



APPLIED MATHEMATICS

7. FINANCIAL MATHEMATICS

Name: _____

Date: _____

Class: XII Sec: _____

- A machine costing Rs 50,000 has a useful life of 4 years. The estimated scarp value is Rs 10,000, then the annual depreciation is
a) Rs 20,000 b) Rs 10,000 c) Rs 5,000 d) Rs 2,500
- At 6% converted quarterly, find the present value of a perpetuity of Rs 600 payable at the beginning of each quarter.
a) Rs 30,400 b) Rs 35,500 c) Rs 40,600 d) Rs 45,000
- The present value of a sequence of payments of Rs 60 made at the end of each 6 months and continuing forever, if money is worth 4% p.a. compounded semi-annually is
a) Rs 3,000 b) Rs 3,500 c) Rs 4,000 d) Rs 4,500
- Mr. X takes a loan of Rs 2,00,000 with 10% annual interest rate for 5 years. Calculate EMI under Flat Rate system.
a) Rs 4,000 b) Rs 5,000 c) Rs 6,000 d) Rs 7,000
- Select your answer to these items using the codes given below and then select the correct option.
A. Both A and R are individually true and R is the correct explanation of A
B. Both A and R are individually true but R is not the correct explanation of A
C. A is true but R is false
D. A is false but R is true

Assertion (A): An investment of Rs 10,000 becomes Rs 50,000 in 4 years, then the CAGR (Compounded Annual Growth Rate) is given by $[\sqrt[4]{5} - 1] \times 100$.

Reason (R): $CAGR = \left[\left(\frac{\text{Ending Value}}{\text{Starting Value}} \right)^{\frac{1}{n}} - 1 \right] \times 100$

- At 6% converted quarterly, find the present value of a perpetuity of 600 payable at the end of each quarter. **(40000)**
- The present value of a perpetual income of x at the end of each six months is 40000. Find the value of x if money is worth 6% compounded semi-annually. **(1200)**



INDIAN SCHOOL NIZWA - WORKSHEET

8. Mr X plans to save amount for higher studies of his son, required after 10 years. He expects the cost of these studies to be R.S 1,00,000. How much should he save at the beginning of each year to accumulate this amount at the end of 10 years, if the interest rate is 12% compounded annually ?
(5087.87)
9. In 10 years, a machine costing R.S 40,000 will have a salvage value of R.S 4,000. A New Machine at that time is expected to sell for R.S 52,000. In order to provide funds for the difference between the replacement cost and the salvage cost, a sinking fund is set up into which equal payments are placed at the end of each year. If the fund earns interest at the rate 7% compounded annually, how much should each payment be?
(3474. 12)
10. A couple wishes to purchase a house for R.S 10,00,000 with a down payment of R.S 2,00,000. If they can amortize the balance at 9% per annum compounded monthly for 25 years, what is their monthly payment? What is the total interest ?
(1214071)
11. A company sets aside a sum of Rs 10000/- at the end of each year in a sinking fund so that at the end of 20 years it would amount to a balance sufficient to repay the machinery. Assuming that the cost of machinery remains constant at the end of 20 years and that money earns 10% p.a. compound interest, find the cost of the machinery. If the number of years is 10 instead of 20 then what is the cost of the machinery?
(1,59,400)
12. Mrs A takes a loan of Rs.5,00,000/- from a bank at the rate of 6% p.a. for 2 years. Calculate her EMI using flat rate method. Also she purchased a car worth Rs,5,00,000/- and paid Rs.1,00,000/- as cash down payment and balance in equal monthly installments in 2 years. If bank charges 6% p.a. compounded monthly , calculate the EMI.
(18,260)
13. Suppose Mr.X invested Rs.1,00,000/- in a mutual fund and the value of the investment at the time of redemption was Rs.1,50,000/-. If CAGR for the investment is 8% , calculate the number of years for which he has invested the amount. If CAGR is 4 % what is the number of years of investment ?
(5 years, 1 year)
14. Mr X takes a loan of Rs 50,00,000/- from a bank at the rate of 12% p.a. for 15 years . Calculate his EMI using flat rate method . After that he took a vehicle loan worth Rs 50 lakh and paid Rs 5,00,000/- as cash down payment and balance in equal monthly installment in 15 years if bank charges 12% p.a. compounded monthly . Calculate the EMI.
(2,16,667, 1,74,825)
15. Examination In-charge of our school buys a copier machine for Rs. 2 lakhs. She estimates that she can use this machine for 6 years and that the machine will only be worth Rs. 10,000/- at the end of its life.
(i) Determine annual depreciation cost for her responsibility under linear method of depreciation.
(ii) Prepare a depreciation schedule for the copier machine.
(31667)



INDIAN SCHOOL NIZWA - WORKSHEET

16. Two close friends Sankar and Siraj found the adjoining advertisement in a local newspaper. Both always wished to have QLED TV at their homes but the exorbitant price of these TVs was out of their reach.

After going through the advertisement Siraj chose the 5 year easy plan paying out Rs. 3510 every month at flat interest rate of 10%.

- a) Calculate the interest paid by Siraj?



Sankar discussed his interest of buying the QLED under the plan with his father who was a bank manager. He suggested Sankar to pay the down payment from his pocket and get the loan for the remaining amount from his bank at 12% reducing interest rate.

- b) Calculate the EMI Sankar is going to pay to the bank if he goes with his father's idea.

- c) Who out of Sankar and Siraj had a better deal? Given: $(1.01)^{-60} = 0.5504$

17. Shanaia takes a loan of ₹ 5,00,000 from a bank at the interest rate of 6% per annum for 10 years she wants to pay back the loan in equated monthly installments. Find her EMI by using

i) flat rate method

ii) reducing balance method given that $(1.005)^{-120} = 0.5496$