If the current block reward for Bitcoin is 6.25 BTC, and the difficulty adjustment mechanism is such that, on average, a new block is found every 10 minutes, how much Bitcoin will be mined per day (24 hours)?

a) 75 BTC
b) 144 BTC
c) 900 BTC
d) 1,080 BTC

Which of the following best defines a **permissioned blockchain**?

a) Anyone can join and validate transactions without approval.
b) Only authorized participants can write and validate transactions.
c) It always uses proof-of-work (PoW) for consensus.
d) A permissioned blockchain does not need cryptographic hash operations

Which of the following combinations is correctly used to compute Bitcoin's current block hash?

a) Previous block's hash, Merkle root, block reward, nonce, timestamp, and block size
b) Previous block's hash, timestamp, nonce, Merkle root, difficulty bits, and block version
c) Block creator's public key, Merkle root, timestamp, block reward, nonce, and difficulty level
d) Previous block's hash, nonce, Merkle root, height, timestamp, and difficulty bits

Which of the following difficulty targets would make it most difficult for miners to find a valid block?

a) 00000000000000000000000000000000000000000000000000000056789abcdef123
b) 00000000000000000000000000000000000000000000000000000002dfe34a1b2c3d555
c) 00000000000000000000000000000000000000000000000000000000afc123987abc
d) 0000000000000000000000000000000000000000000000000000000000af46789

In the Bitcoin, block identifier refers to

a) SHA1 (128 bits) of the future block header
b) Double SHA256 of the current block header
c) Double SHA256 of the difficulty bits only
d) Triple SHA256 of the future block header

In a Merkle tree with n transactions (n is a power of 2), if one transaction is invalid, how many recalculations are needed to detect and correct the invalid transaction?

a) $n/2$
b) $\log_2(n) + 1$
c) $n-1$
d) $3\log_2(n)$

Which of the following Bitcoin script opcode is needed to remove the second-to-top stack item?

a) OP_DELETE
b) OP_2POP
c) OP_DEQUE
d) OP_NIP

If a Merkle tree has 8 transactions, how many hashes are required to compute the Merkle root?

a) 8
b) 15
c) 16
d) 7

What is a nonce in the context of Bitcoin mining?

a) The transaction ID number
b) A miner's ASIC chip array
c) The generator point used in elliptic curve cryptography
d) A value miners iterate through to generate a valid hash

What happens if the number of transactions in a Merkle tree is odd?

a) The tree cannot be built
b) Dummy (duplicate) hashes are added to adjust
c) Transactions are left out of the block
d) The Merkle root is ignored