

Test Questions with Answers

Each question lists four options **A–D**.

1. The investor's portfolio equals

A	B	C	D
$V_t = B_t + \sum_{n=1}^N H_n S_n(t)$	$V_t = H_t B_t + \sum_{n=1}^N H_n S_n(t)$	$V_t = H_0 B_t + \sum_{n=1}^N H_n S_n(t)$	$V_t = \sum_{n=1}^N H_n S_n(t)$

2. A pricing measure exists if and only if...

A	B	C	D
there is no dominant strategy.	there exists an arbitrage strategy.	the law of one price does not hold.	$\sum_{n=1}^N \pi_n = 1$.

3. How many time points does a one-period securities market model have?

A	B	C	D
n	1	2	infinitely many

4. Suppose there are 2 states and $r = 1$, $N = 1$, $S(0) = 2$, $S(1, \omega_1) = 6$, $S(1, \omega_2) = 10$. Find the portfolio value at $t = 1$ for the first state.

A	B	C	D
$2H_0 + 6H_1$	$2H_0 + \frac{5}{3}H_1$	$2H_0 + 10H_1$	$2H_0 + \frac{3}{5}H_1$

5. Let $B_0 = 1$, $B_1 = 2$, $S(0) = 4$, $S(1, \omega_1) = 6$, $S(1, \omega_2) = 10$. Find a pricing measure.

A	B	C	D
(1; 0)	(1/5; 4/5)	(1/4; 3/4)	(1/2; 1/2)

6. Suppose there are 2 states and $r = 1$, $N = 2$, $S_1(0) = 2$, $S_1(1, \omega_1) = 6$, $S_1(1, \omega_2) = 10$; $S_2(0) = 4$, $S_2(1, \omega_1) = 4$, $S_2(1, \omega_2) = 6$. Find a pricing measure.

A	B	C	D
$(0; 1)$	does not exist	$(1; 0)$	$(1; 1/2)$

7. Let $r = 1$, $N = 1$, $S_1(0) = 2$, $S(1, \omega_1) = 12$, $S(1, \omega_2) = 8$. Then...

A	B	C	D
a dominant strategy does not exist.	the law of one price holds.	a dominant strategy exists and equals $H(8; -1)$.	a pricing measure exists.

8. An arbitrage strategy does not exist if and only if...

A	B	C	D
there exists a risk-neutral measure.	the law of one price holds.	there is no pricing measure.	there exists a dominant strategy.

9. Let $r = 0$, $N = 1$, $S_1(0) = 10$, $S(1, \omega_1) = 12$, $S(1, \omega_2) = 10$. Which of the following strategies is an arbitrage?

A	B	C	D
$H(-1; -10)$	none exists	$H(10; -1)$	$H(-10; 1)$

10. Let $r = 0.25$, $S(0) = 3$, $S(1, \omega_1) = 7.5$, $S(1, \omega_2) = 6.25$. How many risk-neutral measures exist?

A	B	C	D
one	infinitely many	two	none