1. You are given the following spot yield curve:

Time	Spot Rate	Forward Rate of Gold
1	4.00%	1000
2	5.00%	980
3	5.75%	970
4	6.25%	965
5	6.50%	962

You want to enter into a swap on gold which will allow you to purchase 100 carats of gold at the end of one year and another 100 carats of gold at the end of 2 years.

Calculate the swap rate per carat of gold.

2. (F11PR) You are given:

Year	Oil Forward Price	Zero Coupon Bond Price
1	132	0.90
2	140	Z

The price of 2 year oil swap which provides two barrels of oil at the end of one year and five barrels of oil at the end of two years is 137.60.

Calculate Z.

3. (F11PR) You are given the following table.

Year	1	2	3	4	5
Zero Coupon Bond Price	0.960	0.915	0.865	0.810	0.755
Oil Forward Price	100	99	95	91	85

Julie will buy 1 million barrels of oil at the end of each year for the next three years.

Calculate the three year swap price.

4. (F11PR) You are given the following table.

Year	1	2	3	4	5
Zero Coupon Bond Price	0.960	0.915	0.865	0.810	0.755
Oil Forward Price	100	99	95	91	85

Kyle will buy 1 million barrels of oil at the end of year 2 and X million barrels of oil at the end of four years. Kyle enters into a swap in order to fix the price of the oil. The swap price is 93.635.

Calculate X.

5. (F11PR) You are given the following table.

Year	1	2	3	4	5
Zero Coupon Bond Price	0.960	0.915	0.865	0.810	0.755
Oil Forward Price	100	99	95	91	85

Katie has a line of credit on which she pays the interest at the one year spot rate. Katie will need to have a loan of $50,000 during the next year and 100,000 during the second year.

Katie enters into a swap in which she swaps her floating rate on her debt over the next two years for a fixed interest rate.

Calculate the fixed interest rate on Katie's swap.

6. (F11PR) You are given the following spot yield curve:

Time	Spot Rate
1	4.00%
2	5.00%
3	5.75%
4	6.25%
5	6.50%

Jacque has a variable rate loan for 5000 for the next 2 years where the interest rate is reset annually. Jacque purchases an interest rate swap to fix the interest rate. Determine the fixed interest rate.

7. (F11PR) You are given the following table.

Year	1	2	3	4	5
Zero Coupon Bond Price	0.960	0.915	0.865	0.810	0.755
Oil Forward Price	100	99	95	91	85

Heather enters into a two year oil swap with a swap of 1 million barrels of oil being swapped at the end of each year.

Immediately after Heather enters the swap, the forward price of oil in one year increases to 104 while the forward price of oil in two years increases 103.

Calculate the market value of the swap.

8. (S09T4) Bob's Bakery specializes in corn bread muffins. One year ago Bob entered into a swap. The swap allows Bob to purchase 100 bushels of corn one year from now and another 100 bushels of corn two years from now for a fixed price of 3.50 per bushel. The following table lists the current spot interest rates and forward price of corn:

Time	Spot Interest Rate	Forward Price of a Bushel of Corn
1 Year	0.05	4.00
2 Years	0.06	5.00

Calculate the market price of the swap.

9. (S10T4) Emily owns a swap. The swap allows Emily to borrow 100,000 during the next two years at an interest rate of 5%. The following table lists the current spot interest rates:

Time	Spot Interest Rate
1 Year	0.05
2 Years	0.06

Determine market value of this swap if Emily sold it today.

Answers

1. 990.29
2. 0.84
3. 98.09
4. 2.3
5. 4.66
6. 4.975%
7. 7.5 million
8. 181
9. 1788.47