## Sample Paper - 1

### GENERAL INSTRUCTIONS

All questions are compulsory.
The question paper consist of 30 questions divided into four sections A, B, C and D. Section A comprises of 6 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each, Section C comprises of 10 questions of 3 marks each and Section D comprises of 8 questions of 4 marks each.
There is no overall choice.
Use of calculator is not allowed.

## SECTION-A

**(1 mark each)**

**1.** Find the number of digits in the square root of 4489. (Without any calculation).

**2.** Find product $\left(4p^2+5p+7\right)\times 3p$

**3.** Multiply the following :

(a) $15xy^2, 17yz^2$

(b) $-5a^2bc, 11ab, 13abc^2$

**4.** If x varies inversely as y when $x=40$, and $y=600$, then find y, when $x=400$.

**5.** Evaluate: $3^{-2}$

**6.** Factorise: $3a^2b^3-27a^4b$.

## SECTION-B

**(2 marks each)**

**7.** Find using distributivity: $\left[\frac{7}{5}\times\left(\frac{-3}{12}\right)\right]+\left[\frac{7}{5}\times\frac{5}{12}\right]$

**8.** Evaluate $\sqrt{2}$ correct upto two place of decimal.

**9.** A dodecahedron is having 20 vertices an 30 edges. How many faces are there?

**10.** Find the value of $\frac{38^2-22^2}{16}$, using a suitable identity.

**11.** If $x-\frac{1}{x}=7$, then find the value $x^2+\frac{1}{x^2}$.

**12.** Ayesha announced a festival discount of 25% on all the items in her mobile phone shop. Raman deep bought a mobile phone for himself. He got a discount of Rs. 1,960. What was the marked price of the mobile phone?

## SECTION-C

**(3 marks each)**

**13.** Find the area of rectangular park which is $36\frac{3}{5}$ m long and $16\frac{2}{3}$ m broad.

(b) Write the name of property for any rational numbers $\frac{a}{b}$ and $\frac{c}{d}$, we have

$$\left(\frac{a}{b}\times\frac{c}{d}\right)=\left(\frac{c}{d}\times\frac{a}{b}\right)$$

**14.** Find area of a rhombus where diagonal are 12 cm and 9.2 cm.

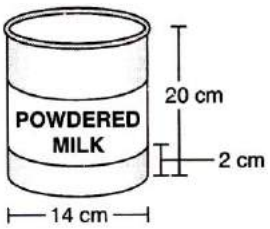
**15.** Radha takes some flowers in a basket and visits three temples one by one. At each temple, she offers one half of the flowers from the basket. If she is left with 3 flowers at the end, find the number of flowers she had in the beginning.

**16.** The area of a trapezium is 34 cm2 and the length of one of the parallel sides is 10 cm and its height is 4 cm. Find the length of the other parallel side.

**17.** Draw a rhombus ABCD such that AC = 6.6 cm, BD = 5.6 cm.

**18.** Divide: $15(y+3)(y^2-16)$ *by* $5(y^2-y-12)$.

**19.** A company packages its milk powder in cylindrical container where base has a diameter of 14 cm and height 20 cm. Company places a label around the surface area the container (as shown in the figure). If the label is placed 2 cm from top and bottom, what is the area of the label.




**20.** The population of a place increased to 54,000 in 2003 at a rate of 5% per annum

(a) Find the population in 2001.

(b) What would be its population in 2005?

**21.** Two cubes have volumes is the ratio 1: 64. The ratio of the area of a face of first cube to the of other is?

**22.** If $x+\frac{1}{x}=5,$, find the value of $x^2+\frac{1}{x^2}$.

## SECTION-D

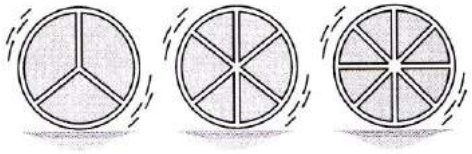
**(4 marks each)**

**23.** Using appropriates find

(a) $-\frac{2}{3}\times\frac{3}{5}+\frac{5}{2}-\frac{3}{5}\times\frac{1}{6}$

(b) $\frac{2}{5}\times\left(-\frac{3}{7}\right)-\frac{1}{6}\times\frac{3}{2}+\frac{1}{14}\times\frac{2}{5}$

**24.** Rehman is making a wheel using spokes. He wants to fix equal spokes in such a way that the angles between any pair of consecutive spokes are equal. Help him by completing the following table.



| Number of spokes | 4 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|
| Angle between a pair of consecutive spokes | 90° | 60° | - | - | - |

(a) Are the number of spokes and the angles formed between the pairs of consecutive spokes in inverse proportion?
(b) Calculate the angle between a pair of consecutive spokes on a wheel with 15 spokes.
(c) How many spokes would be needed, if the angle between a pair of consecutive spokes is $40°$ ?

**25.** The parallel sides of a trapezium are 40 cm and 20 cm. If its non-parallel sides are equal, each being 26 cm, find the area of the trapezium.

**26.** A rational number is such that when you multiply it by $\frac{5}{2}$ and add $\frac{2}{3}$ to the product, you get $\frac{-7}{12}$. what is the number?

**27.** Find the
(a) Probability of the pointer stopping on D in (figure 1)
(b) Probability of getting an ace from a well shuffled deck of 52 playing cards.
(c) Probability of getting a red apple.

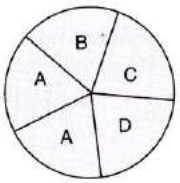


fig. 1

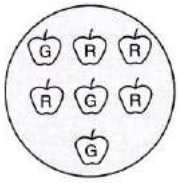


fig. 2

**28.** Simplify
(a) $(a^2-b^2)^2$
(b) $(2x+5)^2-(2x-5)^2$
(c) $(7m+8n)^2+(7m+8n)^2$
(d) $(4m+5n)^2+(5m+4n)^2$

**29.** Arif took a loan for Rs. 80,000 from a bank. If the rate of interest is 10% per annum. Find the difference in amounts he would be paying after $1\frac{1}{2}$ years if the interest is
(a) Compounded annually.
(b) Compounded half yearly.

**30.** Carry out the following divisions :
(a) $28x^4 \div 56x$ (b) $-36y^3 \div 9y^2$
(c) $66pq^2r^3 \div 11qr^2$ (d) $34x^3y^3z^3 \div 51xy^3z^3$

# Solutions

## Section 'A'

**(1 marks each)**

**1.** For 4489, $n = 4$ [Even number]

½

$\therefore$ Number of digits in its square root $= \frac{n}{2} = \frac{4}{2} = 2$

½

**2.** $(4p^2 + 5p + 7) \times 3p = (4p^2 \times 3p) + (5p \times 3p) + (7 \times 3p)$

$= (12p^3 + 15p^2 + 21p)$ **1**

**3.** (a) $15xy^2 \times 17yz^2 = (15 \times 17) \times x \times y^2 \times y \times z^2$

$= 255xy^3z^2$ ½

(b) $-5a^2bc \times 11ab \times 13abc^2 = (-5 \times 11 \times 13)a^2bc \times ab \times abc^2$

$= -715a^4b^3c^3$ ½

**4.** Here, $x$ varies inversely as $y$

Hence, $x_1y_1 = x_2y_2$

$\because x_1 = 40, y_1 = 600, x_2 = 400, y_2 = ?$

$40 \times 600 = 400 \times y_2$

$\Rightarrow \quad y_2 = \frac{40 \times 600}{400} = 60$ **1**

**5.** $3^{-2} = \frac{1}{3^2} = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

**6.** $3a^2b^3 - 27a^4b = 3a^2b(b^2 - 9a^2)$

$= 3a^2b[(b)^2 - (3a)^2]$

$= 3a^2b(b + 3a)(b - 3a)$

## Section 'B'

**(2 marks each)**

**7.** $\left[\frac{7}{5} \times \left(\frac{-3}{12}\right)\right] + \left[\frac{7}{5} \times \frac{5}{12}\right] = \frac{7}{5} \times \left\{\left(\frac{-3}{12}\right) + \frac{5}{12}\right\}$

$= \frac{7}{5} \times \left\{\frac{-3+5}{12}\right\}$

$= \frac{7}{5} \times \frac{2}{12} = \frac{7}{5} \times \frac{1}{6} = \frac{7}{30}$ **1**

**8.** Using division method

1.414

| | |
|---|---|
| 1 | $2.\overline{00}\ \overline{00}\ \overline{00}$<br>_1 |
| 24 | 100<br>_ 96 |
| 281 | 400<br>_281 |
| 2824 | 11900<br>_11296 |
| | 604 |

Therefore $\sqrt{2}=1.414 \Rightarrow \sqrt{2}=1.41$ **2**

**9.** Here:

Number of vertices (V) =20

Number of edges (E) =30

Let the number of faces =F

Then using Euler's formula, we have

F+V=E+2 .....(1) **1**

$\therefore$ Substituting the values of V and E in(1) ,we get

F+20=30+2

$\Rightarrow$ F +20=32

$\Rightarrow$ $F=32-20$

$\Rightarrow$ F=12

Thus, the required number of faces=12.

**1**

**10.** Since, $a^2-b^2=(a+b)(a-b)$ therefore,

$38^2-22^2-(38-22)(38+22)$ **1**

$=16\times16$

So, $\frac{38^2-22^2}{16}=\frac{16\times60}{16}$

=60 **1**

**11.** We know that $(a-b)^2=a^2-2ab+b^2$

$\therefore$ $\left(x-\frac{1}{x}\right)^2=(x)^2-2(x)\left(\frac{1}{x}\right)+\left(\frac{1}{x}\right)^2$ **1**

$$\left(x-\frac{1}{x}\right)^2 = x^2 - 2 + \frac{1}{x^2}$$

$$(7)^2 = x^2 - 2 + \frac{1}{x^2}$$

$$49 + 2 = x^2 + \frac{1}{x^2}$$

$$x^2 + \frac{1}{x^2} = 51$$ **1**

**12.** Discount amount = Rs. 1960

and discount rate = 25% **½**

When discount Rs. 25, then the marked price = Rs. 100
On discount Rs.1, then the marked price

$$= \frac{Rs.100}{25}$$ **½**

On discount Rs. 1960, then the marked price

$$= \frac{100}{25} \times 1960$$

= Rs. 7840 **1**

Hence, marked price of the mobile phone is Rs. 7840.

## Section 'C'

**(3 marks each)**

**13.** **(a)** Since length of rectangular park $= 36\frac{3}{5}\text{m} = \frac{183}{5}\text{m}$

and breadth of rectangular park $= 16\frac{2}{3}\text{m} = \frac{50}{3}\text{m}$ **1**

Then area of park $= l \times b$

$$= \frac{183}{5}m \times \frac{50}{3}m$$

$$= 61 \times 10m^2 = 610m^2$$

**(b)**

$\left(\frac{a}{b} \times \frac{c}{d}\right) = \left(\frac{c}{d} \times \frac{a}{b}\right)$, it is commutative law of property. **1**

**14.** Let $d_1$ and and $d_2$ be the diagonals of the rhombus.

$d_1$ = 12 cm $d_2$ and = 9.2 cm **1**

Area $= \frac{1}{2} \times d_1 \times d_2$

$$= \frac{1}{2} \times 12 \times 9.2$$

$= 55.2\ cm^2$ **2**

**15.** Let she had $x$ flowers,

I temple visit

$$\text{No of flowers} = x - \frac{x}{2}$$

$$= \frac{x}{2}$$ **½**

II temple visit

$$\text{No. of flowers} = \frac{x}{4} - \frac{1}{2}\left(\frac{x}{4}\right)$$

$$= \frac{x}{4} - \frac{x}{8}$$

$$= \frac{2x - x}{8}$$

$$= \frac{x}{8}$$ **1**

According to condition,

$$\frac{x}{8} = 3$$

$$\therefore \quad x = 24$$ **½**

**16.** Height of trapezium ($h$) = 4 cm

Length of one parallel side = 10 cm

Second parallel side =?

The area of trapezium $= \frac{1}{2} \times h \times$ (sum of parallel sides) **1**

$$\Rightarrow 34 = \frac{1}{2} \times 4 \times \text{ (10 + second parallel side)}$$

$$\Rightarrow \frac{34}{2} = 10 + \text{second parallel side}$$

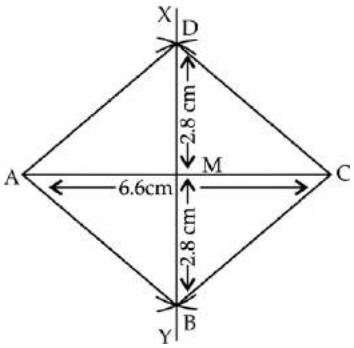
$$\Rightarrow 17 - 10 = \text{second parallel side}$$

$\therefore$ other parallel side of trapezium = 7 cm **2**

**17.** Steps of Construction :

(a) Draw a line segment $AC$ = 6·6 cm.

(b) Draw perpendicular bisector $XY$ of $AC$, which meets $AC$ at $M$. **1**



**(c)** With centre *M* take the radius $= = \frac{1}{2} \times 5.6$ cm *i.e.*, 2·8 cm, draw arcs to intersect *XY* at *B* and *D*.

**(d)** Joint *AB*, *BC*, *CD* and *AD*.

Thus, *ABCD* is the required rhombus. **1**

**18.** Factorising $15\ (y+3)(y^2-16)$,

We get, $5 \times 3 \times (y+3)(y-4)(y+4)$

On factorising, $5(y^2-y-12)$, we get

$5(y^2-4y+3y-12)$

$= 5\ [y(y-4)+3(y-4)]$

$= 5(y-4)(y+3)$ **1**

Therefore, on dividing the first expression by the second expression, we get $\frac{15(y+3)(y^2-16)}{5(y^2-y-12)}$

$\frac{5 \times 3 \times (y+3)(y-4)(y+4)}{5 \times (y-4)(y+3)}$

$= 3(y+4)$ **1**

**19.** Diameter of cylinder = 14 cm

$r$ = 7 cm

The height of cylindrical label $= 20-4 = 16\ cm$

Curved surface area of cylindrical label

$= 2\pi rh =$

$= 2 \times \frac{22}{7} \times 7 \times 16$

$= 704\ cm^2$ **3**

**20.** **(a)** Here $A$ = 54000, $R$ = 5%, $n$ = 2 year,

$\therefore\ P$ =?

$A = P\left(1+\frac{R}{100}\right)^n$

$54000 = P\left(1+\frac{5}{100}\right)^2$

$= P\left(\frac{21}{20}\right)^2$

$\Rightarrow \qquad P = \frac{54000 \times 20 \times 20}{21 \times 21}$

= 48980 (approx.) **1½**

$\therefore$ Population in 2001 was 48980.

**(b)** Here, $P$ = 54000, $R$ = 5% p.a., $n$ = 2 years

$A = P\left(1+\frac{R}{100}\right)^n$

$= 54000\left(1+\frac{5}{100}\right)^2$

$= 54000 \times \frac{21}{20} \times \frac{21}{20}$

$= 59535$

Hence, population in 2005 would be 59535. **1½**

**21.** Volume,

$\frac{V_1}{V_2} = \frac{1}{64}$

$\frac{a_1^3}{a_2^3} = \frac{1}{64}$ **1**

$\frac{a_1}{a_2} = \frac{1}{4}$

Area of first face for first cube $= a_1 \times a_1$

$= 1 \times 1$ **1**

Area of first face of other cube $= a_2 \times a_2$

$= 4 \times 4$

**1**

Ratio will be $= \frac{1}{16}$

***22.*** Since, $x + \frac{1}{x} = 5$

Squaring on both sides,

**1**

$\left(x + \frac{1}{x}\right)^2 = 5^2$ **1**

or $x^2 + \frac{1}{x^2} + 2 \times x \times \frac{1}{x} = (5)^2$

or $x^2 + \frac{1}{x^2} + 2 = 25$

or $x^2 + \frac{1}{x^2} = 25 - 2$

or $x^2 + \frac{1}{x^2} = 23$ **1**

## Section 'D'

**(4 marks each)**

**23.** **(a)** $-\frac{2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5} \times \frac{1}{6} = -\frac{2}{3} \times \frac{3}{5} - \frac{3}{5} \times \frac{1}{6} + \frac{5}{2}$

$= \frac{3}{5}\left(-\frac{2}{3} - \frac{1}{6}\right) + \frac{5}{2}$ (by commutativity)

$= \frac{3}{5}\left(\frac{-4-1}{6}\right) + \frac{5}{2}$

$= \frac{3}{5} \times \frac{-5}{6} + \frac{5}{2}$

$= \frac{-1}{2} + \frac{5}{2} = 2$

(b) $\frac{2}{5} \times \left(\frac{-3}{7}\right) - \frac{1}{6} \times \frac{3}{2} + \frac{1}{14} \times \frac{2}{5} = \frac{2}{5} \times \left(\frac{-3}{7}\right) + \frac{1}{14} \times \frac{2}{5} - \frac{1}{6} \times \frac{3}{2}$

(by associativity)

$= \frac{2}{5} \times \left(\frac{-3}{7} + \frac{1}{14}\right) - \frac{1}{4}$ (by distributivity)

$= \frac{2}{5}\left(\frac{-6+1}{14}\right) - \frac{1}{4}$

$= \frac{2}{5} \times \frac{-5}{14} - \frac{1}{4}$

$= -\frac{1}{7} - \frac{1}{4} = \frac{-4-7}{28} = \frac{-11}{28}$ **2**

**24.** **(a)** Suppose number of spokes be *x* and angle between a pair of consecutive spokes be *y*.

| **X** | 4 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|
| **y** | 90 | 60 | $y_1$ | $y_2$ | $y_3$ |

As the number of spokes increase, angle between a pair of consecutive spokes decreases. Hence, it is a case of inverse proportion.

*i.e.,* $x_1y_1 = x_2y_2$

*(i)* $x_1 = 6, x_2 = 8, y_1 = 60, y_2 = ?$

$6 \times 60° = 8y_1$

$\Rightarrow \quad y_1 = \frac{360°}{8} = 45°$ **1**

**(ii)** $8 \times 45° = 10 \times y_2$

$\Rightarrow \quad y_2 = \frac{360°}{10} = 36°$

**(iii)** $10 \times 36° = 12 \times y_3$

$\Rightarrow \quad y_3 = \frac{360°}{12} = 30°$

The table is

| **X** | 4 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|
| **y** | 90° | 60° | 45° | 36° | 30° |

The number of spokes and the angles formed between the pairs of consecutive spokes is in inverse proportion. Because the products of the corresponding values of two quantities is constant.

*i.e* $4 \times 90° = 6 \times 60° = 8 \times 45° = 10 \times 36° = 12 \times 30° = 360°$ **1**

**(b)** Let the angle be $x$ . The following table

| **No. of spokes** | 12 | 15 |
|---|---|---|
| **Angle** | 30° | x |

As number of spokes increases, the angle decreases it is the case of inverse proportion.

*i.e.* $x_1y_1 = x_2y_2$

$12\times30° = 15\times x$

$\Rightarrow \quad x = \frac{12\times30°}{15} = 24°$

Thus, angle is $24°$. **1**

**(c)** Let the spokes be *x,* if the angle between a pair of consecutive spokes is 40°.

We have the following table.

| **No. of spokes** | **4** | **6** | **8** | **X** | **10** | **12** |
|---|---|---|---|---|---|---|
| **Angle** | 90° | 60° | 45° | 40° | 36° | 30° |

As no. of spokes increases the angle decreases. Hence, it is the case of inverse proportion

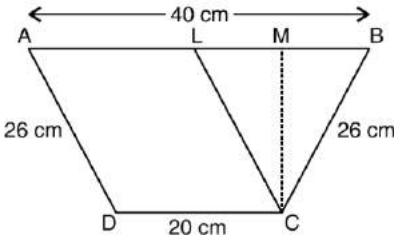
We have, $8\times45° = x\times\ 40°$

$\Rightarrow \quad x = \frac{8\times45}{40°}$

$\Rightarrow \quad x=9$

Hence, the number of spokes are 9. **1**

**25.** Let *ABCD* be the trapezium such that *AB* = 40 cm and *CD* = 20 cm and *AD* = *BC* = 26 cm.




Now, draw $CL \| AD$

Then, *ALCD* is a parallelogram

So, *AL* = *CD* = 20 cm and *CL* = *AD* = 26cm. **½**

In $\Delta CLB$, we have

*CL* = *CB* = 26 cm

Therefore, $\Delta CLB$, is an isosceles triangle. **½**

Draw altitude *CM* of $\Delta CLB$, **½**

Since, $\Delta CLB$, is an isosceles triangle.

So, *CM* is also the median.

Then, $LM = MB = \frac{1}{2}BL = \frac{1}{2}\times20$ cm = 10 cm

$[as\ BL = AB - AL = (40 - 20)\ cm = 20\ cm]$.

Applying Pythagoras theorem in $\Delta CLM$,

we have, $CL^2 = CM^2 + LW^2$

$26^2 = CM^2 + 10^2$

$CM^2 = 26^2 - 10^2$

$= (26 - 10)(26 + 10)$

$= 16 \times 36 = 576$

$CM = \sqrt{576} = 24$ cm **1**

Hence, the area of the trapezium $= \frac{1}{2} \times$ (sum of parallel sides) $\times$ Height

$= \frac{1}{2}(20 + 40) \times 24$

$= 30 \times 24 = 720\,cm^2$ **1**

***26.*** Let the rational number be $x$

$\frac{5}{2}x + \frac{2}{3} = \frac{-7}{12}$ **1**

or, $\frac{5}{2}x = \frac{-7}{12} - \frac{2}{3}$

[Transposing $\frac{2}{3}$ to RHS]

or, $\frac{5}{2}x = \frac{-7 - 8}{12}$

or, $\frac{5}{2}x = \frac{-15}{12}$ **1**

or, $5x \times 12 = -15 \times 2$

or, $60x = -30$ [Dividing both sides by 60]

or, $x = \frac{-30}{60}$

or, $x = \frac{-1}{2}$ **1**

Hence, the required rational number is $\frac{-1}{2}$.

**27.** **(a)** Total outcomes of a spinning a wheel = 5
but a pointer stopping on D

Then, the probability $= \frac{1}{5}$

**(b)** There are 4 ace out of 52 cards.

Probability of getting ace $= \frac{4}{52} = \frac{1}{13}$

**(c)** Total number of apples = 7
Number of red apples = 4
Probability of getting a red apple

$= \frac{No.\ of\ red\ apples}{Total\ No.\ of\ apples} = \frac{4}{7}$ **4**

**28.** **(a)** $(a^2 - b^2)^2$

Use the identity,

$(a-b)^2 = a^2 - 2ab + b^2$

$= (a^2)^2 - 2a^2b^2 + (b^2)^2$

$= a^4 - 2a^2b^2 + b^4$

**(b)** $(2x + 5)^2 - (2x-5)^2$

Use the identities,

$(a+b)^2 = a^2 + 2ab + b^2$

$(a-b)^2 = a^2 - 2ab + b^2$

$= \{(2x)^2 + 2(2x)(5) + (5)^2\} - (2x-5)^2$

$= \{4x^2 + 4x \times 5 + 25\} - \{(2x)^2 - 2(2x)(5) + (5)^2$

$= (4x^2 + 20x + 25 - (4x^2 - 20x + 25)$

$= 4x^2 + 20x + 25 - 4x^2 + 20x - 25$

$= 20x + 20x$

$= 40x$

**(c)** $(7m - 8n)^2 + (7m + 8n)^2 = \{(7m)^2 - 2(7m)$

$(8n) + (8n)^2\} + \{(7m)^2 + 2(7m)\ (8n) + (8n)^2\}$

$= 49m^2 - 112mn + 64n^2 + 49m^2 + 112mn + 64n^2$

$= 98m^2 + 128n^2$

**(d)** $(4m + 5n)^2 + (5m + 4n)^2$

Use the identity,

$(a+b)^2 = a^2 + 2ab + b^2$

$= \{(4m)^2 + 2(4m)\ (5n) + (5n)^2\} + \{(5m)^2 + 2\ (5m)(4n) + (4n)^2\} = (16m^2 + 40mn + 25n^2) + (25m^2 + 40mn + 16n^2)$

$= (16 + 25)m^2 + (40 + 40)mn + 125 + 16)n^2$

$= 41m^2 + 80mn + 41n^2$

**29.** **(a)** Compounded annually

$P$ = Rs. 80000, $T = 1\frac{1}{2}$ year

$R$ = 10% of p.a. and 5% of half years

$A = P\left(1 + \frac{R}{100}\right)^n$

$= 80000\left(1 + \frac{10}{100}\right)^1\left(1 + \frac{5}{100}\right)^1$

$= 80000\left(\frac{11}{10}\right)\left(\frac{21}{20}\right)$

$A$ = Rs. 92400 **2**

**(b)** Compounded half yearly.

$P$ = Rs. 80,000, $R$ = 10%

$= \frac{10}{2} = 5\%$

$n = 1\frac{1}{2}$ year $= \frac{3}{2} \times 32 = 3$ half years

$A = P\left(1 + \frac{R}{100}\right)^n$

$= 80,000\left(1 + \frac{5}{100}\right)^3$

$A = 80,000\left(\frac{21}{20}\right)^3$

$= 80,000 \times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20}$

$A$ = Rs 92610

Difference in amounts = Rs. 92610 – Rs.92400

= Rs. 210 **2**

**30.** **(a)** $28x^4 \div 56x = \frac{28x^4}{56x}$

$= \frac{2 \times 2 \times 7 \times x \times x \times x \times x}{2 \times 2 \times 2 \times 7 \times x}$

$= \frac{x^3}{2}$ **1**

**(b)** $-36y^3 \div 9y^2 = \frac{-36y^3}{9y^2}$

$= \frac{-2 \times 2 \times 3 \times 3 \times y \times y \times y}{3 \times 3 \times y \times y}$

$= -4y$ **1**

**(c)** $66pq^2r^3 \div 11qr^2 = \frac{66pq^2r^3}{11qr^2}$

$= \frac{6 \times 11 \times p \times q \times q \times r \times r \times r}{11 \times q \times r \times r}$

$= 6pqr$

**1**

**(d)** $34x^3y^3z^3 \div 51xy^2z^3$

$= \frac{2 \times 17 \times x \times x \times y \times y \times y \times z \times z \times z}{3 \times 17 \times x \times y \times y \times z \times z \times z}$

$= \frac{2x^2y}{3}$ **1**