MATHS

BOOKS - S CHAND IIT JEE FOUNDATION

COMPOUND INTEREST

Solved Examples

1. What will be the compound interest on a sum of ₹ 2500 after 3 years at the rate of 12

per cent P.a

2. At what percent per annum will Rs. 3000/- amount to Rs. 3993/- in 3 years if the interest is compounded annually?

3. In how many years will the compound interest on ₹ 1000 at the rate of 10% p.a. be ₹

210?

4. Find the compound interest on ₹ 5000 for one year at 4% per annum, the interest being compound half yearly

5. At what rate per cent per annum will ₹ 32000 yield a compound interest of ₹ 5044 in

9 months interest being compounded quarterly

6. What is the difference the compound interest and simple interest on ₹ 2500 for 2 years at 4% p.a.

7. On what sum does the difference between the compound interest and the simple interest for 3 years at 10% is Rs. 31 ?

▶ **Watch Video Solution**

8. A sum of money at compound interest (compound annually) doubles itself in 4 years. In how many years will it amount to eight times of itself?

▶ **Watch Video Solution**

9. A sum of money amounts to ₹4840 in 2 years and ₹5324 in 3 years at compound interest compounded annually. What is the rate of interest per annum?

10. If the compound interest on a certain sum for 2 years at 3% p.a. is ₹ 101.50, then what will be the simple interest on the same sum at the same rate and for the same time

11. If the rate of interest be 4% per annum for first year, 5% per annum for second year and 6% per annum for third year, then the compound interest of Rs 10000 for 3 years will be (a) Rs 1575.20 (b) Rs 1600 (c) Rs 1625.80 (d) Rs 2000

12. The difference between compound interest and simple interest at the same rate on Rs 5000 for 2 years is Rs 72 .The rate of interest per annum is

13. The annual increase in the population of a town is 10%. If the present population of the town is 180000, then what will be its population after two years ?

14. The population of a town was 1,60,000 three years ago. If it increased by 3%, 2.5% and 5% respectively last three years, then the present population is 1, 77, 000 b. 1, 77, 366 c. 1, 77, 461 d. 1, 77, 596

15. The population of a town increases by 5% annually. If the population in 2009 is 1,38,915

what was it in 2006

16. The population of a village is 10000. If the population increase by 10% in the first year, by 20% in the second year and due to mass exodus it decreases by 5% in the third year, what will be its population after 3 years

17. Depreciation applicable to an equipment is 20%. The value of the equipment 3 years from now will he less by 45 % b. 48. 8 % c. 51. 2 % d. 60 %

> ▶ **Watch Video Solution**

Question Bank 19 A

1. What is the compound interest on an amount of ₹ 4800 at the rate of 6 per cent p.a.

at the end of 2 years?

A. ₹ 544.96

B. ₹ 576

C. ₹ 593.28

D. ₹ 588

Answer: C

2. The principal that amounts to Rs 4913 in 3 years at $6\dfrac{1}{4}\%$ per annum compound interest compounded annually, is (a) Rs 3096 (b) Rs 4076 (c) Rs 4085 (d) Rs 4096

    A. ₹ 4096

    B. ₹ 4085

    C. ₹ 4076

    D. ₹ 3096

Answer: A

▶ Watch Video Solution

3. Rs. 8000 invested at compound interest, gives Rs. 1261 as interest after 3 years. The rate of interest per annum is:

A. 0.25

B. 0.175

C. 0.1

D. 0.05

Answer: D

4. The compound interest on Rs 30,000 at 7% per annum is Rs 4347. The period (in years) is

(a) 2 years (b) $2\frac{1}{2}$ years (c) 3 years (d) 4 years

A. 2

B. $\dfrac{21}{2}$

C. 3

D. 4

Answer: A

5. How much would a sum of Rs 16000 amount to is 2 years time at 10% per annum compound interest, interest being payable half-yearly?

A. ₹ 17423

B. 18973

C. 19448

D. 19880

Answer: C

6. The difference between simple interest and compound interest on Rs 1200 for one year at 10% per annum reckoned half-yearly is (a) Rs 2.50 (b) Rs 3 (c) Rs 3.75 (d) Rs 4 (e) None of these

A. ₹ 2.50

B. 3

C. ₹ 3.75

D. 4

Answer: B

▶ **Watch Video Solution**

7. In how many years will a sum of Rs. 800 at 10% per annum compound Interest, compounded semi-annually becomes Rs. 926.10?

A. 1 year

B. 3 years

C. 2 years

D. $\dfrac{11}{2}$ years

Answer: D

▶ **Watch Video Solution**

8. The compound interest on ₹ 16000 for 9 months at 20% p.a, compounded quarterly is

A. ₹ 2518

B. ₹ 2520

C. ₹ 2522

D. ₹ 2524

Answer: C

▶ **Watch Video Solution**

9. A sum of ₹ 24000 is borrowed for $1\dfrac{1}{2}$ years at the rate of interest 10% per annum

compounded semi anually. What is the compound interest (x) ?

A. $x <$ ₹ 3000

B. ₹ $3000 < x <$ ₹ 4000

C. ₹ $4000 < x <$ ₹ 5000

D. $x >$ ₹ 5000

Answer: B

▶ Watch Video Solution

10. An amount of ₹ x at compound interest at 20% per annum for 3 years becomes y. What is y: x?

A. $3 : 1$

B. $36 : 25$

C. $216 : 125$

D. $125 : 216$

Answer: C

▶ Watch Video Solution

11. A man deposited ₹ 6000 in a bank at 5% simple interest. Another man deposited 5000 at 8% compound interest. After 2 years, the difference of their interests will be

    A. ₹ 230

    B. ₹ 232

    C. ₹ 600

    D. ₹ 832

Answer: B

12. The difference between compound interest and simple interest on a sum for 2 years at 8 per cent is Rs 768. The sum is (a) Rs 100000 (b) Rs 110000 (c) Rs 120000 (d) Rs 170000

    A. ₹ 100000

    B. ₹ 110000

    C. ₹ 120000

    D. ₹ 170000

Answer: C

13. The compound interest on a sum of money for 2 years is Rs 832 and the simple interest on the same sum for the same period is Rs 800. The difference between the compound interest and the simple interest for 3 years will be (a) Rs 48 (b) Rs 66.56 (c) Rs 98.56 (d) None of these

A. 0.06

B. 0.08

C. 0.1

D. 0.12

Answer: B

▶ **Watch Video Solution**

---

14. A money-lender borrows money at 4% per annum and pays the interest at the end of the year. He lends it at 6% per annum compound

interest compounded half-yearly and receives the interest at the end of the year. In this way, he gains Rs 104.50 a year. The amount of money he borrows, is (a) Rs 4500 (b) Rs 5000 (c) Rs 5500 (d) Rs 6000

A. ₹ 4500

B. ₹ 5000

C. ₹ 5500

D. ₹ 6000

Answer: B

15. If a sum of money at compound interest amounts to thrice itself in 3 years then in how many years will it be 9 times itself?

A. 6 years

B. 5 years

C. 9 years

D. 7 years

Answer: A

16. If the compound interest on a certain sum of money for 3 years at 10% p.a be ₹ 993. what would be the simple interest?

    A. ₹ 930

    B. ₹ 3920

    C. ₹ 900

    D. ₹ 890

Answer: C

17. If the amount is $2\dfrac{1}{4}$ times of the sum after 2 years, then the rate of compound interest must be

    A. 0.6

    B. 0.4

    C. 0.64

    D. 0.5

Answer: D

18. A sum of money invested at compound interest amounts in 3 years to ₹ 2400 and in 4 years to ₹ 2520. The interest rate per annum is

    A. 0.05

    B. 0.06

    C. 0.1

    D. 0.12

Answer: A

19. The compound interest on ₹ 2000 in 2 years if the rate of interest is 4% per annum for the first year and 3% per annum for the second year will be

A. ₹ 142.4

B. ₹ 140.4

C. ₹ 141.4

D. ₹ 143.4

Answer: A

20. Two partners A and B together lend ₹ 84100 at 5% compounded annually. The amount which A gets at the end of 3 years is the same as what B gets at the end of 5 years. Determine the ratio of shares of A and B.

A. $21 : 20$

B. $441 : 400$

C. $1:4$

D. $5:21$

Answer: B

21. A principal sum of money is lent out at compound interest compounded annually at the rate of 20% per annum for 2 years. It would give ₹ 2410 more if the interest is

compounded half yearly. Find the principal sum.

A. ₹ 120000

B. ₹ 125000

C. ₹ 100000

D. ₹ 110000

Answer: C

▶ **Watch Video Solution**

22. A man borrowed ₹ 5000 at 10% per annum compound interest. At the end of each year he has repaid 1500. The amount of money he still owes after the third year is

A. ₹ 1600

B. ₹ 1690

C. ₹ 1700

D. ₹ 1790

Answer: B

23. The compound interest on a certain sum for 2 years at 10% per annum is Rs 525. The simple interest on the same sum for double the time at half the rate percent per annum is

(a) Rs 400 (b) Rs 500 (c) Rs 600 (d) Rs 800

A. ₹ 400

B. ₹ 600

C. ₹ 500

D. ₹ 800

Answer: C

24. Two friends A and B jointly lent out ₹ 81600 at 4% compound interest. After 2 years A gets the same amount as B gets after 3 years. The investment made by B was

A. ₹ 40000

B. ₹ 30000

C. ₹ 45000

D. ₹ 38000

Answer: A

▶ **Watch Video Solution**

25. Find the compound interest on Rs 24000

at 15% per annum for years.

A. ₹ 8000

B. ₹ 9237

C. ₹ 9327

D. ₹ 9732

Answer: C

⏵ **Watch Video Solution**

Question Bank 19 B

1. It is observed that the population of a city increases at the rate of 8% per annum. If the present population of the city is 125000, then the population of the city after 2 years will be

A. 145000

B. 145800

C. 154000

D. 154800

Answer: B

2. The population of a city is 7.26 lakh today. If the population has been increasing at the rate

of 10% per year, then two years ago, the poplulation would have been

A. 6 lakh

B. 5.5 lakh

C. 5 lakh

D. 4.5 lakh

Answer: A

3. The population of a village was 20,000 and after 2 years it became 22050. What is the rate of increase per annum?

A. 0.1

B. 0.08

C. 0.05

D. 0.06

Answer: C

▶ **Watch Video Solution**

4. The population of a city increases at the rate of 4% per annum. There is additional annual increase of 1% due to influx of job seekers. The % increase in the population after 2 years is

   A. 10

   B. 10.25

   C. 10.5

   D. 10.75

Answer: B

5. The value of a machine depreciates at the rate of 10% every year. It was purchased 3 years ago. If its present value is ₹ 8748, its purchase price was

   A. ₹ 10000

   B. ₹ 11372

   C. ₹ 12000

   D. ₹ 12500

Answer: C

6. Railway police caught 4000 passengers without ticket in April. This number increased by 52% in may. Because of vigilance of railwayemployees and police number passengers without ticket decreased by 5% in June and by 10% in JulyFind the total number ofticketless passengers caught in July.

A. 3125

B. 3255

C. 3575

D. 3591

Answer: D

▶ **Watch Video Solution**

7. The population of a variety of tiny bush in an experimental field increased by 10% in the first year, increased by 8% in the second year

but decreased by 10% in the third year. If the present number of bushes in the experimental field is 26730, then the number of bushes in the beginning was 25000 b. 27000 c. 28000 d. 24600

A. 25000

B. 27000

C. 28000

D. 24600

Answer: A

8. A building worth Rs. 1,33,100 is constructed on land worth Rs. 72,900. After how many years will the value of both be the same if land appreciates at 10% p.a and building depredates at 10% p.a.? $1\frac{1}{2}$ b. 2 c. 3 d. $2\frac{1}{2}$

A. $\frac{11}{2}$ years

B. 2 years

C. $\frac{21}{2}$ years

D. 3 years

Answer: D

9. The bacteria in a culture grows by 10% in the first hour, decreases by 10% in the second hour and again increases by 10% in the third hour. If the original count of the bacteria in a sample is 10000, find the bacteria count at the end of 3 hours.

A. 13310

B. 10890

C. 10990

D. 11000

Answer: B

▶ **Watch Video Solution**

10. Sanjay opened a grocery shop with an initial investment of ₹ 40,000. In the first year, he incurred a loss of 5%. However during the second year, he earned a profit of 10% which in

the third year rose to $\dfrac{121}{2}\%$. Calculate the net profit for the entire period of three years ?

A. ₹ 6500

B. ₹ 47025

C. ₹ 7025

D. ₹ `46500

Answer: C

▶ **Watch Video Solution**

11. The production of a company has ups and downs every year. The production increases for two consecutive years consistently 'by 15% and in the third year it decreases by 10%. Again in the next two years it increases by 15% each year and decreases by 10% in the third year. If we start counting from the year 2008, approximately what will be the effect on production of the company in 2012?

$27\% \in crease$ b. $32\% \in crease$ c.

$37\% \in crease$ d. $425 \in crease$

$52 \in crease$

A. 37% increase

B. 32% increase

C. 42% increase

D. 52% increase

Answer: A

▶ **Watch Video Solution**

12. The population of a town increases 4% annually but is decreased by emigration annually to that extent of (1/2)%. What will be

the increase percent in 3 years? 9. 8 b. 10 c.

10. 8 d. 10. 5

A. 9.8

B. 10

C. 10.5

D. 10.8

Answer: D

▶ **Watch Video Solution**

13. The current birth rate per thousand is 32, whereas the corresponding death rate is 11 per thou and The net growth rate in terms of population increase in percent is given by

0. 0021 % b. 0. 021 % c. 2. 1 % d. 21 %

A. 0.0021 %

B. 0.021 %

C. 2.1 %

D. 21 %

Answer: C

14. Food grain production in India in 1994 was 1520 lakh tonnes. If the product is increasing at a constant rate of 2.8% p.a., what is the production expected to be in 2010?

$((1.028)^{16} = 1.55557)$

A. 2265 lakh tonnes

B. 2300.5 lakh tonnes

C. 2364.5 lakh tonnes

D. 3000 lakh tonnes

Answer: C

 Watch Video Solution

15. The half life of Uranium -233 is 160000 yr i.e.

Uranium -233 decays at a constant rate in such

a way that it reduces to 50% in 160000 yr. In

how many years, will it reduce to 25%

A. 80000 years

B. 240000 years

C. 320000 years

D. 40000 years

Answer: C

▶ **Watch Video Solution**

Self Assessment Sheet 19

1. A man borrows money at 3% per annum interest payable yearly and lend it immediately

at 5% interest (compound) payable half-yearly and therebygains₹330 at the end of the year. The sum borrowed is

A. ₹ 6000

B. ₹ 7500

C. ₹ 8000

D. ₹ 9000

Answer: C

2. Two partners A and B together lend ₹ 2523 at 5% compounded annually. The amount A gets at the end of 3 years is the same as B gets at the end of 5 years. Determine the share of A.

    A. ₹ 1200

    B. ₹ 1323

    C. ₹ 1450

    D. ₹ 1563

Answer: B

3. A principal sum of money is lent out at compound interest compounded annually at the rate of 20% per annum for 2 years. It would give ₹ 2410 more if the interest is compounded half yearly. Find the principal sum.

A. ₹ 100000

B. ₹ 20000

C. ₹ 10000

D. ₹ 110000

Answer: A

▶ **Watch Video Solution**

4. The difference between simple and compound interest on a certain sum for 2 years at 5% per annum compounded annually is ₹ 75. Find the sum:

A. ₹ 40000

B. ₹ 36000

C. ₹ 45000

D. ₹ 30000

Answer: D

▶ **Watch Video Solution**

5. A father divides his property between his two sons A and B. invests the amount at compound interest of 8% pa. B invests the amount at 10% p.a. simple interest. At the end

of 2 years, the interest received by B is ₹ 1336

more than the interest received by A. Find A's

share in the father's property of ₹ 25,000

A. ₹ 12000

B. ₹ 13000

C. ₹ 10000

D. ₹ 12500

Answer: C

6. A sum invested for 3 yr compounded at 5% , 10% and 20% respectively. In 3yr , if the sum amount to ₹ 16632, then find the sum

    A. ₹ 11000

    B. ₹ 12000

    C. ₹ 13000

    D. ₹ 14000

Answer: B

7. A tree increases annually by $\dfrac{1}{8}$ th of its height . By how much will it increase after 2 years if stands today 64 cm high?

    A. 72 cm

    B. 74 cm

    C. 75 cm

    D. 81 cm

Answer: D

8. The population of a town increases by 25% annually. If the present population is one crore, then what was the difference between the population 3 years ago and 2 years ago ?

A. 2500000

B. 1280000

C. 1560000

D. None of these

Answer: B

9. 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) 4 years (b) 5 years (c) 6 years (d) 7 years

A. 4

B. 5

C. 6

D. 7

Answer: A

> ▶ **Watch Video Solution**

10. A merchant invests a certain sum a gain percent is 25. if at the end of the third year, his capital is Rs. 10000, then the amount invested by him is equal to $Rs.5120$ b. $Rs.5210$ c. $Rs.5500$ d. $Rs.5714\dfrac{2}{7}$

A. ₹ 5120

B. ₹ 5220

C. ₹ 5210

D. ₹ 5130

Answer: A

▶ **Watch Video Solution**