The Tokenization Revolution – Quiz

Module 6: The Infrastructure Problem

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Digital Finance — BSc Course

Question 1

The lecture distinguishes between tokenization and digitization. Which statement **best** captures the difference?

A. Tokenization and digitization are the same thing — both put assets on a computer

B. Digitization converts information to digital format (e.g., a PDF of a deed), while tokenization creates a programmable, tradeable ownership claim on a blockchain

C. Tokenization is only for cryptocurrencies; digitization is for real assets

D. Digitization uses blockchain; tokenization uses traditional databases

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- (D) Digitization uses blockchain; tokenization uses traditional databases

Answer: (B) Digitization puts a document on a screen. Tokenization puts a *right* on a ledger. A digitized deed is still a file that requires intermediaries to transfer. A token is a programmable record of ownership that can be transferred peer-to-peer, subdivided, and governed by smart contract logic.

Question 2

Traditional equity settlement in the US operates on a T+1 cycle (changed from T+2 in May 2024). What does "T+1" mean, and why does the lecture call settlement delay a "hidden tax"?

- T+1 means trades execute one minute after the order; it is called a tax because of exchange fees
- T+1 means final transfer of ownership occurs one business day after the trade; it is a hidden tax because approximately $500 billion in capital is trapped during that delay, costing an estimated $17 billion per year in opportunity cost
- T+1 means trades are reviewed by a human within one day
- T+1 is a blockchain concept meaning one block confirmation

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Answer: (B) T+1 means settlement (the final, irrevocable transfer of ownership and payment) happens one business day after the trade. During that delay, capital is locked and cannot be redeployed. At 5% annual cost of capital, this trapped capital costs the US equity market alone roughly $17 billion per year.

Question 3

The lecture lists five benefits of tokenization. Which of the following is **NOT** one of them?

A. Fractional ownership
B. 24/7 trading
C. Guaranteed price appreciation
D. Programmable compliance

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- (C) Guaranteed price appreciation
- (D) Programmable compliance

Answer: (C) The five benefits are: fractional ownership, 24/7 trading, instant settlement, programmable compliance, and global access. Tokenization changes *how* assets are traded and owned — it does not guarantee returns or eliminate market risk.

Question 4

ERC-20, ERC-721, and ERC-1400 are Ethereum token standards. Which standard is designed specifically for security tokens with built-in compliance controls?

A. ERC-20 — the standard for fungible tokens like cryptocurrencies

B. ERC-721 — the standard for Non-Fungible Tokens (NFTs)

C. ERC-1400 — the standard for security tokens, which extends ERC-20 with transfer restrictions, forced transfers, and document management

D. All three are equally suitable for regulated securities

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- (D) All three are equally suitable for regulated securities

Answer: (C) ERC-1400 was proposed by Polymath in 2018 specifically for security tokens. It adds compliance hooks to ERC-20: the token contract can enforce who may hold it (KYC/AML), restrict transfers to approved addresses, and support forced transfers (e.g., court orders). Vanilla ERC-20 lacks these features.

Question 5

BlackRock launched BUIDL, a tokenized money market fund, on Ethereum in March 2024. What makes this significant?

- (A) It was the first-ever financial product on blockchain
- (B) The world's largest asset manager ($10+ trillion AUM) chose a public blockchain over private infrastructure, signaling institutional confidence in tokenized settlement
- (C) BUIDL replaced all of BlackRock's traditional funds
- (D) BUIDL offers higher returns than any other money market fund

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Answer: (B) BUIDL's significance is the signal it sends: BlackRock, managing over $10 trillion, chose public Ethereum rather than building a private blockchain. Each token equals $1 backed by US Treasuries, with daily yield accrual and 24/7 instant redemption via USDC. It attracted $500M+ within six weeks.

Question 6

Switzerland's DLT Act (2021) introduced the concept of "DLT securities" into Swiss law. What did this achieve?

A. It banned all cryptocurrency trading in Switzerland

B. It created a legal basis for blockchain-based securities, allowing tokenized assets to have the same legal standing as traditional securities without requiring a central securities depository

C. It required all Swiss banks to use blockchain

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Answer: (B) The Swiss DLT Act gave tokenized securities legal recognition. A token on a distributed ledger can now represent a legally enforceable ownership claim — the same status as a paper certificate or a book entry at a central depository. This enabled SDX (SIX Digital Exchange) to operate within a clear legal framework.

Question 7

The lecture describes the token lifecycle in five stages. Which is the correct order?

A. Trade → Issue → Originate → Settle → Redeem

B. Originate (legal structuring) → Issue (mint tokens) → Trade (secondary market) → Settle (atomic DvP) → Redeem (burn tokens)

C. Issue → Originate → Redeem → Trade → Settle

D. Redeem → Issue → Trade → Originate → Settle

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- (C) Issue → Originate → Redeem → Trade → Settle
- (D) Redeem → Issue → Trade → Originate → Settle

Answer: (B) The lifecycle mirrors traditional capital markets but executes on-chain: first the asset is legally structured, then tokens are minted, then they trade on secondary markets, settlement occurs atomically (delivery-versus-payment), and finally tokens are burned when the underlying asset is liquidated.

Question 8

A property worth $500,000 is tokenized into 10,000 tokens at $50 each. Annual net rent after expenses is $36,000. What is the annual yield per token?

- A 3.6%
- B 7.2%
- C 10.0%
- D 50.0%

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Answer: (B) Rent per token $= \$36{,}000 \div 10{,}000 = \$3.60$ per year. Token yield $= \$3.60 \div \$50 = 7.2\%$ annual yield. This is comparable to direct property ownership yields (6–8%), minus platform fees and potential liquidity discounts.

Question 9

Under T+1 settlement, average daily US equity trading volume of $500 billion means $500 billion in capital is trapped at any time. At a 5% annual cost of capital, what is the approximate daily cost of this trapped capital?

- A $25 million
- B $68.5 million
- C $500 million
- D $2.5 billion

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Answer: (B) Daily cost $= \$500\text{B} \times 0.05 \div 365 \approx \$68.5\text{M}$. Over 252 trading days, this amounts to roughly $17 billion per year. Under T+0 (tokenized settlement), this trapped capital and its opportunity cost would fall to approximately zero.

Question 10

A tokenized bond has KYC/AML rules encoded in its ERC-1400 smart contract. An investor who has not completed identity verification tries to buy the token. What happens?

- (A) The transaction succeeds, and the issuer contacts the investor later for KYC
- (B) The smart contract rejects the transfer automatically because the buyer's address is not on the approved whitelist
- (C) The exchange manually blocks the trade
- (D) The bond issuer must file a regulatory complaint

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Answer: (B) Programmable compliance means the token itself enforces who can hold it. The ERC-1400 contract checks whether the buyer's wallet address is on a pre-approved whitelist (populated after KYC verification). If not, the transfer function reverts — the trade never executes. No human intervention needed.

Question 11

JPMorgan's Onyx platform uses blockchain for intraday repo transactions. Why is tokenized settlement particularly valuable for repo markets?

A. Because repo markets do not involve real money

B. Because repo transactions are overnight or intraday, so even T+1 settlement creates significant counterparty risk; atomic delivery-versus-payment on blockchain eliminates the settlement window entirely

C. Because JPMorgan wants to replace the Federal Reserve

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Answer: (B) Repo (repurchase agreement) transactions involve very short durations — often hours. With traditional settlement, there is a window where one party has delivered securities but not yet received cash. Tokenized atomic settlement eliminates this window: securities and cash transfer simultaneously in a single transaction.

Question 12

An art collector wants to sell a painting worth $1 million as 1,000 tokens at $1,000 each. Who holds the physical painting?

A. Each token holder receives a physical piece of the painting

B. The painting is stored with a custodian (e.g., a secure vault), and the tokens represent ownership claims against the custodial entity, not physical possession of the artwork

C. The painting is destroyed and replaced by the tokens

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Answer: (B) Tokenization does not move the physical asset — it creates a digital twin of the ownership right. The painting stays in a vault under the custody of a regulated entity. This reintroduces a trust dependency (you must trust the custodian), which the lecture identifies as the "custodial question" — an unsolved tension in tokenization.

Question 13

The lecture says that most tokenization pilots succeed at issuance (Stage 2 of the lifecycle) but struggle with trading and redemption (Stages 3–5). Why is secondary market trading the harder problem?

- (A) Because minting tokens is illegal but trading them is not
- (B) Because trading requires liquidity (sufficient buyers and sellers), market-making infrastructure, price discovery mechanisms, and cross-platform interoperability — none of which exist yet at scale for tokenized assets
- (C) Because issuers do not want their tokens to be traded
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Answer: (B) Issuing tokens on a blockchain is technically straightforward. But a functioning secondary market requires deep liquidity pools, reliable price feeds, market makers willing to quote, legal clarity on transfer restrictions, and interoperability across different blockchain platforms. This is the "last mile" problem of tokenization.

Question 14

A critic argues that tokenized assets are "just a database entry on a fancier database." Using the lecture's framework, what is the **strongest** counter-argument?

- Tokenized assets use more modern programming languages
- Unlike a database entry, a token is programmable (embeds compliance and settlement logic), transferable peer-to-peer without intermediaries, composable with other protocols, and recorded on an immutable ledger with a single source of truth
- Blockchain databases are always faster than traditional databases
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Answer: (B) A traditional database entry requires intermediaries to transfer, cannot enforce compliance automatically, and exists as one of many copies that must be reconciled. A token on a blockchain is self-enforcing (smart contract logic), globally transferable without intermediaries, composable with other on-chain protocols, and exists as a single authoritative record.

Question 15

The lecture mentions "liquidity fragmentation" as a risk. What does this mean in the context of tokenized assets?

- (A) Tokens become physically fragmented and lose value
- (B) If tokenized assets trade on many different blockchains and platforms that do not interoperate, liquidity is split across venues — making it harder to find a counterparty and leading to wider bid-ask spreads
- (C) Fragmentation means tokens can be split into smaller pieces
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Answer: (B) Liquidity fragmentation occurs when the same asset trades on multiple incompatible platforms (Ethereum, Polygon, private chains), splitting the pool of buyers and sellers. Instead of one deep market, you get many shallow ones — worsening price discovery and increasing trading costs.

Question 16

The “oracle problem” is identified as a key challenge for tokenized real-world assets. What is it?

- **A** The difficulty of predicting future token prices
- **B** The challenge of reliably bringing off-chain, real-world data (property valuations, rental income, corporate actions) onto the blockchain in a trustworthy and tamper-proof manner
- **C** A legal dispute over who owns the token
- **D** The risk that blockchain nodes will disagree on transaction ordering

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Answer: (B) Blockchains are self-contained — they cannot independently verify that a building exists, that rent was collected, or that an asset was appraised at a certain value. Oracles bridge this gap by feeding real-world data to smart contracts, but this reintroduces a trust dependency on the data source.

Question 17

The Swiss DLT Act and the EU DLT Pilot Regime both aim to provide legal frameworks for tokenized securities. The US has no equivalent comprehensive legislation. A student argues this gives Europe a competitive advantage. Which evaluation is **most balanced**?

- The student is wrong — regulation always slows innovation
- The student has a point: legal clarity attracts institutional adoption (firms like SDX and BlackRock launched in jurisdictions with clear rules), but Europe's advantage depends on enforcement quality, not just the existence of laws
- The student is completely right — the US will never catch up
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Answer: (B) Legal clarity reduces risk for institutional adopters. Switzerland's DLT Act enabled SDX to operate; the EU's pilot regime creates a sandbox for experimentation. But regulatory advantage is temporary — the US could pass legislation quickly, and enforcement quality matters more than the existence of rules on paper.

Question 18

The custody question creates a paradox: self-custody eliminates intermediaries but introduces key-management risk, while qualified custody reintroduces the intermediary tokenization was supposed to remove. Which custody model does the lecture suggest as the **most promising** compromise?

- (A) Self-custody only — users must manage their own keys
- (B) Hybrid models using multi-party computation (MPC), where multiple parties jointly control a key without any single party knowing the full key
- (C) Qualified custodians only — a regulated bank holds all tokens
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Answer: (B) MPC-based hybrid custody (e.g., Fireblocks) splits the private key across multiple parties. No single party can move assets alone, reducing both the risk of key loss (self-custody) and the risk of intermediary failure (qualified custody). It is a compromise that preserves decentralization benefits while managing operational risk.

Question 19

The lecture estimates that over $300 trillion in global assets (real estate, bonds, private equity) suffers from high transaction costs and limited liquidity. A student claims tokenization will unlock all of this value within five years. What is the **most realistic** assessment?

A. The student is correct — technology is ready for full-scale adoption

B. Tokenization has real potential, but scaling requires solving secondary market liquidity, regulatory harmonization across jurisdictions, oracle reliability, custodial infrastructure, and institutional readiness — full adoption will take decades, not years

C. Tokenization will never scale beyond pilot projects

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Answer: (B) The technology for issuance works, but the ecosystem for trading, settlement, custody, and compliance at scale is still developing. The lecture notes that most firms are between the "live product" and "scale" phases. Full adoption requires not just technology but legal frameworks, institutional infrastructure, and market liquidity — all of which take time.

Question 20

BlackRock chose to deploy BUIDL on public Ethereum rather than a private blockchain. A bank executive argues that private blockchains are safer because they control who participates. What is the **strongest** counter-argument from the lecture?

A. Private blockchains are always inferior

B. Public blockchains offer composability with the existing DeFi ecosystem, network effects from a large validator set, and credible neutrality — no single entity controls the infrastructure, reducing counterparty risk to the platform operator

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Answer: (B) Public blockchains provide three advantages that private chains cannot: composability (BUIDL tokens can interact with any Ethereum protocol), network effects (thousands of validators secure the chain), and credible neutrality (no single company can change the rules). Private chains sacrifice these for control — but that control reintroduces the single-point-of-failure risk.