

(4)

Unit-I I

4. Compute Present Value of Rs. 2000 payable after 7 years on the basis of each of the following interest rates :
- (i) Effective interest rate 8% p.a.
 - (ii) Nominal interest rate 8% p.a.
Payable half yearly
 - (iii) Nominal rate of interest 8% p.a. payable quarterly
 - (iv) Force of interest 8% p.a.
 - (v) Effective discount rate 8% p.a. 10
5. (a) A loan of Rs. 5,000 is desired to be repaid by three equal instalments to be paid at the end of 9th, 15th and 20th year from now. If interest is compounded @9% p.a., find the value of the instalment.
- If interest is reckoned @ 7% p.a. during the first 10 years and thereafter at the rate of 9% p.a. effective, what will be the new instalment? 5

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B.B.A. (Semester-II) Examination, 2015

FINANCIAL MATHEMATICS

(BBA-205)

Time Allowed : Three Hours] [Maximum Marks : 70

Note : Answer five questions in all. Question No.1 is compulsory. Attempt one question from each Unit. Use of simple calculator is permitted.

1. Attempt all parts : $3 \times 10 = 30$
- (a) Find the present value of Rs. 10,000 after 10 years @ 15% p.a. discount rate compounded semi-annually.
 - (b) Calculate the future value of annuity of Rs. 2,000 received for 12 years, if the compound rate of interest is 10% p.a.
 - (c) What is the annual effective interest rate corresponding to a nominal interest rate of 13% p.a., interest payable every 4 months.

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- (d) A Company declared dividend of Rs. 11.20 in year 1 on a equity share of Rs. 100 each. The market price of the share is Rs. 110. An investor, Rajan, whose required rate of return is 15%, examine whether he should purchase the share or not if the growth in dividend is 5%.
- (e) In how many years will an investment double itself when interest @ 8% p.a. is given.
- (f) If interest is compounded continuously, at what annual rate will an amount be four times in 15 years?
- (g) In return of a promise to pay Rs. 500 at the end of 10 years, a person agrees to pay Rs. 100 now, Rs. 200 at the end of 6 years and a final payment at the end of 12 years. If the rate of interest is 8% P.a. effective, What should be the final payment be?
- (h) Briefly discuss the types of interest rate.
- (i) State the types of preference shares.
- (j) Find the market rate of interest on the basis of the following :

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Inflation rate of 11% p.a., Risk free Rate of interest or Real Interest rate 4% p.a., Risk Premium 2% per year.

Unit-I

2. Find out the future value of investment made today for Rs. 15,000 using following interest rate and periods :
- (i) Force of interest 8% p.a. for 3 years
- (ii) 4% p.a. interest payable Semi-annually for 5 years.
- (iii) 4% p.a. for first 4 years, 5% p.a. convertible half yearly for next 5 years, and thereafter 6% p.a. during last 6 years. 10
3. (a) Mr. XYZ puts a sum of Rs. 6,000 with a financier who pays interest @ 8% p.a. effective. Find the sum Mr. XYZ is entitled to receive from the financier after 5 years from now. What Mr. XYZ would get, had the financier paid interest @
- (i) 8% p.a. with quarterly interests
- (ii) 8% p.a. with monthly interests 5
- (b) Find out the annual effective rates corresponding to the following rates : 5
- (i) 18% p.a. payable half yearly
- (ii) 20% p.a. payable quarterly

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- (b) Mr. X borrowed a sum of Rs. 10,000 from a bank. He repaid a sum of Rs. 3,000 after 3 years since he took the loan. He could again make a payment of Rs. 5,000 after a further period of 6 years. Find the amount Mr. X should pay to the bank to settle his account finally as at the end of 10th year since he took the loan. Allow for an interest of 10% p.a. payable half yearly during the first 5 years and thereafter at the rate of 12% p.a. payable quarterly. 5

Unit-III

6. (a) A sum of Rs. 1050 is deposited into a providend fund account at the end of every month, What will be the total amount of this fund at the end of 5 years if it earns interest @ 4% p.a. 5
- (b) Find the present value of an immediate annuity of Rs. 1500 p.a. payable after 7 years @ 6% p.a. interest. Find out accumulated value also. 5

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7. (a) A person has taken loan of Rs. 50,000 from bank on which interest is payable @10% p.a., However, the a repayment is to short only at the end of 3rd year from now. What should be the annual payment if the total loan and interest is to be repaid in six instalment? 5
- (b) A Company offers to refund an amount of Rs. 44,650 at the end of 5 years for a deposit of Rs. 6,000 made annually. Find out the implicit rate of interest offered by the Company. 5

Unit-IV

8. (a) The risk free rate of return is 4.5% and market return is 15%. The beta of the security is 0.90. X Ltd. has paid a current dividend of Rs. 10 which is expected to grow @ 7% p.a. If the share is currently selling for Rs. 140 should the investors buy or sell and why? 5
- (b) A bond of Rs. 1,000 is redeemable after 10 years. The coupon rate of bond is 12%. Find out the value of the bond if the investors required rate of return is 13% and maturity is either 8 years or 12 years. 5

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9. The face value of redeemable preference share is Rs. 500. It is redeemed after 5 years. The share is currently selling for Rs. 1,100 and the coupon rate is 10%. Two investors Inder and Manoj want to buy this share. Inder's required rate of return is 11% and Manoj's is 12%, What should be the value of the preference share according to these investors?

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P.T.O.