

JOB ORIENTED IBA MATH COURSE

Lecture-03 (Interest)

Part-1: CLASS DISCUSSION

Group 1: Simple Interest

1. The simple interest on a sum of money is $\frac{9}{16}$ of the principal. If the number representing the rate of interest in percent per annum is equal to the number representing the time in years, find the rate of interest per annum.
(A) 7 (B) 7.5 (C) 5 (D) 6.5 (E) None of these
2. A certain sum of money invested under simple interest matures to Tk. 7,200 at the end of 4 years. If the investment is allowed to run for another 3 years, the total accumulated amount becomes Tk. 9,000. What is the annual rate of interest?
(A) 8% (B) 12.5% (C) 10% (D) 12% (E) None of these
3. The simple interest yield on a certain corporate capital investment over a 12-year maturity horizon is projected to be Tk. 3,600. If the fund manager decides to triple the principal capital base at the end of the 6th year, what will be the aggregate interest earned by the investor at maturity?
(A) Tk. 3600 (B) Tk. 5400 (C) Tk. 7200 (D) Tk. 4500 (E) None of these
4. Tk. 800 becomes Tk. 956 in 3 years at a certain rate of simple interest. If the rate of interest is increased by 4%, what amount will Tk. 800 become in 3 years?
(A) Tk. 1052 (B) Tk. 1020.80 (C) Tk. 1025 (D) Tk. 118 (E) Tk. 152
5. An initial capital investment of Tk. 1,500 grows to a total maturity value of Tk. 2,040 over a period of 6 years under a fixed simple interest scheme. If the annual yield rate had been set 2.5 percentage points higher at the inception of the investment, what would be the terminal value of this asset at the end of the same 6-year period?
(A) Tk. 645 (B) Tk. 768 (C) Tk. 726 (D) Tk. 792 (E) None of these
6. A corporate treasury fund was allocated to a commercial bond for a fixed tenure of 5 years under a simple interest structure. Had the treasury department chosen an alternative risk-tier bond yielding 3.5 percentage points higher annually, the firm would have realized an additional USD 1,050 in aggregate financial returns. What was the initial capital sum (in USD) allocated to this investment?
(A) Tk. 8000 (B) Tk. 7000 (C) Tk. 5000 (D) Tk. 6000 (E) None of these
7. A portfolio manager allocates Tk. 45,000 into a low-risk government bond yielding a fixed annual return of 6%. How much supplementary capital must the manager deploy into a high-yield corporate bond offering an 11% annual return so that the aggregate annual yield across the entire consolidated fund stands exactly at 9.5%?
(A) Tk. 50000 (B) Tk. 56000 (C) Tk. 70000 (D) 60000 (E) None of these
8. An entrepreneur secures a short-term bridging loan from a commercial bank for a fixed duration of 72 days to cover an inventory shortage. The bank levies a flat simple interest financing fee of Tk. 1,440 at an annualized rate of 10%. Assuming a standard 360-day commercial year, what was the initial capital sum advanced to the entrepreneur?
(A) Tk. 54,000 (B) Tk. 68,000 (C) Tk. 72,000 (D) Tk. 80,000 (E) None of these
9. Annie invested a certain sum of money in a bank that paid simple interest. The amount grew to Tk. 240 at the end of 2 years. She waited for another 3 years and got a final amount of Tk. 300. What was the principal amount that she invested at the beginning
(A) 200 (B) 150 (C) 210 (D) 175 (E) None of these

10. At simple interest, a sum becomes 3 times in 20 years. Find the time, in which the sum will be double at the same rate of interest.
 (A) 8 years (B) 10 years (C) 12 years (D) 14 years (E) None of these
11. A corporate treasury fund was allocated to a short-term commercial asset for a fixed tenure. Had the capital been invested at a 3% higher annual rate of simple interest for the exact same duration, the accumulated interest yield would have increased by 24% of the original principal capital base. If the absolute extra interest earned under this higher rate scenario is Tk. 4,800, what was the original duration of the investment in years?
 (A) 8 years (B) 10 years (C) 12 years (D) 14 years (E) None of these
12. What is the rate of simple interest for the first 4 years if the sum of Tk. 360 becomes Tk. 540 in 9 years and the rate of interest for the last 5 years is 6%?
 (A) 4% (B) 5% (C) 3% (D) 6% (E) 3.5%
13. Mr. A deposited certain amount of money for a fixed period of time. On maturity he received a total of Tk. 4500 when the ratio of interest and investment became 3:6. If the interest rate was 5% (Simple) per annum, calculate the time period for which the money was invested?
 (A) 10 years (B) 15 years (C) 12 years (D) 14 years (E) 20 Years
14. In 4 years, Tk. 6000 amounts to Tk. 8000. In what time at the same rate, will Tk. 525 amount to Tk. 700?
 (A) 8 years (B) 6 years (C) 12 years (D) 4 years (E) None of these
15. An institutional asset allocation of Tk. 45,000 appreciates to a total terminal valuation of Tk. 63,000 over a fixed maturity horizon of 6 years under a uniform simple interest scheme. If a secondary, independent capital reserve of Tk. 35,000 is deployed under the exact same interest yield structure, how many years will it require to achieve a terminal valuation of Tk. 49,000?
 (A) 8 years (B) 6 years (C) 12 years (D) 4 years (E) None of these

Group 2: Compound Interest

16. Mr. Kamal deposited TK 800 in a Bank at 15% annual compound interest rate. At the end of the second year, the total amount including the interest will be:
 (A) 850 (B) 900 (C) 1025 (D) 1058 (E) None of them
17. Laboni bought a 1-year, Tk. 10,000 certificate of deposit that paid interest at an annual rate of 8 percent compounded semiannually. What was the total amount of interest paid on this certificate at maturity?
 (A) Tk. 10,464 (B) Tk. 864 (C) Tk. 816 (D) Tk. 800 (E) Tk. 480
18. An institutional investment trust deploys Tk. 16,000 into a structured growth fund that guarantees an annual interest rate of 20%, compounded quarterly. What will be the total terminal value of this corporate asset at the end of a 6-month holding period?
 (A) 17600 (B) 17640 (C) 1640 (D) 1600 (E) None of them
19. The simple interest accrued on a corporate capital reserve fund over an 8-year holding period equals exactly 1.2 times its baseline principal value. If an identical capital sum is deployed into a secondary commercial project at the same interest rate compounded annually, what will be the ratio of the aggregate accumulated amount (Principal + Interest) to the Compound Interest earned at the end of a 2-year tenure?
 (A) 25 : 11 (B) 36 : 11 (C) 20 : 9 (D) 5 : 2 (E) None of These
20. Under a guaranteed compound interest portfolio scheme, the absolute dividend returns accrued to a corporate entity in two consecutive fiscal years are Tk. 6,400 and Tk. 7,040, respectively. If all returns are automatically reinvested into the pool, what is the annualized rate of interest under this growth structure?
 (A) 11% (B) 10% (C) 9% (D) 12% (E) 5%
21. A corporate treasury department evaluates two alternative debt financing instruments for a 2-year capital allocation project. Scheme Alpha offers an annual yield of 8% under a simple interest structure, while Scheme Beta offers the same 8% annualized rate but compounded annually. If the cumulative absolute variance in returns between the two schemes at maturity stands at exactly Tk. 384, what is the total capital sum under evaluation?
 (A) Tk. 25000 (B) Tk. 50000 (C) Tk. 70000 (D) Tk. 60000 (E) None of these
22. A finance company declares that, at a certain compound interest rate, a sum of money deposited by anyone will become 8 times in 3 years. If the same amount is deposited at the same compound rate of interest, then in how many years will it become 16 times?
 (A) 6 (B) 5 (C) 4 (D) 8 (E) None of these

23. A sum of money at compound interest amounts to thrice itself in 3 years. In how many years will it be 9 times itself?
 (A) 6 (B) 5 (C) 4 (D) 8 (E) None of these
24. A private equity growth fund stipulates that an institutional capital placement will appreciate to exactly 9 times its initial baseline valuation after a compounding tenure of 4 years. Under the identical compounding rate and structure, how many years will it take for the initial capital placement to appreciate to 27 times its baseline valuation?
 (A) 6 (B) 5 (C) 4 (D) 8 (E) None of these
25. A sum of money amounts to Tk. 6690 after 3 years and to Tk. 10,035 after 6 years on compound interest. Find the sum.
 (A) 4460 (B) 4360 (C) 5460 (D) 3360 (E) None of these
26. A corporate endowment trust calculates that the aggregate compound interest earned on a venture capital injection over a 2-year horizon at an annualized rate of 15% is Tk. 32,250. What would be the total simple interest generated if an identical capital were deployed at the same rate and for the same duration?
 (A) Tk. 20,000 (B) Tk. 31,000 (C) Tk. 30,000 (D) Tk. 25,000 (E) None of them

Part-2: Take-Home Assignment

- What will be the ratio of simple interest earned by certain amount at the same rate of interest for 6 years and that for 9 years?
 (A) 1 : 3 (B) 1 : 4 (C) 2 : 3 (D) 2:5 (E) None of these
- Simple interest rate of a bank was reduced to 5% from 7%. As a consequence, Karim's income from bank interest was reduced by Tk. 2100 in 5 years. How much was Mr. Karim's initial deposit with the bank?
 (A) BDT 12,500 (B) BDT 21,000 (C) BDT 33,500 (D) BDT 46,000 (E) None of these
- What is the simple interest on a sum of Tk. 700 if the rate of interest for the first 3 years is 8% per annum and for the last 2 years is 7.5% per annum?
 (A) Tk. 269.5 (B) Tk. 283 (C) Tk. 273 (D) Tk. 280 (E) None of these
- What is the rate of simple interest for the first 4 years if the sum of Tk. 360 becomes Tk. 540 in 9 years and the rate of interest for the last 5 years is 6%?
 (A) 4% (B) 5% (C) 3% (D) 6% (E) 3.5%
- Asif borrows Tk. 1500 from two moneylenders. He pays interest at the rate of 12% per annum for one loan and at the rate of 14% per annum for the other. The total interest he pays for the entire year is Tk. 186. How much does he borrow at the rate of 12%
 (A) Tk. 1200 (B) Tk.1300 (C) Tk. 1400 (D) Tk. 300 (E) None of these
- The compound interest at 10% per annum on a certain amount of money for two years is Tk. 10.50. Then what is the principal amount in Taka?
 (A) 40 (B) 50 (C) 75 (D) 100 (E) None of them
- How much interest will Tk. 2000 earn at an annual rate of 10% in one year is the interest is compounded every 6 months?
 (A) 200 (B) 210 (C) 220 (D) 310 (E) None of them
- What will be the difference between simple and compound interest @ 10% per annum on a sum of Tk. 1000 after 4 years?
 (A) Tk. 31 (B) Tk. 32.10 (C) Tk. 40.40 (D) Tk. 64.10 (E). None of these
- A bond gets matured in 10 years. Ram invested Tk. 42000 in this bond and received Tk. 105000 once the bond matured. If the bond was under simple interest, then what was the rate of interest per annum?
 (A) 10% (B) 12.5% (C) 15% (D) 7.5% (E). None of these
- If interest of Tk. 500 in 4 years and interested of Tk. 600 in 5 years collectively is Tk. 500 then what is the interest rate?
 (A) 5% (B) 6% (C) 10% (D) 12% (E). None of these
- A lent Tk. 5000 to B for 2 years and Tk. 3000 to C for 4 years on simple interest at the same rate of interest and received Tk. 2200 in all from both of them as interest. The rate of interest per annum is:
 (A) 5% (B) 7% (C) 7.5% (D) 10% (E). None of these
- For how many years does a person need to invest his Tk. 3000 at 7% to earn Tk 420 in simple interest?
 (A) 3 (B) 4 (C) 2 (D) 5 (E). None of these

13. How long will it take for an amount Tk. 450 to yield Tk. 81 as interest at 4.5% per annum of simple interest?
 (A) 4 years (B) 4.5 years (C) 5 years (D) 5.5 years (E). None of these
14. If the ratio of simple interest and principal is $8 : \frac{25}{2}$ and rate of interest is equal to the time invested then find the time of investment.
 (A) 12 years (B) 8 years (C) 10 years (D) 16 years (E). None of these
15. If the rate of simple interest is 12% per annum the amount that would fetch interest of Tk. 6000 per annum is
 (A) 50000 (B) 7200 (C) 72000 (D) 70000 (E). None of these
16. A sum of Tk. 600 amounts to Tk. 70 in 4 years at simple interest. What will it amount to the rate of interest is increased by 2%?
 (A) 750 (B) 768 (C) 800 (D) 850 (E). None of these
17. Tk. 800 amounts to Tk. 920 in 3 years at S.I. If the interest rate is increased by 3%, it would amount to how much?
 (A) 698 (B) 990 (C) 675 (D) 992 (E). None of these
18. The same of principle interest of a certain amount of money would be Tk. 460 after 3 years from now and Tk. 500 after 5 years from now. What is the total interest rate?
 (A) 5% (B) 12% (C) 15% (D) 20% (E). None of these
19. What is the rate of simple interest for the first 4 years if the sum of tk. 360 becomes tk. 540 in 9 years and the rate of interest for the last 5 years is 6%?
 (A) 4% (B) 5% (C) 3% (D) 6% (E). None of these
20. If the interest of Tk. H at H% in 4 years is Tk H then H = ?
 (A) 25 (B) 20 (C) 30 (D) 32 (E). None of these
21. If simple interest on a certain sum of money is Tk. 256 and the rate of interest per annum equals the number of years, then the rate of interest is -
 (A) 13% (B) 14% (C) 16% (D) 18% (E). None of these
22. A total of Tk. 1200 is deposited in two savings accounts for one year, one portion at 5% simple interest, and the rest at 7% simple interest. If Tk. 72 was earned in interest, how much was deposited at 5%?
 (A) 410 (B) 520 (C) 600 (D) 650 (E). None of these
23. A sum of Tk. 1550 is lent out into two parts, one at 8% and another one at 6%. If the total annual income is Tk. 106, find the money lent at each rate.
 (A) 400 & 1150 (B) 650 & 900 (C) 700 & 850 (D) none (E). None of these
24. A person deposited Tk. 400 for 2 years, Tk. 550 for 4 years and tk. 1200 for 6 years. He received the total simple interest of Tk. 1020. The rate of interest per annum is-
 (A) 15% (B) 10% (C) 5% (D) 20% (E). None of these
25. The simple interest of a certain sum of money at the rate of 5% p.a for 8 years is Tk. 840. At what rate of interest the same amount of interest can be received on the same sum after 5 years?
 (A) 6% (B) 8% (C) 9% (D) 10% (E). None of these
26. In how many years an amount of money will treble itself at a simple rate of interest of 20% per annum?
 (A) 8 (B) 10 (C) 12 (D) 15 (E). None of these
27. In what time period will simple interest on Tk. 500 at 5% be equal to the interest on Tk. 400 for 5 years at 5%?
 (A) 8 years (B) 6 years (C) 4 years (D) 3 years (E). None of these
28. In 4 years, Tk. 6000 amounts to Tk. 8000. In what time at the same rate will Tk. 525 amount to Tk. 700?
 (A) 2 years (B) 4 years (C) 3 years (D) 5 years (E). None of these
29. A man loses Tk. 55.50 yearly when the annual rate of interest falls form 11.5% to 10%. His capital is:
 (A) 3700 (B) 7400 (C) 8325 (D) 1110 (E). None of these
30. A sum was put at simple interest at a certain rate for 3 years. Had it been put at 2% higher rate, it would have fetched Tk. 360 more. Find the sum.
 (A) 4000 (B) 3000 (C) 8000 (D) 6000 (E). None of these
31. A man deposits Tk. 600 in a Bank at 10% interest rate compounded annually. At the end of the second year. What will be the total amount including interest?
 (A) 660 (B) 720 (C) 726 (D) 626 (E). None of these

32. The compound interest on Tk. 2800 for 18 months at 10% p.(A) is
(A) 441.35 (B) 434 (C) 436.75 (D) 420 (E). None of these
33. Albert invested an amount of Tk. 8,000 in a fixed deposit scheme for 2 years at compound interest rate 5% per annum. How much amount will Albert get on maturity of the fixed deposit?
(A) 8600 (B) 8620 (C) 8820 (D) 9000 (E). None of these
34. A man borrowed Tk. 800 at 10% per annum S.I and immediately lent the whole sum at 10% per annum (C)I What does he gain at the end of 2 years?
(A) 10 (B) 80 (C) 8 (D) 6 (E). None of these
35. How much interest will Tk. 1,000 earn in one at an annual interest rate of 8% if interest rate is compounded every 6 months?
(A) Tk. 80 (B) Tk. 88 (C) Tk. 81.6 (D) Tk. 816 (E). None of these
36. How much interest will Tk. 1000 earn in one at an annual interest rate of 20% if interest rate compounded every 6 months?
(A) 200 (B) 205 (C) 208 (D) 210 (E). None of these
37. A sum of money amounts to Tk. 6690 after 3 years and to Tk. 10035 after 6 years on compound interest. Find the sum.
(A) 4360 (B) 4560 (C) 4660 (D) 4460 (E). None of these
38. At simple interest, a sum becomes 3 times in 20 year. Find the time, in which the sum will be double at the same rate of interest.
(A) 8yr (B) 10yr (C) 12yr (D) 14yr (E). None of these
39. The simple interest on a sum of money will be Tk. 600 after 10 years. If the principal is trebled after 5 years. What will be the total interest at the end of the tenth year?
(A) 1200 (B) 1250 (C) 1275 (D) 1300 (E). None of these
40. What will be the deposited amount at initial stage, if it becomes Tk. 43750 at the end of 5 years with a simple interest rate of 15% per annum? How many years it will take said deposited amount to become Tk. 55000?
(A) 8yr (B) 10yr (C) 12yr (D) 14yr (E). None of these

Answer : Home assignment of Lecture 02

1	C	2	B	3	C	4	B	5	A	6	B	7	E	8	D	9	C	10	C
11	D	12	C	13	A	14	B	15	A	16	B	17	D	18	A	19	B	20	A
21	C	22	C	23	B	24	B	25	B	26	B	27	C	28	B	29	A	30	D
31	C	32	B	33	C	34	C	35	C	36	D	37	D	38	B	39	A	40	B