Group – A

1. Multiple choice questions: $1 \times 5 = 5$

(i) The value of $6 \div (-1)$ does not lie between

(a) 0 and -10; (b) -3 and -12; (c) -4 and 10; (d) -7 and 7.

(ii) Find the missing numerator if $2\frac{x}{6} + 4\frac{5}{12} = 6\frac{7}{12}$

(a) 5; (b) 2; (c) 1; (d) 4.

(iii) The cardinal number of the set of the letters of the word 'SCHOOL' is _____

(a) 6; (b) 5; (c) 7; (d) 4.

(iv) If A:B = 7:9 and B:C = 6:7, then A:C is _____

(a) 2:3; (b) 3:2; (c) 1:3; (d) 2:7.

(v) It is found that a book will contain 350 pages; if 32 lines are allowed in a page, how many lines should be allowed in a page, if the book is to contain 280 pages?

(a) 46 lines; (b) 42 lines; (c) 40 lines; (d) 44 lines.

2. State 'True' or 'False': $1 \times 5 = 5$

(i) The product of integers is commutative.

(ii) $7 \div 1.4 = 5$

(iii) $|-9| + |9| = 0$

(iv) All equivalent sets are equal sets.

(v) If a, b, c are in continued proportion, then $a^2 = bc$.

3. Fill in the blanks: $1 \times 5 = 5$

(i) If cost of 16 products is Rs. 72, then the cost of 30 products will be _____.

(ii) If x:5 = 18:30, then x = _____.

(iii) Two sets are _____ when they have exactly the same elements.

(iv) Every integer is a rational number with denominator _____.

(v) $\frac{2}{3}$ is a _____ fraction.

4. Match the column: $1 \times 5 = 5$

i	$a + 0 = 0 + a$	a	vulgar fraction.
ii	$\frac{6}{11}$	b	singleton set.
iii	{5}	c	$b^2 = ac$
iv	a:b::b:c	d	inverse variation
v	Speed varies inversely as time	e	additive identity.

5. Write 'Yes' or 'No': $1 \times 5 = 5$

(i) Sets which do not contain any element in common are called overlapping sets.

(ii) Zero is a rational number.

(iii) The difference between highest and lowest value of an observation in a given data is called mean.

(iv) Bar graph is a pictorial representation of data.

(v) A cube is a rectangular solid whose all edges are equal.

Group – B

6. Write very short answer of the following questions: 2x5=10

(i) Simplify : $- 15 \div 5 \times (-7)$

(ii) Find : $1\frac{1}{2} \times 1\frac{1}{4} \times 1\frac{1}{5}$

(iii) Divide: $-\frac{5}{9} \div \frac{2}{-3}$

(iv) Express the ratio 35:63 in the simplest form.

(v) Find the volume of a cube whose one edge is 5 cm. long.

7. Write short answer of the following questions: 3x5=15

(i) If 20 workers consume a certain quantity of flour in 14 days, in how many days will 8 workers consume the same quantity of flour?

(ii) Find the mean proportional between $\frac{1}{8}$ and $\frac{1}{50}$.

Or

There are 130 stickers in box. Divide the stickers between two children in the ratio of 4:9.

(iii) If x:y = 2:7 and y:z = 3:4, find x:y:z.

(iv) If the mean of 16, 14, x, 23, 20 is 18. Find the value of x.

(v) The product of two numbers is $-24\frac{1}{2}$. If one of the numbers is $5\frac{1}{4}$, find the other number.

Or

By what number should we multiply $-4\frac{9}{14}$ so that the product is $4\frac{8}{63}$?

Group-C

8. Answer the following. (any 8) 5x8=40

i) Simplify: $3\frac{1}{7} \times (3\frac{1}{2}-5\frac{1}{4}) \times (5\frac{1}{4}+3\frac{1}{2}) \times 1\frac{1}{11}$

ii) There are 1.6 km in a mile. How many miles are there in 135.28 km?

iii) write down un.iversal set of the following set
a.){0,3,6,9,12,15}   b){1,3,5,7,9,11}   c) {Pine,oak,deodar}   d){Himalayas,Alps,Andes}
e){$\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{9}$,$\frac{1}{11}$}

iv) Explain with example that every equal set is equivalent but every equivalent set is not equal.

v) A sum of Rs 7000 is divided among A,B,C in. such a way that the share of A and B are in the ratio 2:3 and those of B and C are in the ratio 4:5. Find B's share.

vi) A cistern can be filled by one tap in $2\frac{1}{2}$ hrs and by another $3\frac{3}{4}$ hrs. How long will the cistern take to fill i they are opened together.

vii) if mean of x , x+2 , x+4, x+6, x+8 is 24. Find x.

viii) The way Mrs. Singh spends her allowance is given below.

item	lunch	hobby	recreation	saving	total
percent	25%	20%	40%	15%	100%

Draw a Pie chart.

ix) A beam 11m long ,40 cm wide and 30 cm deep is made of wood which weighs 25 kg per meter cube. Find the weight of the beam.

x) A classroom is 12m long, 7 m wide and 4 m high. Find the cost of repairing the 4 walls at the rate Rs per meter square. Find the total cost.

Group - A

1.
(i) (c) – 4 and 10.

(ii) (c) 1.

(iii) (b) 5.

(iv) (a) 2:3

(v) (c) 40 lines.

2.
(i) True

(ii) True

(iii) False

(iv) False

(v) False

3.
(i) 135

(ii) 3

(iii) equal

(iv) 1

(v) Proper.

4.
(i) a + 0 = 0 + a   (e) Additive identity

(ii) $\frac{6}{11}$ (a) Vulgar fraction

(iii) { 5 }   (b) Singleton set

(iv) a:b :: b:c   (c) $b^2 = ac$

(v) Speed varies inversely as time.   (d) Inverse Variation
5.

(i) No;

(ii) Yes

(iii) No

(iv) Yes

(v) Yes.

Group – B

6.
(i) $-15 \div 5 \times (-7)$
$= (-3) \times (-7)$
$= 21$

(ii) $1\frac{1}{2} \times 1\frac{1}{4} \times 1\frac{1}{5}$
$= \frac{3}{2} \times \frac{5}{4} \times \frac{6}{5}$
$= \frac{9}{4} = 2\frac{1}{4}$

(iii) $-\frac{5}{9} \div \frac{2}{-3}$
$= -\frac{5}{9} \times \frac{-3}{2}$
$= \frac{5}{6}$

(iv) 35:63
HCF of 35 and 63 is 7
$\therefore 35:63 = \frac{35}{63} = \frac{35 \div 7}{63 \div 7} = \frac{5}{9} = 5 : 9.$

(v) Given, edge (a) = 5 cm
Volume of cube = $a^3 = 5^3 = 125$ cm^3.

7.
(i) 20 workers consume a certain quantity in 14 days
    1   ,,   ,,   ,,   ,,   in 14 × 20 days
    8   ,,   ,,   ,,   ,,   in $\frac{14 \times 20}{8}$ days = 35 days.

(ii) Let x be the mean proportional between $\frac{1}{8}$ and $\frac{1}{50}$.
Then $\frac{1}{8} : x :: x : \frac{1}{50}$
Or $x^2 = \frac{1}{8} \times \frac{1}{50} = \frac{1}{400}$
Or $x = \sqrt{\frac{1}{400}} = \pm\frac{1}{20}$
$\therefore \frac{1}{20}$ is the mean proportional between $\frac{1}{8}$ and $\frac{1}{50}$.

Or
Sum of both the ratio terms = 4 + 9 = 13

$\therefore$ 1st child's share = $\frac{4}{13}$ × 130 = 40;   2nd child's share = $\frac{9}{13}$ × 130 = 90.

(iii) x:y = 2:7 and y:z = 3:4
Or $\frac{x}{y} = \frac{2}{7}$ and $\frac{y}{z} = \frac{3}{4}$
To find x:y:z, we have to make y equal in both the cases.
LCM of 7 and 3 is 21
$\therefore$ x:y = 2:7 = $\frac{2}{7} = \frac{2 \times 3}{7 \times 3} = \frac{6}{21}$ = 6:21
y:z = 3:4= $\frac{3}{4} = \frac{3 \times 7}{4 \times 7} = \frac{21}{28}$ = 21:28
$\therefore$ x:y:z = 6:21:28.

(iv) The mean of 16, 14, x, 23, 20 is 28
$\therefore \frac{16+14+X+23+20}{5}$ = 18
Or 73 + x = 90
Or x = 17.

(v) The product of two numbers is $-24\frac{1}{2} = -\frac{49}{2}$
One of the numbers is $5\frac{1}{4} = \frac{21}{4}$
Let the other number be x.
Then x × $\frac{21}{4} = -\frac{49}{2}$
Or x = $-\frac{49}{2} \div \frac{21}{4}$
Or x = $-\frac{49}{2} \times \frac{4}{21} = \frac{-14}{3} = -4\frac{2}{3}$

Or

Let the required number be x, then
BTP
$-4\frac{9}{14} \times x = 4\frac{8}{63}$

Or x = $4\frac{8}{63} \div (-4\frac{9}{14})$
Or x = $\frac{260}{63} \div (-\frac{65}{14})$
Or x = $\frac{260}{63} \times -\frac{14}{65} = -\frac{8}{9}$

Group – C

8. Answer the following.
i)Simplify: $3\frac{1}{7}$ x$(3\frac{1}{2} -5\frac{1}{4})$ x $(5\frac{1}{4} +3\frac{1}{2})x1\frac{1}{11}$
Ans:$\frac{22}{7}$ x $(-\frac{7}{4})$ x $\frac{35}{4}$ x $\frac{12}{11} = \frac{-105}{2}$ = -52$\frac{1}{2}$
ii)There are 1.6 km in a mile .How many miles are there in 135.28 km?
Ans:There is 1.6 km in 1 mile
        There is 1 km in 1/1.6 mile
    There is 135.28 km in 135.28/1.6 mile= 84.55 mile
iii)write down un.iversal set of the following set
a.){0,3,6,9,12,15} b){1,3,5,7,9,11} c) {Pine,oak,deodar} d){Himalayas,Alps,Andes}
e){$\frac{1}{4}, \frac{1}{5}, \frac{1}{9}, \frac{1}{11}$}
Ans: a) Multiples of 3   b) odd numbers   c) Trees   d) Mountains e)Fractional numbers
iv)Explain with example that every equal set is equivalent but every equivalent set is not equal.

Ans:Equivaleny set means when 2 or more sets are having same numbers of elements.

Equal set means when 2 or more sets are having same elements. It could be out of order. Let us assume A={A,B,C,D,E}   B={January, February, March, April, May}
A and B are having same numbers of elements but different elements. Therefore A and B are equivalent sets not equal sets. Therefore we can conclude that equivalent sets are not always equal. Again on the other hand Let us assume C={A,C,T} and D={C,A,T}
C and D are having same elements and same numbers of elements therefore C and D are two equivalent and equal sets. This is how we can say that Every equal set is equivalent but each equivalent set may not be equal.

v)A sum of Rs 7000 is divided among A,B,C in. such a way that the share of A and B are in the ratio 2:3 and those of B and C are in the ratio 4:5.Find B's share.

Ans: A:B=2:3 and B:C= 4:5

$\dfrac{A}{B}= \dfrac{2x4}{3x4}=\dfrac{8}{12}$, $\dfrac{B}{C}=\dfrac{4x3}{5x3}=\dfrac{12}{15}$

A:B:C= 8:12:15

B's share= $\dfrac{12}{35}$x 7000 =Rs 2400

vi)A cistern can be filled by one tap in $2\frac{1}{2}$ hrs and by another $3\frac{3}{4}$ hrs.How long will the cistern take to fill if they are opened together.

Ans: 1st tap fills in 1 hr 2/5 part
2nd tap fills in 1 hr 4/15 part
Therefore both the taps can fill in 1 hr(2/5 + 4/15) = 10/15 part = 2/3 part
2/3 part can be filled in 1 hr
1 part can be filled in $\dfrac{1}{2/3}$ hrs = 3/2 hrs =$1\frac{1}{2}$ hrs.

vii)if mean of x , x+2 , x+4, x+6, x+8 is 24.Find x.

Ans:According to the problem
$\dfrac{x+x+2+x+4+x+6+x+8}{5}$=24
Or, 5x+20=120
Or,5x=100
Therefore x=20

viii)The way Mrs. Singh spends her allowance is given below.

item	lunch	hobby	recreation	saving	total
percent	25%	20%	40%	15%	100%

Draw a Pie chart.
Ans. Step 1: Draw one circle
Step 2:Convert the percentage share into degree multiplying it with 3.6
Step 3: now according to different measures plot different angles inside the circle.
In this case Plot the following angle measures inside a circle
25x 3.6=90^0, 20 x3.6=72^0, 40x 3.6=144^0, 15x3.6= 54^0

ix)A beam 11m long ,40 cm wide and 30 cm deep is made of wood which weighs 25 kg per meter cube. Find the weight of the beam.
Ans:Volume= (11 x 0.4 x 0.3) cubic metre= 1.32 cubic metre
Weight of the wooden beam=(1.32x25)kg=33kg
x)A classroom is 12m long, 7 m wide and 4 m high. Find the cost of repairing the 4 walls at the rate Rs 15 per meter square. Find the total cost.
Ans: Area of the four walls = 2(l+b) x h
                                = {2(12+7) x 4} sq metre
                                = 152 sq m
Therefore total cost =Rs (152 x 15)= Rs 2280