|  |  |
| --- | --- |
| **C:\Users\ADMIN\Desktop\j.png** | **JAIPURIA INSTITUE OF MANAGEMENT, INDORE**  Post Graduate Diploma in Management (Batch 2022-24) |
| **Course Title: Fixed Income Securities, (Course Code: 40234)**  **End Term Examination, Term - V (Jan, 2024)** | |
| **Time Duration: 2 Hours Total Marks: 40** | |

***General Instructions*:**

1. *Answer the questions as directed. The break-up of the marks is given wherever necessary.*
2. *Marks against each question are indicated to its right.*
3. *Answer all the sub-questions of a ‘Question’ in one place in continuation in* ***the physical answer sheet.***
4. *MS Excel / scientific/financial calculators can be used for calculations.*
5. *Internet access is not allowed.*
6. *Answers should be brief and to the point and to be* ***submitted in physical answer sheets only.***
7. *MS Excel rough work sheet is not required to be submitted.*
8. *Do not write on the question paper except your roll number.*

Q1. Assume that two firms issue bonds with the following characteristics. Both bonds are issued at par.

|  |  |  |
| --- | --- | --- |
|  | **ABC Bonds** | **XYZ Bonds** |
| Issue Size | Rs. 1.2 billion | Rs. 150 million |
| Maturity | 10 years\* | 20 years |
| Coupon | 9% | 10% |
| Collateral | First Mortgage | General Debenture |
| Callable | Not callable | In 10 years |
| Call price | None | 110 |
| Sinking Fund | None | Starting in 5 years |

\* Bond is extendible at the discretion of the bondholder for an additional 10 years.

Ignoring credit quality, categorize four features of these two issues that might account for the lower coupon on the ABC debt. Explain. **(4 marks)**

Q2. Mr. Anurag estimates that there will be annual cash outflows of Rs. 40,000 for four years from the end of three years from now. Mr. Anurag wants to immunize the payments by investing in the following two bonds:

|  |  |
| --- | --- |
| **Bond A** | A Zero-coupon bond of face value Rs. 1,000 maturing after 6 years and currently traded at Rs. 455.60 |
| **Bond B** | 12% coupon bearing bond of face value of Rs. 1,000 maturing after 5 years redeemable at par value and currently traded at Rs. 930.90 |

Assume the interest rate remains at 14%. You are required to divide the proportion of funds to be invested in Bonds A and B such that Mr. Anurag’s payments are immunized. **(8 marks)**

Q3. Given the following details, answer the sub-questions:

|  |  |
| --- | --- |
| Year | 1-year Forward rate |
| 1 | 5% |
| 2 | 5.5% |
| 3 | 6.0% |
| 4 | 6.5% |
| 5 | 7% |

a) Discover the purchase price of a 2-year zero coupon bond be if it is purchased at the beginning of year 2 and has a face value of $1,000?  **(2 marks)**

b) Discover the yield to maturity be on a four-year zero-coupon bond purchased today?  **(2 marks)**

**(4 Marks)**

Q4. Smith Blare and Brody Markus are assistant bond portfolio managers. The senior portfolio manager has asked them to consider the acquisition of one of the two option-free bond issues with the following characteristics:

Issue 1 has a lower coupon rate than issue 2

Issue 1 has a shorter maturity than issue 2

Both issues have the same credit rating.

Smith and Brody are discussing the interest rate risk of the two issues. Smith argues that Issue 1 has a greater interest rate risk and Brody argues that Issue 2 has a greater interest rate risk.

1. Compare and Contrast the opinion of the two assistant bond portfolio managers with respect to their selection of the issue with greater interest rate risk. **(2 marks)**
2. Suppose you are the senior portfolio manager discover the correct argument for both the assistant bond portfolio managers. How would you suggest that Smith and Brody examine which issue has greater interest rate risk? **(2 marks)**

**(4 Marks)**

Q5. Gamma Company has an existing capital structure of Debt: Equity of 400: 1900. It is analyzing the option to raise more debt to finance its new plant at an optimal weighted average cost of capital.

The average forecasted EBIT for the next 5 years is Rs. 400 million.

The tax rate applicable is 30%

Schedule of cost of capital at various credit ratings suggested by investment bankers:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Credit Rating | AAA | AA | A | BBB | BB | C |
| pre-tax cost of debt | 6.02% | 6.77% | 7.65% | 8.04% | 11.25% | 13.15% |
| cost of equity | 12.95% | 13.80% | 14.04% | 18.00% | 22.00% | 25.00% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Credit Rating | AAA | AA | A | BBB | BB | C |
| Desired EBIT interest coverage | 20 | 14 | 8 | 5 | 3 | 1.5 |

Dissect the maximum amount of debt which can be taken in the Balance Sheet of Gamma Company at an optimal weighted average cost of capital. **(10 Marks)**

Q6. Complete and deduce the following schedule for a 30-year fully amortizing mortgage loan with a mortgage rate of 7.25%, where the amount borrowed is $150,000. The monthly mortgage payment is $ 999.94

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Month | Beginning Mortgage | Mortgage Payment | Interest | Scheduled Principal Repayment | End –of Month Balance |
| 357 |  |  |  |  |  |
| 358 |  |  |  |  |  |
| 359 |  |  |  |  |  |
| 360 |  |  |  |  |  |

**(4 Marks)**

Q7. Company Y, a Polish manufacturer, wishes to borrow U.S. dollars at a fixed rate of interest. Company Z, a U.S. multinational, wishes to borrow Polish Zloty at a fixed rate of interest. They have been quoted the following rates per annum (adjusted for differential tax effects):

|  |  |  |
| --- | --- | --- |
|  | Zloty | US Dollars |
| Company Y | 12.0% | 8.5% |
| Company Z | 10.6% | 6.4% |

Conclude the rates applicable to Company Y and Company Z after a swap arrangement has been created. The bank which will be acting as an intermediary will earn 10 basis points per annum. The swap arrangement should be equally attractive to both parties. **(6 Marks)**

--------------------------------------------------------------------------------------------------------------------------