

Scientific Numismatics: Advanced Principles

Numismatics · Answer Key · 25 Questions

1. Which specific chemical phenomenon causes the 'verdigris' patina found on copper-based ancient coinage exposed to acetic acid or atmospheric pollutants?

- A) Formation of copper(II) carbonate
- B) Oxidation to copper(II) oxide
- C) Formation of copper(II) acetate**
- D) Reduction of copper(I) sulfide

2. What is the primary scientific purpose of 'die axis' orientation analysis in numismatic research?

- A) Determining the market value of the coin
- B) Identifying the minting workshop's physical alignment
- C) Detecting the presence of trace elements in the alloy
- D) Establishing the chronological sequence of coin striking**

3. In the context of numismatic metallurgy, what does the term 'flan' specifically refer to in the production process?

- A) The decorative rim of the coin
- B) The prepared metal disc before striking**
- C) The die used to impress the design
- D) The chemical cleaning agent for gold coins

4. What diagnostic method do numismatists use to determine the exact elemental composition of a coin without damaging the surface?

- A) Destructive acid titration
- B) X-ray fluorescence (XRF) spectrometry**
- C) Micro-scratch hardness testing
- D) Thermal gravimetric analysis

5. The phenomenon of 'die doubling' on a coin's surface is scientifically attributed to which process error?

- A) Excessive heating of the planchet
- B) Mechanical misalignment during the hubbing process**
- C) Chemical corrosion of the steel die
- D) Rapid cooling of the blank during casting

6. Which term describes the scientific study of the weight standards and systems used in ancient currency?

- A) Metrology**
- B) Epigraphy
- C) Sigillography
- D) Palaeography

7. What is the 'ser-i-sikka' in the context of historical Islamic coinage?

- A) The official weight standard of the Caliphate
- B) The administrative record of the minting process**
- C) The specific chemical composition of the alloy
- D) The inclusion of the ruler's name in the khutba

8. What causes the characteristic 'crescent-shaped' edge cracks sometimes seen on ancient hammered silver coins?

- A) Over-striking with excessive pressure
- B) Brittle fracture due to impurity segregation at the edge**
- C) Chemical oxidation of the coin rim
- D) Cooling the coin in liquid nitrogen

9. In numismatics, what is 'billon' technically defined as?

- A) A pure copper alloy
- B) An alloy of silver with a high base metal content**
- C) A gold-plated iron core
- D) A non-metallic ceramic composite

10. What was the primary function of the 'a secco' technique in the context of ancient minting?

- A) Polishing the dies with abrasive sand
- B) Striking coins without heating the planchet**
- C) Applying protective enamel coatings
- D) Engraving the reverse die with a stylus

11. Which mineral impurity, when found in ancient gold coins, is often used by scientists to trace the geographic origin of the ore?

- A) Platinum group elements (PGEs)**
- B) Sodium chloride
- C) Calcium sulfate
- D) Iron pyrite

12. The 'Ewing Effect' in numismatic documentation refers to:

- A) The psychological impact of rare coin ownership
- B) The correlation between coinage volume and inflation rates
- C) The identification of forgery via microscopic tool marks**
- D) The chemical degradation of copper-nickel alloys

13. What is the significance of the 'sullage' found in the archaeological discovery of hoards?

- A) The monetary value of the hoard
- B) Organic matter preserved with coins that provides dating context**
- C) The chemical residue left by bronze corrosion
- D) The secondary striking of base metals

14. Which technique is used to determine the exact density of a coin to verify its metallic composition?

- A) Hydrostatic weighing**
- B) Surface tension analysis
- C) Coulometric titration
- D) Refractive index measurement

15. What causes 'die rust' which appears as pitting on the surface of a coin?

- A) Exposure of the hardened steel die to moisture**
- B) Oxidation of the blank before striking
- C) Repeated use of the hammer on the die
- D) Application of acidic pickling solutions

16. Which metallurgical term describes the process of heating a coin to remove internal stresses before striking?

- A) Annealing**
- B) Quenching
- C) Tempering
- D) Smelting

17. The 'Gresham's Law' describes which economic phenomenon regarding currency?

- A) Bad money drives out good money**
- B) Gold coins will always appreciate in value
- C) Minting costs exceed the face value of the coin
- D) Inflation is caused by increased coin supply

18. What specific chemical reaction occurs when silver coins turn black due to exposure to sulfur in the atmosphere?

- A) Formation of silver sulfide**
- B) Oxidation to silver oxide
- C) Hydration of the silver surface
- D) Chlorination of the silver structure

19. What is the scientific function of a 'collar' in modern minting?

- A) To add security features to the edge
- B) To prevent the metal from expanding laterally during striking**
- C) To protect the die from wear
- D) To hold the coin in the heating kiln

20. In numismatics, what are 'brockages'?

- A) Coins minted with two reverse dies
- B) Coins resulting from a strike where a coin sticks to the die**
- C) Coins made of counterfeit alloys
- D) Coins missing the portrait side

21. Which unit was traditionally used to measure the purity of gold in ancient coinage?

- A) Karat**
- B) Carat
- C) Grain
- D) Gram

22. What does the study of 'provenance' in numismatics rely upon?

- A) Documented chain of custody and historical records**
- B) Scientific analysis of the coin's chemical smell
- C) Subjective aesthetic appraisal
- D) The monetary inflation at the time of striking

23. Why is lead often found in ancient silver-copper alloys?

- A) It was added intentionally to improve fluidity during casting
- B) It was a byproduct of the smelting of argentiferous galena**
- C) It was used to increase the coin's weight for trade
- D) It was added to prevent the silver from tarnishing

24. What is the primary difference between a 'cast' forgery and a 'struck' original coin?

A) Cast coins lack the high-pressure metal flow lines present in struck coins

B) Cast coins are heavier than struck coins

C) Struck coins have porous surfaces while cast coins are smooth

D) Cast coins contain higher levels of gold

25. Which scientific analysis identifies the presence of traces of copper within an ancient silver coin to infer the extraction process?

A) Lead isotope analysis

B) Carbon-14 dating

C) Mass spectrometry of trace impurities

D) Thermography