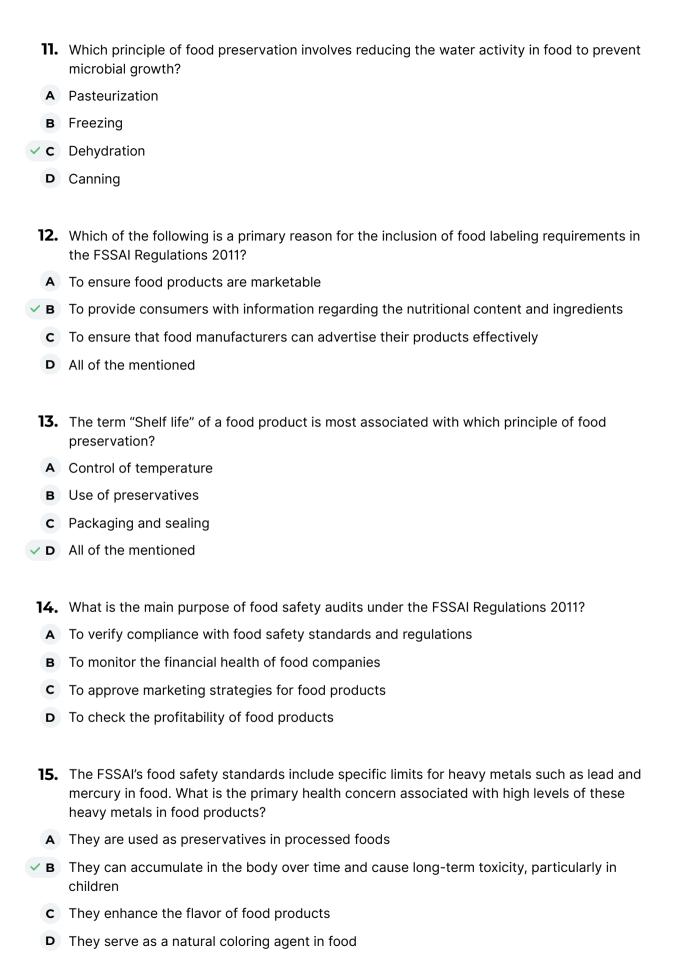
JSO - NSTS - Examination

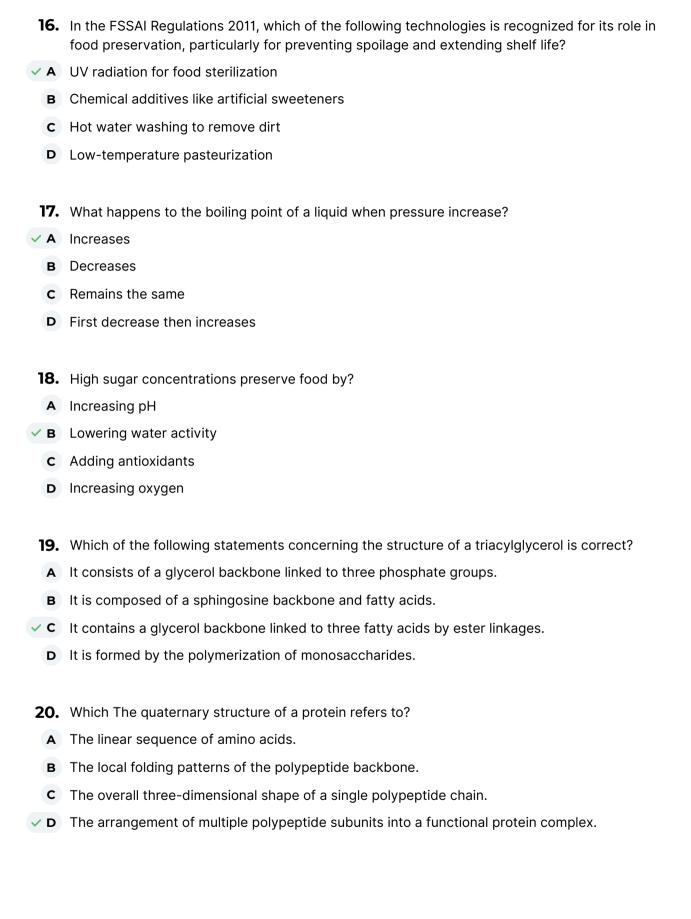


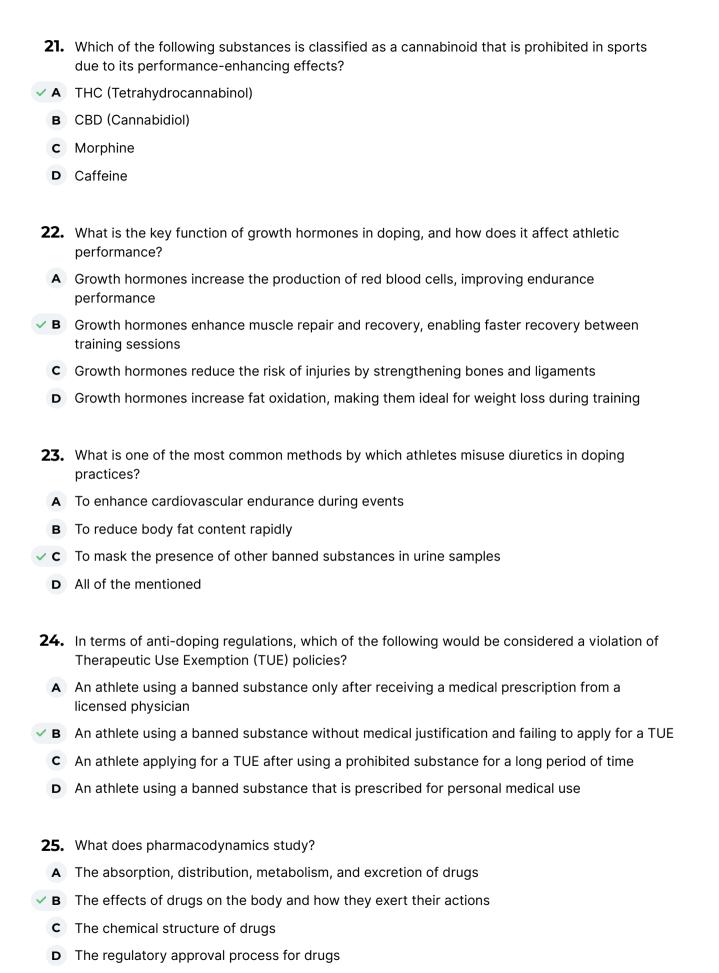
- C A fast-food meal
 - **D** A natural food flavoring

✓ B A dietary supplement that has a health benefit









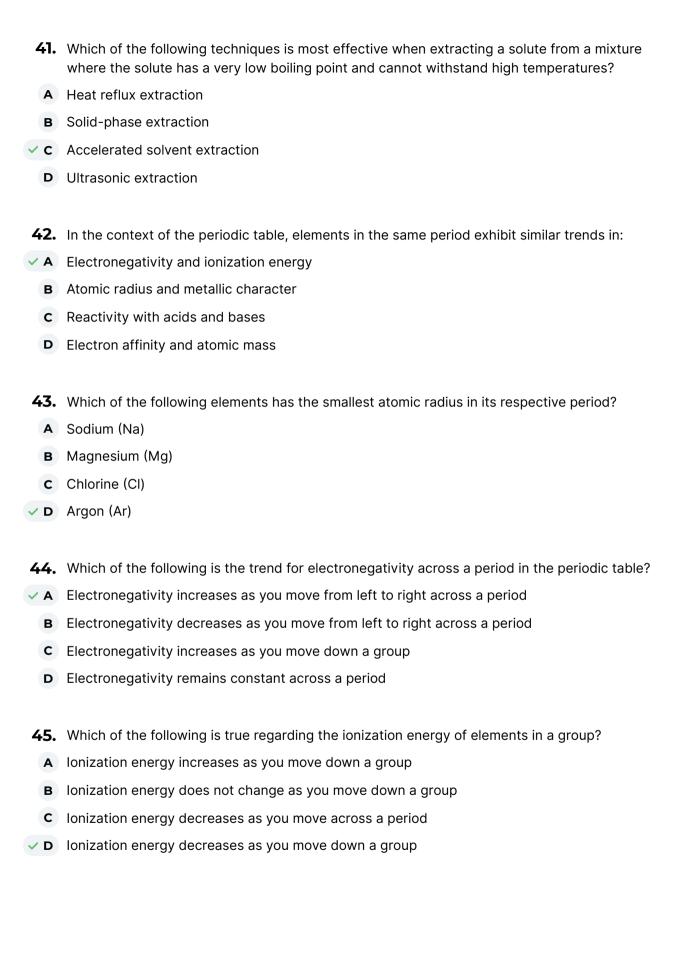
- **26.** In terms of pharmacokinetics, what happens to a dope drug like a stimulant (e.g., amphetamines) after ingestion in an athlete's body?
- A It is absorbed into the bloodstream and quickly metabolized by the liver, leading to a rapid increase in heart rate and alertness
 - B It is stored in the fat cells and only slowly metabolized over time, providing sustained energy
 - c It is absorbed in the gastrointestinal tract but does not enter the bloodstream
 - D It directly enters the brain without being metabolized, immediately increasing energy levels
- **27.** Which of the following most accurately describes the mechanism of action of anabolic steroids in promoting muscle growth?
- ✓ A Anabolic steroids directly increase muscle fiber size by stimulating cellular hypertrophy
 - **B** Anabolic steroids increase protein breakdown, resulting in muscle atrophy
 - c Anabolic steroids inhibit the action of testosterone, preventing muscle growth
 - D Anabolic steroids reduce oxygen delivery to muscle tissue
- **28.** The "Athlete Biological Passport" is used to:
 - A Track an athlete's travel history.
- ✓ B Monitor an athlete's biological variables over time to detect potential doping.
 - c Record an athlete's performance statistics.
 - D Document an athlete's medical history.
- **29.** The "whereabouts" rule in anti-doping requires athletes to:
 - A Disclose their medical history.
 - **B** Provide their financial records.
- C Inform anti-doping agencies of their location for out-of-competition testing.
 - **D** Submit their training schedules.
- **30.** The "half-life" of a drug refers to:
 - A The time it takes for the drug to reach its maximum concentration in the body.
- ✓ B The time it takes for half of the drug to be eliminated from the body.
 - **c** The time it takes for the drug to bind to its target receptors.
 - **D** The time it takes for the drug to be completely metabolized.

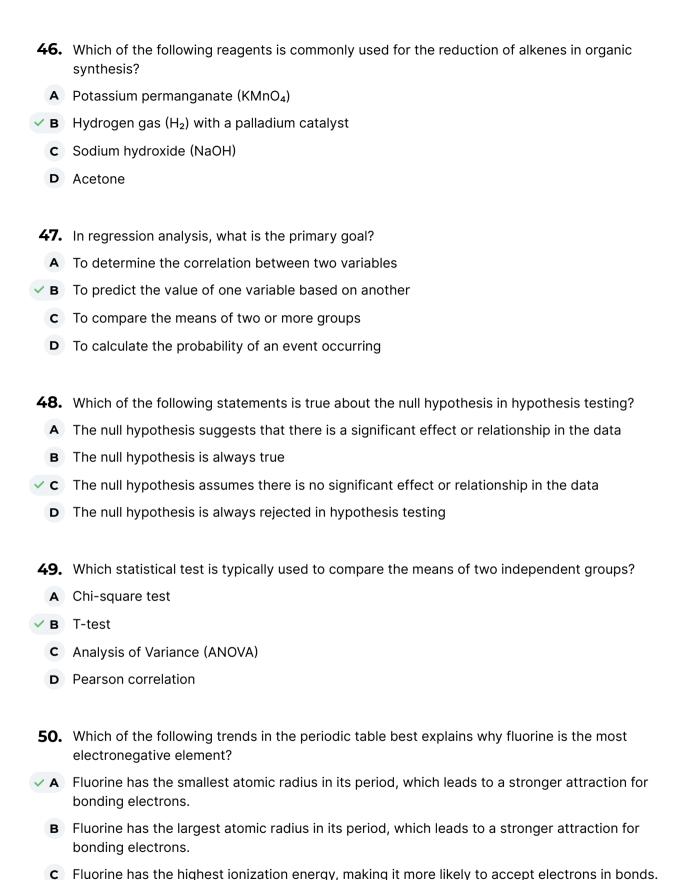
- **31.** In anti-doping analysis, The MRPL is: A The maximum allowable concentration of a prohibited substance in a sample. ✓ B The minimum concentration of a prohibited substance that an analytical method must reliably detect. **c** The therapeutic dose of a prohibited substance. **D** The concentration of a prohibited substance that causes adverse effects. **32.** Threshold substances" in anti-doping refer to: A Substances that are always prohibited, regardless of concentration. ✓ B Substances that are prohibited only when their concentration exceeds a specified limit. **c** Substances that are permitted within a specific therapeutic range. **D** Substances that have no performance-enhancing effects. **33.** The pKa value of an acid is defined as the pH at which: A The acid is fully dissociated into its ions ✓ B The concentration of the acid equals the concentration of its conjugate base c The acid has zero dissociation **D** The pKa value is not related to pH **34.** Which of the following is true about the pKa of a weak acid? A The higher the pKa, the stronger the acid
- ✓ B The lower the pKa, the stronger the acid
 - c pKa values are only relevant for strong acids
 - **D** pKa values are independent of concentration
- **35.** Which of the following analytical methods is most commonly used for determining the mass of an unknown sample?
 - A Volumetric method
 - **B** Titrimetric method
- ✓ C Gravimetric method
 - D Chromatographic method

36.	The distribution ratio in extraction is defined as the ratio of the concentration of the solute in:	
A	The solvent to the solute in the original phase	
✓ B	The original phase to the solvent phase	
C	The gas phase to the liquid phase	
D	The solute to the solvent in the original phase	
37.	Which of the following extraction methods is most likely to be used when a higher temperature is applied to accelerate the process?	
A	Solid phase extraction	
✓ B	Heat reflux extraction	
C	Ultrasonic extraction	
D	Liquid-liquid extraction	
38.	In the periodic table, elements in the same group typically have:	
A	Similar atomic masses	
✓ B	Similar chemical properties due to the same number of valence electrons	
C	The same number of protons	
D	The same number of neutrons	
39.	In an aqueous solution, a weak acid (HA) has a pKa value of 4.0. What is the pH at which the concentration of HA is equal to its conjugate base (A-)?	
A	1	
✓ B	4	
C	7	
D	10	
40.	In titrimetric analysis, which of the following statements about the choice of indicator is correct?	
✓ A	The indicator should have a pKa value very similar to the pH at the equivalence point of the titration	
В	The indicator should have a large dissociation constant (Ka) compared to the titrant	
C	The indicator should be used in concentrations much higher than the titrant for accuracy	

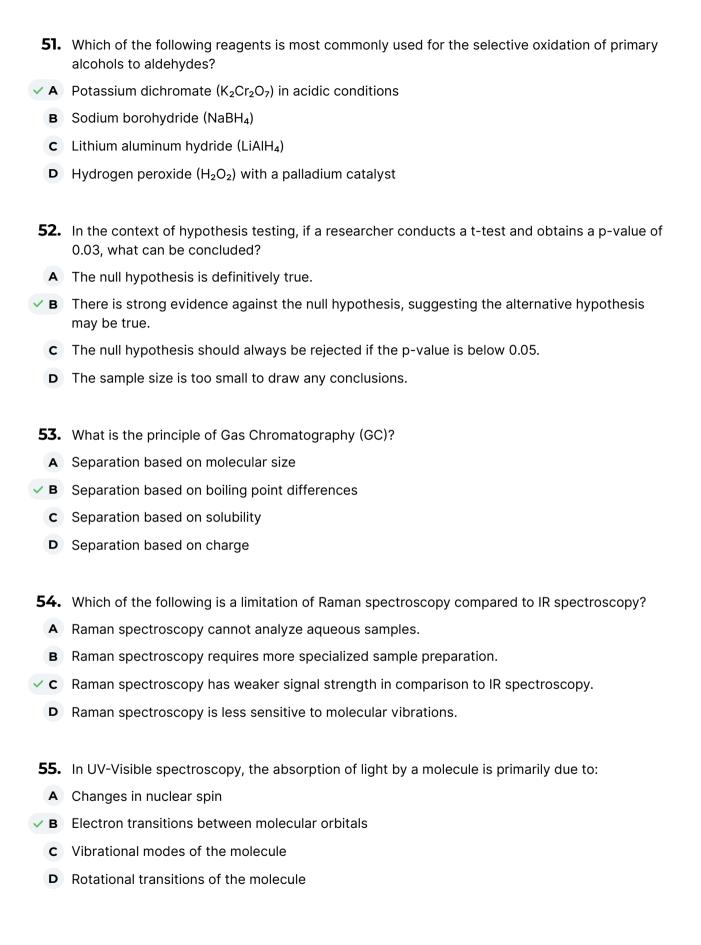
D The indicator should react with the analyte to form a colored complex, regardless of pH

changes





D Fluorine has the highest electron affinity, making it more likely to accept electrons in bonds.



56.	Which of the following factors affects the frequency of an IR absorption band?	
✓ A	The bond strength (force constant) and the reduced mass of the atoms involved in the bond	
В	The molecular weight of the compound	
C	The color of the compound	
D	The temperature of the sample	
57.	In Raman spectroscopy, which of the following statements is true?	
A	Raman spectroscopy detects the absorption of light by molecular bonds.	
✓ B	Raman spectroscopy involves the scattering of light, typically using visible or near-infrared light.	
C	Raman spectroscopy is sensitive only to changes in molecular mass.	
D	Raman spectroscopy can only be used to study liquids.	
58.	Which detector is commonly used in GC to detect organic compounds that produce ions when combusted? Which detector is commonly used in GC to detect organic compounds that produce ions when combusted?	
A	UV detector	
В	Refractive index detector	
∨ C	Flame ionization detector (FID)	
D	Mass spectrometer	
59.	In UV-Visible spectroscopy, the Beer-Lambert law relates absorbance to:	
A	Wavelength and frequency.	
✓ B	Concentration and path length.	
C	Molecular weight and density.	
D	Polarity and solubility.	
60.	In capillary electrophoresis (CE), what is the primary factor that influences the electrophoretic mobility of an analyte?	
A	Hydrophobicity.	
В	Boiling point.	
✓ C	Charge-to-size ratio.	
D	Molecular weight.	

61.	In mass spectrometry, what does the term "tandem mass spectrometry (MS/MS)" refer to?
A	Simultaneous detection of multiple ions.
✓ B	Fragmentation of selected ions for structural analysis.
C	Measurement of isotopic ratios.
D	Ionization using multiple techniques.
62.	What is the purpose of using a "reflector" in a Time of flight mass spectrometer (TOF-MS)?
A	To increase ion acceleration.
✓ B	To improve mass resolution.
C	To ionize the sample.
D	To decrease ion velocity.
63.	In reversed-phase HPLC, what is the primary interaction responsible for analyte retention?
A	Ionic interactions.
✓ B	Hydrophobic interactions.
C	Hydrogen bonding.
D	Size exclusion.
64.	What is the significance of the "plate height" in chromatography?
A	It represents the length of the column.
✓ B	It indicates the efficiency of the separation.
C	It determines the flow rate of the mobile phase.
D	It measures the detector response.
65.	In mass spectrometry, what is the purpose of a collision-induced dissociation (CID) cell?
A	To accelerate ions.
✓ B	To fragment selected ions.
C	To measure isotopic ratios.
D	To ionize the sample.

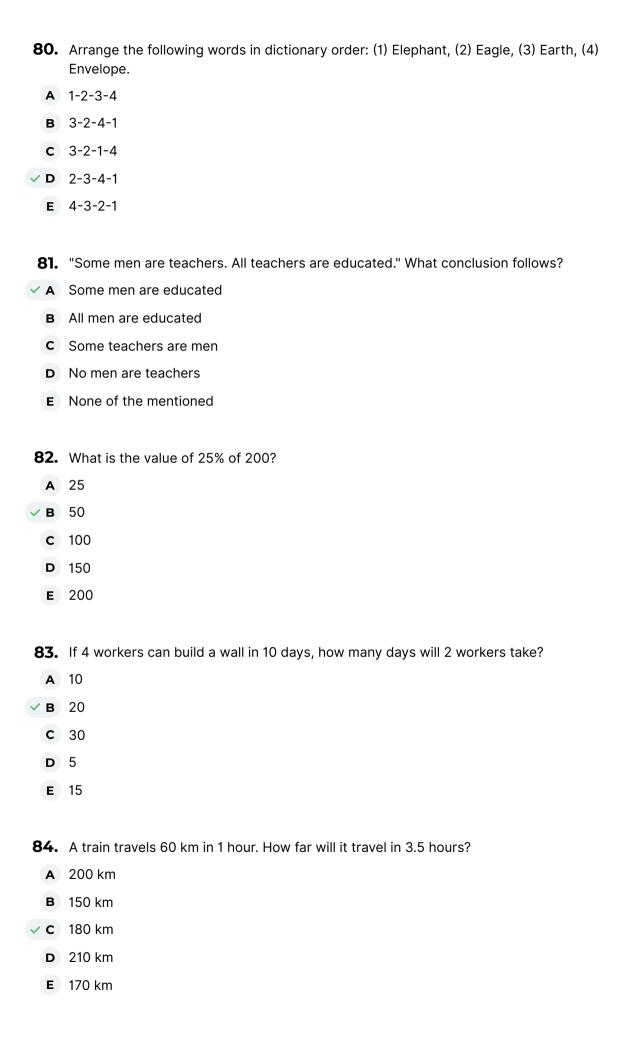


71. What is proficiency testing in the context of an ISO/IC 17025 accredited laboratory? A A method for training laboratory personnel ✓ B A comparison of the laboratory's performance against known standards or other laboratories. **c** A routine internal audit of laboratory operations D A technique for reducing laboratory testing times 72. What does a "Management Review Meeting" typically focus on in an ISO/IEC 17025 accredited laboratory? A Ensuring the laboratory meets ISO/IEC 9001 requirements **B** Reviewing laboratory finances ✓ C Assessing the performance of the quality management system, including areas for improvement D Discussing new forensic cases 73. According to ISO/IEC 17025:2017, which of the following is a mandatory requirement for a laboratory to demonstrate its competence? A The laboratory must have a documented process for continuous improvement. **B** The laboratory must be accredited by a global certification body. **C** The laboratory must only perform tests that are specified by the government. ✓ D The laboratory must have procedures for validating new methods and verifying existing ones. 74. Which of the following best describes the concept of measurement uncertainty in the context of testing under ISO/IEC 17025? A The range within which test results can fluctuate due to human error **B** The systematic error in a laboratory instrument **c** The difference in results when testing the same sample multiple times ✓ D The quantifiable estimation of the error associated with the measurement results **75.** Certified Reference Materials (CRMs) are used for: ✓ A Validating analytical methods and ensuring traceability. **B** Calibrating instruments only.

c Performing proficiency testing.

D Documenting quality audits.

76	If A _ 1 D _ 0 _ 0 _ 0 _ what is the course of the marking a soft had better in HD 0 0 H0
	If $A = 1$, $B = 2$, $C = 3$, what is the sum of the positions of the letters in "DOG"?
	24
✓ B	
	30
	23
E	27
77 .	Find the odd one out: Apple, Orange, Grapes, Mango, Potato.
A	Apple
В	Orange
C	Grapes
D	Mango
✓ E	Potato
78.	If 3 cats can catch 3 mice in 3 minutes, how many cats are needed to catch 100 mice in 100 minutes?
78. ~ A	minutes?
	minutes?
✓ A B	minutes?
✓ A B C	minutes? 3 30
✓ A B C	minutes? 3 30 10
✓ A B C	minutes? 3 30 10 100
✓ A B C D	minutes? 3 30 10 100
✓ A B C D	minutes? 3 30 10 100 9 If 9 = 81, 8 = 64, 7 = 49, then 6 = ?
A B C D E	minutes? 3 30 10 100 9 If 9 = 81, 8 = 64, 7 = 49, then 6 = ?
✓ A B C D E	minutes? 3 30 10 10 100 9 If 9 = 81, 8 = 64, 7 = 49, then 6 = ? 36
✓ A B C D E	minutes? 3 30 10 100 9 If 9 = 81, 8 = 64, 7 = 49, then 6 = ? 36 49 25



85.	If $x + y = 12$ and $x - y = 4$, what is the value of x ?
A	3
В	5
✓ C	8
D	10
E	6
86.	The LCM of 12 and 18 is:
Α	6
✓ B	36
C	12
D	18
E	24
87.	The compound interest on ₹5000 at 10% per annum for 2 years is:
A	1000
В	1100
C	1050
✓ D	1210
E	1200
88.	A and B together can complete a task in 12 days. B alone takes 30 days. How many days will A take alone?
A	10
✓ B	
	18
	20
	22
89.	Choose the correct synonym for "Abundant":
	Scarce
	Plenty
	Rare
D	Tiny
	Insufficient

90.	What is the plural form of "Analysis"?
A	Analysis
В	Analysises
✓ C	Analyses
D	Analyze
E	None of the mentioned
91.	Identify the correctly spelled word:
Α	Tommorrow
В	Tomorow
C	Tommoro
✓ D	Tomorrow
E	Tomorro
92.	Find the antonym of "Expand":
A	Enlarge
✓ B	Contract
C	Spread
D	Grow
E	Widen
93.	Choose the correct sentence:
Α	He has went to market
В	He have gone to market
✓ C	He has gone to market
D	He was go to market
E	He will gone to market
	"The sun rises in the east" is an example of which type of sentence?
Α	Interrogative
В	Imperative
∨ C	Assertive
D	Exclamatory
E	Negative

95.	What is the chemical formula of water?
A	H_2O_2
✓ B	H ₂ O
C	O ₂ H
D	HO ₂
E	H ₃ O
96.	What is the hardest natural substance on Earth?
A	Iron
В	Graphite
✓ C	Diamond
D	Quartz
E	Gold
97.	Which vitamin is known as the "Sunshine Vitamin"?
A	Vitamin A
В	Vitamin B
C	Vitamin C
✓ D	Vitamin D
E	Vitamin K
98.	Which gas is most abundant in Earth's atmosphere?
A	Oxygen
В	Carbon Dioxide
✓ C	Nitrogen
	Hydrogen
E	Helium
99.	The phenomenon of "Ozone depletion" is mainly caused by:
	Carbon Dioxide
	Sulfur Dioxide
	CFCs
	Oxygen
E	Hydrogen

100. The process of plants making their food using sunlight is called:

- **A** Respiration
- **B** Digestion
- ✓ c Photosynthesis
 - **D** Evaporation
 - **E** Transpiration