Numerical Questions on Time Value of Money

1. If the interest is 10% payable quarterly, find the effective rate of interest [Ans: 10.38%]
2. Find the PV of ₹100,000 to be required after 5 years if the rate of interest be 9%. Given that $PVIF_{(9\%,5)} = 0.65$. (Ans: ₹65,000)
3. Find the PV of ₹2000 to be received after 10 years, if discount rate is 8% (Ans: ₹926)
4. What is the PV of ₹50,000 to be received after 10 years at 10% compounded annually? (Ans: ₹19277)
5. Find the amount of an annuity if payment of ₹5000 is made annually for 7 years at 14% interest compounded annually. (Ans: ₹53,652.46)
6. A person is required to pay 4 equal annual payments of ₹60,000 each in his deposit account that pays 8% interest per year. Find out the FV at the end of 4 years. (Ans: 270,420)
7. ₹2000 is invested at the end of each month in an account paying interest 6% p.a. compounded monthly. What is the FV of this annuity after 10th payment?
   HINT: First convert 6% interest p.a to monthly ie $i = 0.06/12 = 0.005$, then apply FVA formula.
   (Ans: ₹20,456)
8. Find the PV of a 4 year annuity of ₹20,000 discounted at 10% (Ans: ₹63,400)
9. You bought a TV costing ₹25980 by making a down payment of ₹5000 and agreeing to make equal annual payment for 4 years. How much would be each payment, if the interest on unpaid amount be 14% compounded annually? $PVIFA_{(14\%,4)} = 2.914$ (Ans: ₹7200)
10. Suppose you have borrowed a 3 year loan of ₹1,00,000 at 9% from SBI to buy a motorcycle repayable in 3 equal end-of-year repayments. What will be the amount of annual instalments? (Ans ₹ 39,510)
11. A sum of ₹5000 is invested for 2 years at 10% interest rate compounded half yearly. Find the maturity value. Also find the effective interest rate per annum. (Ans: MV ₹6077.50, r = 10.25%)
12. You want to gift ₹2,00,000 to your sister after 4 years from now. How much amount you should invest every year starting from the beginning of the first year so that you get ₹2,00,000 after 4 years? Rate of interest 10% p.a.
    (Ans: ₹39,176.5, HINT: Use FVA (due) formula)