

PUSASQF404
Fixed Income Products

Time: 2 hours
Total Marks: 60 marks

Note:

- 1) The candidate has option to either attempt question 4A or question 4B. Rest all questions are mandatory.**
- 2) Numbers to the right indicate full marks.**
- 3) The candidates should only write the option alphabet for answers in case of the MCQ based questions.**
- 4) Use of approved scientific calculator is allowed.**

Q1.

15 Marks

- 1) Floating-rate bonds are the best way to reduce:**
 - a. credit risk.
 - b. inflation risk,
 - c. interest rate risk.
 - d. ALL of the above
- 2) Compared with developed markets bonds, emerging markets bonds most likely :**
 - a. offer lower yields.
 - b. exhibit higher risk.
 - c. benefit from lower growth prospects.
 - d. None of the above
- 3) A zero-coupon bond matures in 15 years. At a market discount rate of 4.5% per year and assuming annual compounding, the price of the bond per 100 of par value is closest to :**
 - a. 51.30
 - b. 51.67
 - c. 71.62
 - d. 31.45
- 4) Bonds issued by the World Bank would most likely be:**
 - a. quasi-government bonds
 - b. global bonds
 - c. supranational bonds
 - d. None of the above
- 5) The distinction between investment grade and non investment grade bonds is best described by**
 - a. tax status.
 - b. credit quality.
 - c. maturity dates.
 - d. All of the above.

- 6) A floating-rate note has a quoted margin of +50 basis points and a required margin of +75 basis points. On its next reset date, the price of the note will be:
- equal to par value.
 - less than par value
 - greater than par value
 - not enough information
- 7) The 4-year spot rate is 8.25%, and the 3-year spot rate is 9.05%. What is the 1-year forward rate three years from today?
- 5.885%
 - 6.850%
 - 6.059%.
 - 7.354%
- 8) A yield curve constructed from a sequence of yields-to-maturity on zero-coupon bonds is the:
- par curve.
 - spot curve.
 - forward curve
 - None of these.
- 9) The interest rate risk of a fixed-rate bond with an embedded call option is best measured by:
- effective duration.
 - modified duration.
 - Macauley duration
 - Convexity
- 10) A limitation of calculating a bond portfolio's duration as the weighted average of the yield durations of the individual bonds that compose the portfolio is that:
- assumes a parallel shift to the yield curve.
 - is less accurate when the yield curve is less steeply sloped.
 - is not applicable to portfolios that have bonds with embedded options
 - All of these.

Q2.

A.

5 Marks

An analyst needs to assign a value to an illiquid four-year, 4.5% annual coupon payment corporate bond. The analyst identifies two corporate bonds that have similar credit quality: A is a three-year, 5.50% annual coupon payment bond priced at 1075.00 per 1000 of par value, and the other B is a five-year, 4.50% annual coupon payment bond priced at

1047.50 per 1000 of par value. Using matrix pricing, the estimated price of the illiquid bond per 1000 of par value ?

B. 5 Marks

Identify the relationships among a bond's price, coupon rate, maturity, and market discount rate (yield-to-maturity).

C. 5 Marks

Following table shows the forward rates , find the 1 year,2 year, 3 year, 4 year spot rates?

Time period	Forward rate %
0y1y	1.88
1y1y	2.77
2y1y	3.54
3y1y	4.12

Q3.

A. 5 Marks

A 6% annual coupon corporate bond with two years remaining to maturity is trading at a price of 102.125. The two-year, 4% annual payment government benchmark bond is trading at a price of 103.750.

Calculate the G-spread(the spread between the yields-to-maturity on the corporate bond and the government bond having the same maturity)?

B. 5 Marks

Explain the role of Matrix Pricing.

C. 5 Marks

BOND	PRICE	COUPON RATE	TIME TO MATURITY
A	101.886	5%	2 YEARS
B	100	6%	2 YEARS
C	97.327	5%	3 YEARS

Referring above table, Calculate : YTM for each bond?

Q4A. 15 Marks

A German bank holds a large position in a 7.25% annual coupon payment corporate bond that matures on 4 April 2036. The bond's yield-to-maturity is 7.44% for settlement on 27 June 2021, stated as an effective annual rate. That settlement date is 83 days into the 360-day year using the 30/360 method of counting days.

- Calculate the full price of the bond per 100 of par value.
- Calculate the approximate modified duration and approximate convexity using a 1 bp increase and decrease in the yield-to-maturity.

- iii. Calculate the estimated convexity-adjusted percentage price change resulting from a 100 bp increase in the yield-to-maturity.
- iv. Compare the estimated percentage price change with the actual change, assuming the yield-to-maturity jumps to 8.44% on that settlement date.

Q4B.

15 Marks

1.

Bond G, described in the exhibit below, is sold for settlement on 16 June 2021.

Annual Coupon	5%
Coupon Payment Frequency	Semi Annual
Interest Payment Dates	10 April and 10 October
Maturity Date	10 October 2023
Day Count Convention	30/360
Annual Yield-to-Maturity	4%

Calculate on 16 June 2021 ,

- i. The Full price of the BOND
- ii. Accrued interest
- iii. Flat Price

2.

- i. Define key rate duration and describe the use of key rate durations in measuring the sensitivity of bonds to changes in the shape of the benchmark yield curve.
- ii. Explain how a bond's maturity, coupon, and yield level affect its interest rate risk.