Quiz: Lesson 6.4 – Next-Generation Infrastructure

Module 6: The Infrastructure Problem

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Question 1 (Understand)

What is a Central Bank Digital Currency (CBDC)?

A. A blockchain-based token pegged to a fiat currency by a private company

B. **A digital form of central bank money that is a liability of the central bank**

C. A private cryptocurrency issued by commercial banks

D. A stablecoin backed by central bank reserves

Question 2 (Understand)

What is the key difference between a retail CBDC and a wholesale CBDC?

A. Retail CBDCs are token-based; wholesale CBDCs are always account-based

B. Retail CBDCs use blockchain; wholesale CBDCs use centralized databases

C. **Retail CBDCs are available to the general public; wholesale CBDCs are restricted to financial institutions for interbank settlement**

D. Wholesale CBDCs have higher transaction limits but are otherwise identical to retail CBDCs

Question 3 (Analyze)

In an account-based CBDC, transactions require identity verification. In a token-based CBDC, transactions require proof of possession (private key). What is the primary tradeoff?

A. Token-based costs more to operate than account-based

B. Account-based is faster; token-based is slower

C. **Account-based enables surveillance and AML enforcement but reduces privacy; token-based preserves privacy but makes AML compliance harder**

D. There is no meaningful tradeoff; both models are functionally equivalent

Question 4 (Apply)

The ECB proposes a digital euro holding limit of €3,000 per person. What is the primary policy reason for this cap?

A. To limit the total supply of digital euros in circulation

B. **To prevent large-scale deposit flight from commercial banks to risk-free CBDC, which could destabilize bank funding**

C. To prevent money laundering by capping individual holdings

D. To ensure that the digital euro is only used for small payments

Question 5 (Understand)

What distinguishes a custodial wallet from a non-custodial wallet?

A. **In a custodial wallet the provider holds the private keys; in a non-custodial wallet the user holds the private keys**
B. Custodial wallets are only available on mobile devices
C. Non-custodial wallets do not support CBDC tokens
D. Custodial wallets are always more secure than non-custodial wallets

Question 6 (Apply)

A cryptocurrency exchange suffers a hack and loses customer funds. Which wallet model were the affected customers most likely using?

A. Non-custodial hardware wallets

B. MPC wallets with distributed key shares

C. Paper wallets stored offline

D. **Custodial wallets managed by the exchange**

Question 7 (Understand)

What is Multi-Party Computation (MPC) in the context of digital wallets?

A. A technique for encrypting wallet addresses on the blockchain

B. A consensus algorithm that validates transactions across multiple nodes

C. A protocol for synchronizing wallet balances across multiple devices

D. **A cryptographic method where the private key is split into shares held by multiple parties, so no single party can sign a transaction alone**

Question 8 (Understand)

What does RWA tokenization mean?

A. Issuing a stablecoin backed by a basket of real-world assets

B. Creating a digital twin of a physical object using IoT sensors

C. Converting cryptocurrency into fiat currency through a regulated exchange

D. **Representing ownership rights to real-world assets (bonds, real estate, commodities) as digital tokens on a distributed ledger**

Question 9 (Analyze)

Traditional bond settlement takes T+1 (one business day). Tokenized bond settlement can be near-instant. Which of the following is the most significant financial benefit of faster settlement?

A. **It reduces counterparty risk exposure and frees capital that would otherwise be locked during the settlement window**

B. It eliminates the need for legal documentation

C. It guarantees higher returns on the bond

D. It removes counterparty credit risk entirely

Question 10 (Evaluate)

A government proposes using programmable CBDC to issue social welfare payments that can only be spent at approved retailers and expire after 90 days. Which concern is most critical?

A. The technical complexity of implementing expiry logic in smart contracts

B. The risk of retailers refusing to accept CBDC payments

C. The cost of deploying CBDC wallets to all welfare recipients

D. **The erosion of individual financial freedom and the precedent for government surveillance and control over personal spending**

Question 11 (Apply)

The Monetary Authority of Singapore (MAS) has proposed "purpose-bound money" (PBM). What does PBM do?

A. It binds CBDC to a specific blockchain protocol

B. It restricts CBDC usage to a single bank account

C. **It wraps CBDC units in a smart contract that imposes spending conditions, while the underlying CBDC remains fungible once unwrapped**

D. It permanently converts CBDC into a non-fungible token

Question 12 (Understand)

What is the difference between "programmable money" and "programmable payments"?

A. There is no difference; the terms are interchangeable

B. **Programmable money has conditions embedded in the currency itself (e.g., expiry); programmable payments attach logic to the payment instruction while the money remains unconditional**

C. Programmable payments are faster than programmable money

D. Programmable money requires blockchain; programmable payments do not

Question 13 (Understand)

What is a Decentralized Identifier (DID)?

A. A government-issued digital passport number

B. A bank account number stored on a blockchain

C. **A globally unique identifier controlled by the subject (not a central registry), enabling verifiable, self-sovereign identity**

D. A cryptocurrency wallet address

Question 14 (Apply)

Using SSI with verifiable credentials, an individual can prove they are over 18 without revealing their date of birth. What cryptographic technique enables this?

A. Digital signatures alone

B. **Zero-knowledge proofs (ZKPs)**

C. Public key infrastructure (PKI)

D. Symmetric key encryption

Question 15 (Analyze)

A large bank currently spends $200 million annually on KYC compliance across its global operations. How could SSI with verifiable credentials reduce this cost?

A. By outsourcing KYC to the blockchain network

B. By using AI to automate document scanning (unrelated to SSI)

C. **By enabling customers to present pre-verified KYC credentials that the bank can verify cryptographically, eliminating redundant document collection and manual verification**

D. By eliminating the need for KYC entirely

Question 16 (Analyze)

The BIS "unified ledger" concept proposes placing CBDCs, tokenized deposits, and tokenized assets on a single platform. What settlement innovation does this enable?

A. Automatic currency conversion between all CBDC jurisdictions

B. **Atomic settlement (Delivery-vs-Payment), where asset and payment transfer occur simultaneously in a single transaction, eliminating settlement risk**

C. Reduced transaction fees through economies of scale

D. Faster batch processing at the end of each business day

Question 17 (Apply)

An institutional investor purchases a tokenized bond using CBDC. The bond pays a 4% annual coupon. What happens to coupon payments in a fully tokenized environment?

A. **A smart contract automatically distributes CBDC coupon payments to the wallet address holding the bond token on each payment date**

B. The bondholder must submit a claim form to receive each coupon payment

C. A custodian bank collects coupons and distributes them monthly

D. The issuer manually transfers coupon payments to each bondholder's bank account

Question 18 (Evaluate)

China's e-CNY has been in pilot since 2020 with 260+ million wallets created, yet adoption for daily payments remains low. What is the most likely explanation?

A. **Existing mobile payment solutions (Alipay, WeChat Pay) are already deeply embedded in daily life, and the e-CNY offers insufficient incremental value to change user behavior**

B. Chinese citizens do not trust digital payments

C. The e-CNY technology is too slow for retail use

D. The Chinese government has not promoted the e-CNY sufficiently

Question 19 (Evaluate)

A central bank must choose between launching a CBDC on a permissioned blockchain or a centralized database. Which factor most strongly favors the centralized database?

A. Lower energy consumption

B. Easier integration with existing cryptocurrency ecosystems

C. Better public perception of technological innovation

D. **Higher transaction throughput (100,000+ TPS) required for national retail payment volume, which current permissioned blockchains struggle to match**

Question 20 (Evaluate)

Consider the convergence of CBDC, RWA tokenization, and SSI. Which of the following represents the greatest risk to this converged infrastructure?

A. **Geopolitical fragmentation leading to incompatible national standards, preventing cross-border interoperability of CBDCs, tokens, and identity systems**

B. The expiry of current cryptographic standards due to quantum computing

C. Insufficient consumer demand for digital identity wallets

D. High electricity costs for running blockchain nodes