Quiz Date: 1ˢᵗ June 2020

Q1. Pamela invested an amount of Rs. 35,000 for two years at the rate of 5 p.c.p.a. What amount of compound interest would she receive at the end of two years?
(a) Rs. 3587.50
(b) Rs.3500
(c) Rs. 3580.50
(d) Rs. 3565.50
(e) Rs. 3485.7

Q2. If the rate of interest is 10% p.a. and Rs. 12000 lent at the compound interest, half yearly for one year. What is the equivalent simple rate of interest for first year (if S.I. is equal to C.I.)?
(a) 10.25%
(b) 9.24%
(c) 6.26%
(d) 8.42%
(e) 12.25%

Q3. The height of a cone is equal to perimeter of an isosceles triangle whose equal and unequal sides are 6 cm and 9 cm respectively. If diameter of cone is 16 cm, what is the volume of cone (in cm^3)?   (take π = 22/7)
(a) 1208
(b) 1408
(c) 1610
(d) 1480
(e) 1650

Q4. The compound interest for two years on a certain sum is equal to the simple interest accrued on the same sum at the rate of 23% for three years. What is the rate of compound interest?
(a) 15%
(b) 25%
(c) 30%
(d) 35%
(e) 20%

Q5. What is the compound interest on Rs. 5,000 for 4 years if the rate of interest is 10% p.a. for the first 2 years and 20% per annum for the next 2 years?
(a) Rs. 2,320.50
(b) Rs. 3,712
(c) Rs. 3,745
(d) Rs. 2156.50
(e) None of these

Q6. On what sum will the difference between the simple and compound interest for 3 years at 6 per cent per annum amount to Rs. 13.77?
(a) Rs 1250
(b) Rs 1320
(c) Rs 1520
(d) Rs 1150
(e) None of these

Q7. The compound interest on a certain sum for 2 years is Rs 60.60 and simple interest is Rs. 60. Find the rate of interest per annum and the sum.
(a) 2%, Rs 1600
(b) 2%, Rs 1400
(c) 3%, Rs 1500
(d) 2%, Rs 1500
(e) None of these

Q8. What sum of money will amount to Rs 699.66 in 2 years, reckoning compound interest for 1 year at 4 per cent and for the other at 3 ½ per cent per annum?
(a) Rs 560
(b) Rs 650
(c) Rs 670
(d) Rs 580
(e) None of these

Q9. The simple interest accrued on an amount of Rs. 22,500 at the end of four years is Rs. 10,800. What would be the compound interest accrued on the same amount at the same rate of interest at the end of two years ?
(a) Rs. 16,908
(b) Rs. 5,724
(c) Rs. 28,224
(d) Rs. 8,586
(e) Rs. 5424

Q10. The diameter of a cycle wheel is 70 cm. A cyclist takes 30 hrs to reach a destination at the speed of 22 km/h. How many revolutions will the wheel make during this journey ?

(a) 1 lakhs
(b) 3 lakhs
(c) 4 lakhs
(d) 5 lakhs
(e) 2 lakhs

Q11. The sum of the circumference of a circle and the perimeter of a square is equal to 272 cm. The diameter of the circle is 56 cm. What is the sum of the areas of the circle and the square?
(a) 2464 sq cm
(b) 2644 sq cm
(c) 3040 sq cm
(d) 3080 sq cm
(e) 3240 sq cm

Q12. The ratio of radius of a circle and length of a rectangular field is 2 : 7. If perimeter of circle and that of rectangular field be 176 m and 322 m respectively, what is the width of rectangular field?
(a) 85 m
(b) 63 m
(c) 58 m
(d) 77 m
(e) 39 m

Q13. There are two circles of different raddi. The area of a square is 196 sq. cm, whose side is half of the radius of the larger circle. The radius of the smaller circle is three-seventh that of the larger circle. What is the circumference of the smaller circle?
(a) 12π cm
(b) 16π cm
(c) 24π cm
(d) 32π cm
(e) 36π cm

Q14. A cylinder, a hemisphere and a cone stand on the same base and have the same height. Find the ratio of the area of their curved surface if radius and height are equal.
(a) 2 : 2 : √2
(b) 2 : √2 : 1
(c) √2 : 3 : 1
(d) 1 : 2 : 3
(e) 4: 2: 1

Q15. The dimensions of a rectangular room when increased by 4 metres are in the ratio of 4 : 3 and when decreased by 4 metres, are in the ratio of 2 : 1. The dimensions of the room are
(a) 6 m and 4 m
(b) 12 m and 8 m
(c) 16 m and 12 m

(d) 24 m and 16 m
(e) None of these

Solutions

S1. Ans.(a)
Sol.
C.I. obtained by Pamela

$$= 35000 \left[\left(1 + \frac{5}{100}\right)^2 - 1 \right]$$

$$= 175 \times \frac{41}{2} = Rs. \, 3587.5$$

S2. Ans.(a)
Sol.
Amount $= 12000 \left(1 + \frac{5}{100}\right)^2$
     $= 13230$
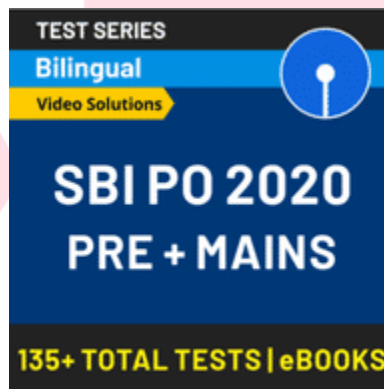   CI $= 13230 - 12000 = 1230$
     When SI $= 1230$
     Rate $= \frac{1230 \times 100}{12000} = 10.25\%$

S3. Ans. (b)
Sol.
Height of cone $= 2 \times 6 + 9$
   $= 21$ cm
$\therefore$ Volume of cone $= \frac{1}{3}\pi r^2 h$

$$= \frac{1}{3} \times \frac{22}{7} \times 8^2 \times 21$$

$= 1408$ cm³

S4. Ans. (c)
Sol.

Let the amount be Rs. P and rate of C.I. be r%.

SI = C. I.

$$\Rightarrow \frac{P \times 23 \times 3}{100} = P\left[\left(1 + \frac{r}{100}\right)^2 - 1\right]$$

$$\Rightarrow \left(1 + \frac{r}{100}\right)^2 = \frac{169}{100}$$

$$\Rightarrow 1 + \frac{r}{100} = \frac{13}{10}$$

$$\Rightarrow r = 30\%$$

S5. Ans.(b)
Sol.

$$\text{C. I.} = 5000\left[\left(1 + \frac{10}{100}\right)^2 \times \left(1 + \frac{20}{100}\right)^2 - 1\right]$$

$$= 5000 \times \frac{1856}{2500} = \text{Rs } 3,712$$

S6. Ans.(a)
Sol.
We know that

$$\text{Diff.} = P\frac{R^2}{100^2}\left(\frac{300 + R}{100}\right)(for\ 3\ years)$$

$$\Rightarrow 13.77 = \frac{P \times 36 \times 306}{100 \times 100 \times 100}$$

$$\Rightarrow P = \frac{1377 \times 100 \times 100}{36 \times 306}$$

$$\Rightarrow P = Rs.\ 1250$$

S7. Ans.(d)
Sol.
We know that

$$\frac{CI}{SI} = \frac{200 + R}{200}(for\ 2\ years)$$

$$\Rightarrow \frac{60.60}{60} = \frac{200 + R}{200}$$

$$\Rightarrow R = \frac{200(60.60 - 60)}{60}$$

$$\Rightarrow R = 2\%$$

Now, diff. $= \frac{PR^2}{(100)^2}$

$$\Rightarrow 60.60 - 60 = P \times \frac{4}{10000}$$

$$\Rightarrow P = \frac{0.60 \times 100 \times 100}{4} = Rs.\ 1500$$

S8. Ans.(b)
Sol.
Let the sum = x

A/q, $x \times \frac{104}{100} \times \frac{103.5}{100} = 699.66$

$\Rightarrow x = Rs. 650$

S9. Ans.(b)
Sol.

$r = \frac{10800 \times 100}{22500 \times 4} = 12\%$

$CI = 22500 \left(1 + \frac{12}{100}\right)^2 - 22500$

$= 22500 \times \frac{112}{100} \times \frac{112}{100} - 22500$

$= 28224 - 22500 = 5724$

S10. Ans.(b)
Sol.
Total distance covered by cyclist
$= 22 \times 30 = 660$ km
Distance covered by wheel in 1 revolution
$= 2 \times \frac{22}{7} \times \frac{70}{2} = 220$ cm
$\therefore$ Required number of revolutions
$= \frac{660 \times 1000 \times 100}{220} = 3$ lakh

S11. Ans.(c)
Sol.
Let side of square is a cm
$\therefore \pi D + 4a = 272$, where D = Dia. of circle
$\Rightarrow \frac{22}{7} \times 56 + 4a = 272$
$\Rightarrow a = \frac{272-176}{4}$
$\Rightarrow a = 24$ cm
$\therefore$ Required sum $= \frac{\pi}{4}D^2 + a^2$
$= \frac{22}{7} \times \frac{1}{4} \times 56 \times 56 + 24^2$
$= 2464 + 576$
$= 3040 \, cm^2$

S12. Ans.(b)

Sol.
Let radius of circle and length of rectangle
be 2x m and 7x m respectively.

$\because 2 \times \frac{22}{7} \times 2x = 176$

$\Rightarrow x = 14$ m

$\therefore$ length of rectangular field = 7 × 14

= 98 m

Now, width of field $= \frac{322}{2} - 98$

= 63 m

S13. Ans.(c)
Sol.
Let side of square is a cm.

$\therefore a^2 = 196$

$\Rightarrow a = 14$ cm

$\therefore$ radius of larger circle = 28 cm

$\therefore$ radius of smaller circle

$= 28 \times \frac{3}{7} = 12$ cm

$\therefore$ Circumference of smaller circle

= 2 × π × 12

= 24 π cm

S14. Ans.(a)
Sol.
Curved surface area of cylinder = 2 πrh
Curved surface area of hemisphere = 2 πr²
Curved surface area of cone

$= \pi rl = \pi r\sqrt{r^2 + h^2}$

Therefore, required ratio is

2 πrh : 2 πr² : π r $\sqrt{r^2 + h^2}$

$= 2 \pi r^2 : 2 \pi r^2 : \sqrt{2} \pi r^2$ (since, h = r)

$= 2 : 2 : \sqrt{2}$

S15. Ans.(b)
Sol.

Let the length and breadth of the rectangular room be ℓ and b.

We have, $\dfrac{\ell + 4}{b + 4} = \dfrac{4}{3}$

$\Rightarrow 3\ell + 12 = 4b + 16$

$\Rightarrow 3\ell - 4b = 4$ ...(i)

Again, we have $\dfrac{\ell - 4}{b - 4} = \dfrac{2}{1} \Rightarrow \ell - 4 = 2b - 8$

$\Rightarrow \ell - 2b = -4$ .....(ii)

On solving (i) and (ii), we get

L = 12 m and B = 8 m

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