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| **C:\Users\ADMIN\Desktop\j.png** | **JAIPURIA INSTITUE OF MANAGEMENT, INDORE**  Post Graduate Diploma in Management |
| **Course Title: Fixed Income Securities (Course Code: 40234)**  **End-Term Examination, Term – V (Batch 2021-23) (February 2023)** | |
| **Time Duration: 2 Hours Total Marks: 40** | |

***Instructions*:**

1. *This exam is completely an MS -excel based exam*
2. *No answer sheet will be given*
3. *Students need to submit one excel workbook as an answering script. The workbook will have multiple worksheets.*
4. *Students need to solve each question in a separate worksheet and name the worksheet with ques no.*
5. *No Internet access will be given*
6. *No formula, interest factors tables will be provided*
7. *Students should continually keep saving their work*
8. *Students should save the final excel answer sheet with their name, roll no. and division*
9. *Do not write anything on the question paper apart from your roll no.*

**Q1**. A debenture is available at a premium of 3.7% to par with a remaining maturity of 4 years, an annual coupon rate of 8.5% p.a, and redemption at par.

The interest rate term structure for spot rates is as follows:

|  |  |
| --- | --- |
| Year 1 | 7.50% |
| Year 2 | 7.70% |
| Year 3 | 7.80% |
| Year 4 | 7.85% |

Conclude if the debenture should be purchased. **(5 Marks)**

**Q2. Consider the following corporate bond**

|  |  |  |
| --- | --- | --- |
| **Date** | **cash flow** | **Risk-free rate** |
| 15-11-2021 |  |  |
| 15-12-2021 | 5 | 3.80% |
| 15-06-2022 | 5 | 4.30% |
| 15-12-2022 | 5 | 4.50% |
| 15-06-2023 | 5 | 4.60% |
| 15-12-2023 | 115 | 4.65% |

Categorize:

1. Risk spread if the bond is trading at 118.55 as of 15th November 2021 **(7 Marks)**
2. Difference in price between risky and risk-free bonds with the same cash flows **(3 Marks)**

**Q3.** A corporate bond with a coupon of 9% p.a. payable twice a year (on 28th June and 28th December) and redemption at 108% (par value INR 1000) is trading at 1049 as on 17th Sept 2021. Maturity is in December 2026.

|  |  |
| --- | --- |
| **Date** | **Cash flow** |
| 28-12-2021 | 45 |
| 28-06-2022 | 45 |
| 28-12-2022 | 45 |
| 28-06-2023 | 45 |
| 28-12-2023 | 45 |
| 28-06-2024 | 45 |
| 28-12-2024 | 45 |
| 28-06-2025 | 45 |
| 28-12-2025 | 45 |
| 28-06-2026 | 45 |
| 28-12-2026 | 1125 |

Compute:

1. Modified Duration **(5 Marks)**
2. Convexity **(5 Marks)**

**Q4**. Delta Company has an existing capital structure of Debt: Equity of 600: 2300. It is analyzing the option to raise more debt to finance its new plant at the Company's existing capital structure of D: E of 600: 2300 in its balance sheet at an optimal weighted average cost of capital.

The average forecasted EBIT for the next 5 years is Rs. 430 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 | 6.01% | 6.47% | 7.15% | 8% | 11% | 13% |
| cost of equity | 11.95% | 12.80% | 13.04% | 18.00% | 22.00% | 25.00% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Credit Rating | AAA | AA | A | BBB | BB | C |
| Desired EBIT interest coverage | 19.4 | 13.3 | 6.8 | 3.8 | 2.2 | 1.14 |

Suggest the company on the maximum amount of debt it can take in its balance sheet at an optimal weighted average cost of capital. **(10 Marks)**

**Q5.** IBM Inc. an American firm that has a subsidiary in Japan and Suzuki Corporation, a Japanese firm that has its subsidiary in the USA, faces the following interest rates.

|  |  |  |
| --- | --- | --- |
| Currency | IBM Inc. | Suzuki Corp. |
| USD (Floating Rate) | LIBOR + 0.5% | LIBOR + 2.5% |
| Japanese Yen (Fixed Rate) | 2% | 2.25% |

Suzuki Corpn. wishes to borrow a dollar loan at a floating rate and IBM Inc. wishes to borrow a Japanese Yen loan at a fixed rate. A financial institution arranges a swap and requires 75 basis points as its commission.

If the swap is equally attractive to both companies, judge the rate of interest IBM Inc. and Suzuki Corp. will end up paying. **(5 Marks)**

**-----------------------------------------------End of the question paper---------------------------------------------**