**Time Value of Money Questions**

1. Mr. Anil has received Rs. 30,000 from his relatives during Diwali celebrations. He wanted to save this money in the piggy bank so that he could buy an expensive cricket kit after five years. His father has suggested him to invest the money in bank so that the savings could grow. He went through Bank-ka-Bazaar website to find out the options available to him. Calculate the value of the investment after five years
2. SBV is offering FD account at 8% interest p.a.
3. BBOB is offering FD account at 10% interest p.a.
4. HDDFC bank is offering FD account at 12% interest p.a.
5. Mr. Aakash, Anil’s father has offered to pay 15% interest p.a.
6. Mr. Binil planned to invest Rs. 60,000 at the end of first year, Rs. 90,000 per year in 2nd and 3rd year-end and Rs. 110,000 in three years thereafter. Calculate the compounded value at the end of year 6 at an interest rate of 10% p.a.
7. Ms. Seema is saving to go to Las Vegas after 10 years. She believes that her plan to go to Las Vegas may cost her 3,000,000. She can save 200,000 every year-end for ten years. Interest rate is 10%.
   1. Is it sufficient to plan a vacation in Vegas based on expected cost mentioned above? Calculate the annual short-fall.
   2. If the savings are more than needed, calculate the sum accumulated after 10 years.
8. Your father has promised to give you Rs. 1,000,000 in cash on your 25th birthday. Today is your 15th birthday. How much he should save today in lump sum so that he could gift you Rs. 1 million. You can take the discount rate of 10%. What would be your answer if investment returns are 12% and 15%?
9. Mr. Ravi wants to save for the college education of his son, Deepak. Mr. Ravi could save Rs. 40,000 every year for five years so that he could pay the fees in lumpsum after five years.
10. Mr. Manoj is going to receive a pension of Rs. 500 at the end of year 1, Rs. 1000 at the end of year 2 and Rs. 2000 at the end of the years 3 through 10. Calculate the present value if the discount rate is Interest rate is 10%.

Extra:

1. Five Installments annuity is Rs. 12000 beginning at the end of year 10 for 5 years. Calculate present value of annuity at the beginning of year 10 (t=9) and (t=0).
2. Following cash flows are promised by a friend who is working in an investment bank against the investment of Rs. 11,500. There are three plans (A, B, and C). SIB bank is offering interest rate of 10% on savings deposit.

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| --- | --- | --- | --- | --- | --- |
| Year | 1 | 2 | 3 | 4 | 5 |
| A | 1000 | 2000 | 3000 | 4000 | 5000 |
| B | 5000 | 4000 | 3000 | 2000 | 1000 |
| C | 3000 | 3000 | 3000 | 3000 | 3000 |

1. Calculate the sum of investment after 5 years if:
   1. Rs. 10,000 invested at 20% interest rate compounding annually.
   2. Rs. 10,000 invested at 20% interest rate compounding quarterly.
2. Calculate the future value of an investment of Rs. 20,000 offering 10% Interest rate.
   1. If Compounding annually.
   2. If compounding semi-annually.
   3. If compounding monthly.
3. Calculate the effective interest rate under following situation:
   1. Stated interest rate 12%, compounding quarterly (4 times a year)
   2. Stated interest rate 12%, compounding monthly. (12 times a year)
   3. Stated interest rate 12%, compounding daily. (360 days a year)
4. A bank is offering an interest rate of 10% on savings deposits. If the compounding is done on a weekly basis, what is the effective interest rate?