Class: 6 KEY ANSWERS TERM : II

Chapter - 1 Numbers

Page 12:

Exercise: 1.1

1. a. 4578
Yes, 4578 is divisible by 2 as the number in one's digit is 8.

b. 32841.
It is not divisible by 2 as the number in one's digit is 1

c. 3982
It is divisible by 2 as the number in one's digit is 2.

d. 451910
It is divisible by 2 as the number in one's digit is 0.

e. 3555
It is not divisible by 2 as the number in one's place is 5.

2. a. 3705
Sum of the digits is 3+7+0+5 = 15. It is divisible by 3.

∴ 3705 is divisible by 3.

b. 1956
Sum of digits 21, divisible by 3
∴ 1956 is divisible by 3.

c. 436
Sum of the digits is 13, not divisible by 3
∴ 436 is not divisible by 3.

d. 6474
Sum of digits is 21, divisible by 3
∴ 6474 is divisible by 3.

e. 7944
Sum of digits is 24, is divisible by 3
∴ 7944 is divisible by 3.

3. a. 580
Number formed by the ones place and units place 80. It is divisible by 4.
∴ 580 is divisible by 4.

b. 4944
44 is divisible by 4
∴ 4944 is divisible by 4.

c. 2882
82 is not divisible by 4
∴ 2882 is not divisible by 4.

d. 9556
56 is divisible by 4
∴ 9556 is divisible by 4.

e. 2578
78 is not divisible by 4
∴ 2578 is not divisible by 4.

4. a. 4356
Unit place is 6
∴ 4356 is not divisible by 5.

b. 2445
Unit place is 5
∴ 2445 is divisible by 5.

c. 380
Unit place is 0
∴ 380 is divisible by 5.

d. 5480
Unit place is 0
∴ 5480 is divisible by 5.

e. 12345
Unit place is 5
∴ 12345 is divisible by 5.

5. a. 738
∴ It is divisible by 2.
$7 + 3 + 8 = 18$ $(1 + 8 = 9)$
∴ It is divisible by 3.

∴ It is divisible by 6 since it is divisible by 2 and 3.

b. 8748
∴ It is divisible by 2.
8+ 7 + 4 + 8 = 27 (2 + 7 = 9)
∴ It is divisible by 3.
∴ It is divisible by 6 since it is divisible by 2 and 3.

c. 2127
∴ It is not divisible by 2 but it is divisible by 3(2 + 1 + 2 + 7 = 12)
∴ It is not divisible by 6.

d. 440
∴ It is divisible by 2.
4 + 4 = 8
∴ It is not divisible by 3
∴ It is not divisible by 6 since it is not divisible by 3.

e. 3926
∴ It is divisible by 2.
3 + 9 + 2 + 6 = 20 (2 + 0 = 2)
∴ It is not divisible by 3
∴ It is not divisible by 6 since it is not divisible by 3.

6. a. 10112
112 is divisible by 8.
∴ 10112 is divisible by 8.

b. 5232
232 is divisible by 8.
∴ 5232 is divisible by 8.

c. 5220
220 is not divisible by 8.
∴ 5220 is not divisible by 8.

d. 18920
920 is divisible by 8.
∴ 18920 is divisible by 8.

e. 20384
384 is divisible by 8.
∴ 20384 is divisible by 8.

7. a. 2304
2 + 3 + 0 + 4 = 9
9 is a multiple of 9
∴ 2304 is divisible by 9.

b. 29385
2 + 9 + 3 + 8 + 5 = 27
27 is a multiple of 9
∴ 29385 is divisible by 9.

c. 293921
2 + 9 + 3 + 9 + 2 + 1 = 26
26 is not a multiple of 9
∴ 293921 is not divisible by 9.

d. 111204
1 + 1 + 1 + 2 + 0 + 4 = 9
9 is a multiple of 9
∴ 111204 is divisible by 9.

e. 212257
2 + 1 + 2 + 2 + 5 + 7 = 19
19 is not a multiple of 9
∴ 212257 is not divisible by 9.

8. a. 48340
The last digit is 0
∴ It is divisible by 10.

b. 48355
The number is not divisible by 10

c. 29417
It is not divisible by 10

d. 98480
It is divisible by 10

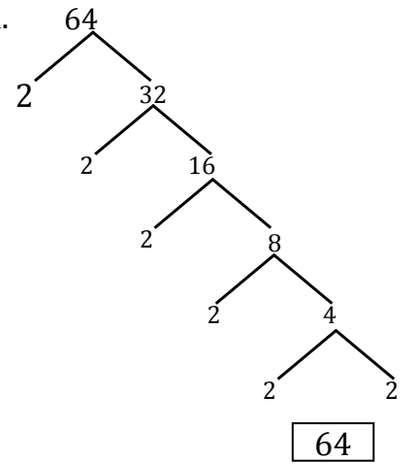
e. 10000
It is divisible by 10

9. i. 27 __2__ 4 divisible by 3.

ii. 1723 __0__ 4 divisible by 11.

iii. 639 __3__ 6 divisible by 9.

10. a.



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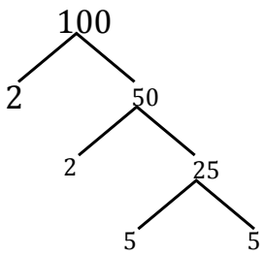
b.



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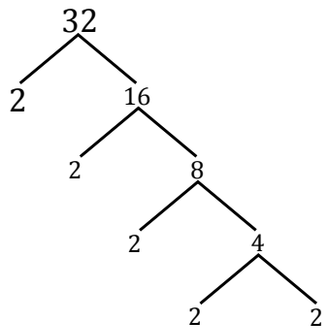
c.



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H.O.T.S:

1. YES: Numbers divisible by 8 are even numbers all even numbers are divisible by 2.
2. YES: Numbers divisible by 6 are even numbers all even numbers are divisible by 2.
3. NO: The numbers 2, 6, 10, 14. . . . are divisible by 2 but not by 4.
4. NO: The numbers 5, 15, 25 . . . . are divisible by 5 but not b 2.
5. YES: 12 is divisible by 3 Hence product of 12 in also divisible by 3.
6. NO: The numbers 4, 12, 20, 28 . . . are divisible by 2 and 4 but not by 8.
7. NO: 90, 180, 270 . . . are ending with 0 and still divisible by 9.

Page 27 and 28:

Exercise: 1.2

1. a. $240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$

$720 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5$

$HCF = 2 \times 2 \times 2 \times 2 \times 3 \times 5 = 240$

b. $224 = 2 \times 2 \times 2 \times 2 \times 2 \times 7$

$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

$128 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

$HCF = 2 \times 2 \times 2 \times 2 \times 2 = 32$

c. $140 = 2 \times 2 \times 5 \times 7$

$230 = 2 \times 5 \times 23$

$300 = 2 \times 2 \times 3 \times 5 \times 5$

$180 = 2 \times 2 \times 3 \times 3 \times 5$

$HCF = 2 \times 5 = 10.$

d. $120 = 2 \times 2 \times 2 \times 3 \times 5$

$168 = 2 \times 2 \times 2 \times 3 \times 7$

$264 = 2 \times 2 \times 2 \times 3 \times 11$

$HCF = 2 \times 2 \times 2 \times 3 = 24$

2. a. HCF of 384, 168 and 360

$$\begin{array}{r|l} & 2 \\ \hline 168 & 384 \\ & 336 \\ \hline & 48 \end{array}$$

HCF of 24 and 360

```
        3
48 ) 168
     144
      24

        15
24 ) 360
     24
     120
     120
       0

        2
24 )  48
      48
       0
```

HCF of 24

b. To find HCF of 480, 405 and 150

```
         1
405 ) 480
      405
       75

         5
75 ) 405
     375
      30

         2
30 )  75
      60
      15

         2
15 )  30
      30
       0
```

HCF of 480 and 405 is 15.

To find HCF of 15 and 150.

```
         10
15 ) 150
     150
       0
```

∴ HCF of 480, 405 and 150 is 15.

c. To find HCF of 512, 432 and 240

```
          1
432 ) 512
      432
       80

          5
80 ) 432
     400
      32

          2
32 )  80
      64
      16

          2
16 )  32
      32
       0
```

HCF of 432 and 512 is 16.

To find HCF of 16 and 240.

```
          15
16 ) 240
     16
     ---
      80
      80
       0
```

∴ HCF of 432, 512 and 240 is 16.

d. To find HCF of 180, 432 and 882

$$\begin{array}{r|l} & 2 \\ 180 & 432 \\ & 360 \\ \hline & 72 \end{array}$$

$$\begin{array}{r|l} & 2 \\ 72 & 180 \\ & 144 \\ \hline & 36 \end{array}$$

$$\begin{array}{r|l} & 2 \\ 36 & 72 \\ & 72 \\ \hline & 0 \end{array}$$

HCF of 180 and 432 is 36.

To find HCF of 36 and 882.

$$\begin{array}{r|l} & 24 \\ 36 & 882 \\ & 72 \\ \hline & 162 \\ & 144 \\ \hline & 18 \end{array}$$

$$\begin{array}{r|l} & 2 \\ 18 & 36 \\ & 36 \\ \hline & 0 \end{array}$$

$\therefore$ HCF of 180, 432 and 882 is 18.

3. a.

$$\begin{array}{r|l} & 1 \\ 966 & 1012 \\ & 966 \\ \hline & 46 \end{array}$$

$$\begin{array}{r|l} & 21 \\ 46 & 966 \\ & 966 \\ \hline & 0 \end{array}$$

HCF of 966 and 1012 is 46.

b.

$$\begin{array}{r|l} & 6 \\ 226 & 1356 \\ & 1356 \\ \hline & 0 \end{array}$$

HCF of 226 and 1356 is 226.

c.

$$\begin{array}{r|l} & 1 \\ 72 & 90 \\ & 72 \\ \hline & 18 \end{array}$$

$$\begin{array}{r|l} & 4 \\ 18 & 72 \\ & 72 \\ \hline & 0 \end{array}$$

HCF of 90 and 72 is 18.

d.

$$\begin{array}{r|l} & 1 \\ 35 & 42 \\ & 35 \\ \hline & 7 \end{array}$$

$$\begin{array}{r|l} & 5 \\ 7 & 35 \\ & 35 \\ \hline & 0 \end{array}$$

HCF of 42 and 35 is 7.

4.

a. Multiples of 8 $\Rightarrow$ 8, 16, 24, 32, 40, 48, 56, 64, 72, 80 . . .

Multiples of 12 $\Rightarrow$ 12, 24, 36, 48, 60, 72, 84, 96, 108, 120 . . .

Common multiples $\Rightarrow$ 24, 48, 72, 96, 120 . . .

b. Multiples of 4 $\Rightarrow$ 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, . . .

Multiples of 3 $\Rightarrow$ 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, . . .

Common multiples $\Rightarrow$ 12, 24, 36, 48, . . .

c. Multiples of 2 ⇒ 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, . . .

Multiples of 3 ⇒ 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, . . .

Multiples of 4 ⇒ 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, . . .

Common multiples ⇒ 12, 24, 36, 48, 60, 72, . . .

d. Multiples of 16 ⇒ 16, 32, 48, 64, 80, 96, 112, 138, 144, 160, . . .

Multiples of 4 ⇒ 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, . . .

Multiples of 12 ⇒ 12, 24, 36, 48, 60, 72, 84, 96, 108, 120, . . .

Common multiples ⇒ 48, 96, 144, . . .

e. Multiples of 10 ⇒ 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, . . .

Multiples of 20 ⇒ 20, 40, 60, 80, 100, 120, 140, 160, 180, 200, . . .

Multiples of 30 ⇒ 30, 60, 90, 120, 150, 180, 210, 240, 270, 300, . . .

Common multiples ⇒ 60, 120, 180, 240, . . .

5. a.

4	8,	12,	20
	2,	3,	5

LCM = 4 x 2 x 3 x 5 = 120

b.

5	10,	25,	40
2	2,	5,	8
	1,	5,	4

LCM = 5 x 2 x 5 x 4 = 200

c.

2	36,	60,	84
2	18,	30,	42
3	9,	15,	21
	3,	5,	7

LCM = 2 x 2 x 3 x 3 x 5 x 7= 1260

d.

11	44,	99,	121
	4,	9,	11

LCM = 11 x 4 x 9 x 11 = 4356

6. a. LCM of 24 and 25 = 24 x 25 (co-prime numbers)

b. LCM of 6, 10 and 15

6 = 2 x 3

10 = 2 x 5

15 = 3 x 5

LCM = 2 x 3 x 5 = 30

c. LCM of 8 and 12 is 24

∴ at 6:24 a.m. the clock will ring together.

d. The largest number is HCF of 135 – 15, 183 – 15, 375 – 15

HCF of 120, 168, 360

120 = 2 x 2 x 2 x 3 x 5

168 = 2 x 2 x 2 x 3 x 7

360 = 2 x 2 x 2 x 3 x 3 x 5

HCF = 2 x 2 x 2 x 3 = 24

e. LCM of 16 and 24 is 48

∴ at 8:48 a.m. both trains arrive together.

7.

1st No.	2nd No.	LCM	HCF	1 x 2	LCM x HCF
12	18	36	6	216	216
15	18	90	3	270	270
20	15	60	5	300	300
80	40	80	40	3200	3200
36	27	108	9	972	972
10	15	30	5	150	150
30	100	300	10	3000	3000
35	56	280	7	1960	1960
60	84	420	12	5040	5040

Chapter - 2 Metric Measures

Page 39 and 40:

Exercise: 2.1

1. a. = 1.547 km c. = .514 km

b. = .52 m d. = .9 m

2. Curved line

3. mm / cm / m

4. To be done by students.

5. a.
$$\begin{array}{r} 30\text{ cm }6\text{ mm} \\ +\ 24\text{ cm }8\text{ mm} \\ \hline 54\text{ cm }14\text{ mm} \\ \text{or} \\ 55\text{ cm }4\text{ mm} \\ \hline \end{array}$$

b.
$$\begin{array}{r} 2\text{ m }38\text{ cm} \\ 5\text{ m }24\text{ cm} \\ +\ 4\text{ m }75\text{ cm} \\ \hline 11\text{ m }137\text{ cm} \\ \text{or} \\ 12\text{ m }37\text{ cm} \\ \hline \end{array}$$

c.
$$\begin{array}{r} 1\text{ km }0\text{ m }990\text{ cm} \\ +\ 0\text{ km }6\text{ m }0\text{ cm} \\ \hline 1\text{ km }6\text{ m }990\text{ cm} \\ \text{or} \\ 1\text{ km }15\text{ m }90\text{ cm} \\ \hline \end{array}$$

d.
$$\begin{array}{r} 2\text{ km }\ 500\text{ m} \\ +\ 1\text{ km }\ 600\text{ m} \\ 60\text{ m} \\ \hline 3\text{ km }\ 1160\text{ m} \\ \hline \end{array}$$

6. a.
$$\begin{array}{r} 5\text{m }35\text{ cm} \\ -\ 2\text{ m }65\text{ cm} \\ \hline 2\text{ m }70\text{ cm} \\ \hline \end{array}$$

b.
$$\begin{array}{r} 5\text{ km }140\text{ m} \\ -\ 4\text{ km }320\text{ m} \\ \hline 0\text{ km }820\text{ m} \\ \hline \end{array}$$

c.
$$\begin{array}{r} 100\text{ km }1000\text{ m} \\ -\ 100\text{ km }\ 5\text{ m} \\ \hline 0\text{ km }\ 995\text{ m} \\ \hline \end{array}$$

d.
$$\begin{array}{r} 0\text{ km }999\text{ m }100\text{ cm} \\ -\ 200\text{ m }\ 95\text{ cm} \\ \hline 0\text{ km }799\text{ m }\ 5\text{ cm} \\ \hline \end{array}$$

7. Length of the wire = 9 m 25 cm
Length of wire that was cut out = 5 m 60 cm
Remaining length

$$\begin{array}{rrr} & 9\text{ m} & 25\text{ cm} \\ & 5\text{ m} & 60\text{ cm} \\ \hline \text{i.e} & 8\text{ m} & 125\text{ cm} \\ & 5\text{ m} & 60\text{ cm} \\ \hline \text{i.e} & 3\text{ m} & 65\text{ cm} \end{array}$$

= 3 m 65 cm

8. a. Rainfall in first 3 years
$$\begin{array}{r} 187.1 \\ 99.3 \\ +\ 275.9 \\ \hline 562.3 \\ \hline \end{array}$$

b. Highest is 2013

Lowest is 2015

c. 187.1 + 99.3 + 275.9 + 212.8 + 74.5 = 849.6

d. 275.9 – 74.5 = 201.4

Page 42:

Exercise: 2.2

1. Answer may vary.

2. both are equal in weight

3. a. 1964 g = 1.964 kg

b. 2200 g

c. 0.3 kg = 300 g

d. 1200 g

4. a.

	12 kg	13 gm
+	8 kg	4 gm
	20 kg	17 gm

b.

	530 gm
+	437 gm
	967 gn

c.

	3 kg	350 gm
+	5 kg	230 gm
	8 kg	580 gm

d.

	25 kg	625 gm
+	17 kg	825 gm
	42 kg	1450 gm

i.e 43 kg 450 gm

e.

	30 kg	170 gm
	18 kg	530 gm
+	7 kg	60 gm
	55 kg	760 gm

f.

	26 kg	600 gm
	36 kg	500 gm
+	6 kg	800 gm
	68 kg	1900 gm

$\Rightarrow$ 69 kg 900 gm

5. a.

	5 kg	480 gm
–	2 kg	378 gm
	3 kg	102 gm

b.

	19 kg	1000 gm
–	19 kg	250 gm
	750 gm	

c.

	49 kg	1185 gm
–	22 kg	275 gm
	27 kg	910 gm

d.

	8 kg	1135 gm
–	4 kg	684 gm
	4 kg	451 gm

e.

	68 kg	1056 gm
–	35 kg	936 gm
	33 kg	120 gm

f.

	97 kg	1003 gm
–	5 kg	368 gm
	92 kg	635 gm

6. $\frac{1}{2}$ kg + 500 gm

500 gm + 500 gm = 1000 g or 1 kg

7. 5000 – 650 = 4350 gm or

4 kg 350 gm of cake was used.

8. Weight of rice bag: 50 kg 750 gm

Weight of wheat bag: 45 kg 380 gm

Total weight = 95 kg 1130 gm or 96 kg 130 gm

9. Total weight

2 kg	000 gm
3 kg	500 gm
1 kg	275 gm
5 kg	550 gm
11 kg	1325 gm

$\Rightarrow$ 12 kg 325 gm

10. Weight after melting

2 gm	000 mg
0 gm	125 mg
1 gm	1000 mg
0 gm	125 mg
1 gm	875 mg

$\Rightarrow$ 1 gm 875 mg

Page 44 and 45:

Exercise: 2.3

1. Answer may vary

2. a. 3000 *ml*

b. 1375 *ml*

c. 9450 *ml*

d. 692 *l*

3. litre or millilitre

4. litre and millilitre

5. a) litre

b) *ml*

c) *ml*

d) *l*

e) *l*

6. a.

	15 *l*	3 *ml*
+	10 *l*	6 *ml*
	25 *l*	9 *ml*

b.

	37 *l*	96 *ml*
+	3 *l*	322 *ml*
	40 *l*	418 *ml*

c.

	12 *l*	000 *ml*
		250 *ml*
+	18 *l*	425 *ml*
	30 *l*	675 *ml*

d.

	45 *l*	000 *ml*
		225 *ml*
+	15 *l*	625 *ml*
	60 *l*	850 *ml*

7. a.

	12 *l*	925 *ml*
–	5 *l*	570 *ml*
	7 *l*	355 *ml*

b.

	1 *l*	370 *ml*
–		975 *ml*

1 *l* 370 *ml* = 1370 *ml*

1370 *ml* – 975 *ml* = 395 *ml*

c.

	25 *l*	750 *ml*
–	15 *l*	860 *ml*
	24 *l*	1750 *ml*
	15 *l*	860 *ml*
	9 *l*	890 *ml*

d.

	10 *l*	000 *ml*
–	4 *l*	372 *ml*
	9 *l*	1000 *ml*
	4 *l*	372 *ml*
	5 *l*	628 *ml*

8. Answers may vary (any 3 measurement)

9. Quantity of milk bought = 2 *l*

Quantity used to make coffee = 850 *ml*

Quantity of milk left =

1 *l*	1000 *ml*
	850 *ml*
1 *l*	150 *ml*

10. Quantity of water bought = 25.5 *l*

Quantity poured into the container = 12 *l* 650 *ml*

Quantity of water left in the big container =

25 *l*	500 *ml*
12 *l*	650 *ml*
24 *l*	1500 *ml*
12 *l*	650 *ml*
12 *l*	850 *ml*

11. Water in the container = 3 *l* 450 *ml*
= 2 *l* 1450 *ml*

Capacity of water bottle = 1.5 *l* = 1 *l* 500 *ml*

Water remaining in the container =

	2 *l*	1450 *ml*
–	1 *l*	500 *ml*
	1 *l*	950 *ml*

12. Capacity of lorry = 3000 *l*

Total water supplied is

	1050 *l*	275 *ml*
+	780 *l*	550 *ml*
	1830 *l*	825 *ml*

Water remaining in the container =

	3000 *l*	000 *ml*
–	1830 *l*	825 *ml*
	1169 *l*	175 *ml*

Page 51 and 52:

Exercise: 2.4

1. After how many hours does:

a. After 12 hours 12 am becomes 12 pm

b. After 6 hours 6'o clock becomes 12'o clock

c. After 6 hours 8'o clock becomes 2'o clock

d. After 7 hours 1'o clock becomes 8'o clock

e. After 5 hours 12'o clock becomes 5'o clock

2. After how many hours and minutes does:

a. After 9 hours and 30 minutes 4:55 becomes 2.25

b. After 2 hours and 30 minutes 3.25 becomes 5.55

c. After 4 hours and 40 minutes 3.45 becomes 8.25

d. After 1 hour and 30 minutes 6.00 becomes 7.30

3. Convert hours into minutes and minutes into seconds:

a. 2 Hours
= 2 × 60 = 120 minutes

b. 8 Hours
= 8 × 60 = 480 minutes

c. 12 Hours
= 12 × 60 = 720 minutes

d. 30 Minutes
= 30 × 60 = 1800 seconds

e. 22 Minutes
= 22 × 60 = 1320 seconds

f. 12 minutes
= 12 × 60 = 720 seconds

4. Convert seconds into minutes and minutes into hours:

a. 60 seconds
$= \frac{60}{60} = 1$ *minute*

b. 120 minutes
$= \frac{120}{60} = 2$ *hours*

c. 180 seconds
$= \frac{180}{60} = 3$ *minutes*

d. 240 minutes
$= \frac{240}{60} = 4$ *hours*

e. 300 minutes
$= \frac{300}{60} = 5$ *hours*

5. Complete the table:

	Starting time	Ending time	Duration hours / min
School	8.30 a.m.	3.30 p.m.	7 hours
Lunch break	12.20 p.m.	1.00 p.m.	40 minutes
Movie	3.15 p.m.	5.45 p.m.	2 hours 30 minutes
Cricket coaching	5:30 a.m.	7.00 a.m.	1 hour 30 minutes

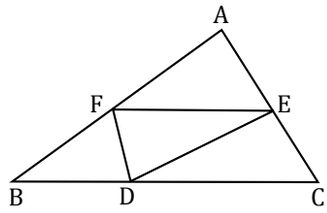
Chapter 3

Geometry

Page 60-62:

Exercise: 3.1

1. Count and name all the triangles in the figure:



Δ AFE

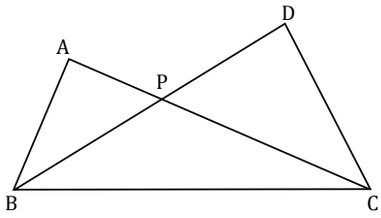
Δ DEF

Δ FBD

Δ ABC

Δ EDC

2. In the adjoining figure name:



a. Δ PAB
Δ PCD
Δ PBC
These triangles have P as one of their vertices

b. Δ DBC
Δ ABC
These triangle have BC as a side

3.

a. Using lengths of the sides, triangles can be classified as a equilateral, isosceles and scalene triangles.

b. A triangle is called isosceles if two of its sides are of equal length.

c. A triangle is called equilateral triangle if all its sides are equal.

4. Name the triangle classified by lengths of its sides:

a. 4 cm, 7 cm, 4 cm = isosceles triangle

b. 3.5 cm, 3.5 cm, 3.5 cm = equilateral triangle

c. 4 cm, 5 cm, 7 cm = scalene triangle

5. Write the types of triangles whose measurements are

a. AB = 25 cm BC = 25 cm CA = 34 cm
Isosceles triangle

b. PQ = 3 cm, QR = 4 cm, RP = 5 cm
Scalene triangle

c. XY = 48 cm YZ = 47 cm ZX = 48 cm
Isoscles triangle

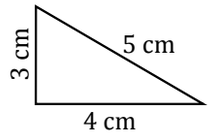
d. AW = 12 cm, WB = 12 cm, BA = 12 cm
Equilateral triangle

e. AB = 100 mm, BC = 1 cm, CA = 100 mm
Equilateral triangle

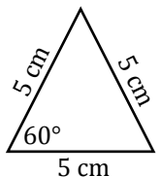
f. VA = 2.3 m, NA = 230 cm, NV = 2300 mm
= 2300 mm = 2300 mm
Equilateral triangle

g. AB = 1 m = 1000 mm
BC = 100 cm – 1000 mm
CA = 1000 mm = 1000 mm
Equilateral triangle

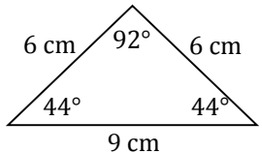
6. Classify the triangles by its angles.

a. 

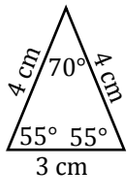
= right triangle

b. 

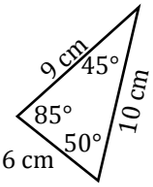
= equilateral triangle

c. 

= Obtuse triangle

d. 

= Acute triangle

e. 

= Acute triangle

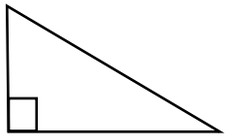
7. Name triangles classified by angles.

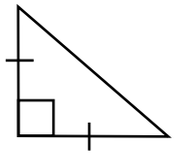
a. 35°, 40°, 105° = Obtuse triangle

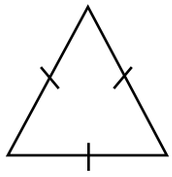
b. 65°, 70°, 45° = Acute triangle

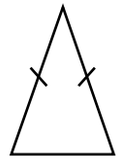
c. 25°, 65°, 90° = Right triangle

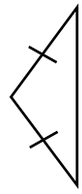
8. Classify the following triangle by angles and sides. Equal sides and equal angles, if any, are indicated in each diagram.

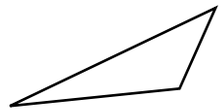
a.  Right scalene triangle

b.  Right isosceles triangle

c.  Acute equilateral triangle

d.  Acute isosceles triangle

e.  Obtuse isosceles triangle

f.  Obtuse scalene triangle

9. State which of the statements is true in a triangle.

a. Two angles are obtuse angles (false)

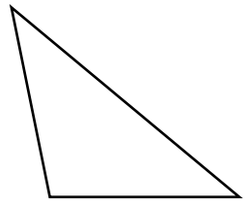
b. Any two angles form a liner pair (false)

c. Each angle has to be less than 90°(false)

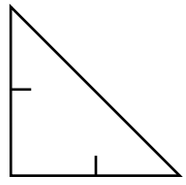
d. An equilateral triangle is isosceles (true)

e. The angles are 45°,40°and 105°(false)

10. Draw a rough diagram for each of the following triangles. Are there any triangles that are impossible to draw?

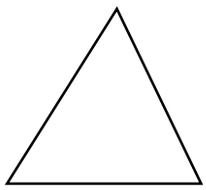
a. 

Obtuse Scalene triangle

b. 

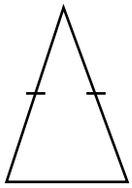
Right Isosceles triangle

c. Not possible to draw Obtuse equilateral triangle

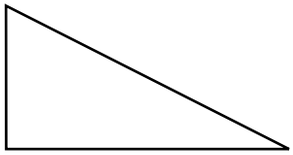
d. 

Acute Scalene triangle

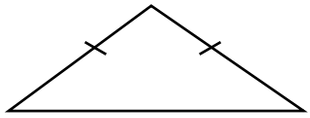
e. Not possible to draw Right equilateral triangle

f. 

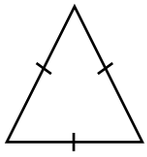
Acute Isosceles triangle

g. 

Right Scalene triangle

h. 

Obtuse Isosceles triangle

i. 

Acute equilateral triangle

Page 66:

H.O.T.S:

1. $2x + 110 = 180$

   $2x = 180 - 110$

   $2x = 70$

   $x = \frac{70}{2} = 35^0$

2. $14x + 9x + 7x = 180$

   $30x = 180$

   $x = \frac{180}{30} = 6$

   A $= 14 \times 6 = 84^0$

   B $= 9 \times 6 = 54^0$

   C $= 7 \times 6 = 42^0$

Chapter 4

Information Processing

Page 71 and 72:

Exercise: 4.1

1. From the tress given below form numerical expressions:

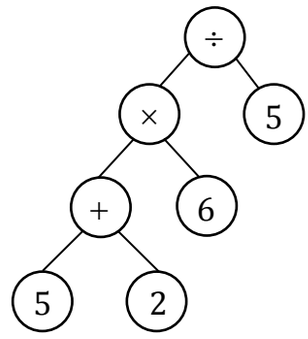
a) $2(x + 3) \div (x + 3)$

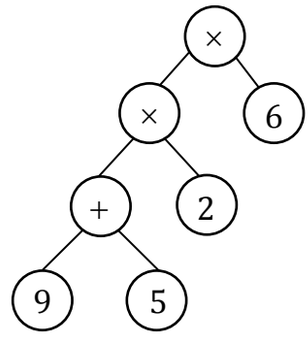
b) $(2 - 1) + (6 + 4) \times 3 + (4 - 2)$

c) $3 + (3 - 1) - (2 - 1) \times (4 + 2) + (3 - 1)$

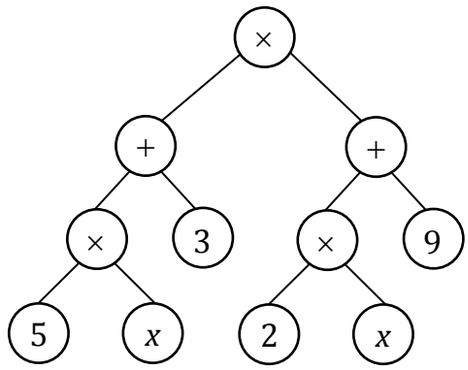
d) $(x + 4) + 3 \div (3x - 1) + 7$

2. Draw tree diagram for the expressions below

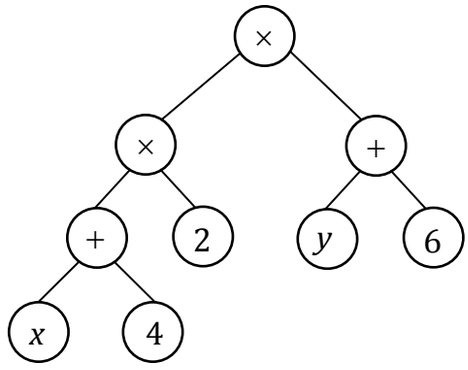
a. 

b. 

c.



d.



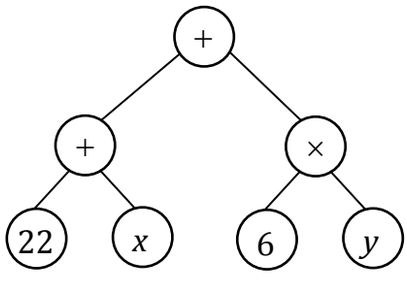
3. Draw tree diagram for the given algebraic statements.

a. 22 more than my age added to 6 times my friend's age.

My age = x

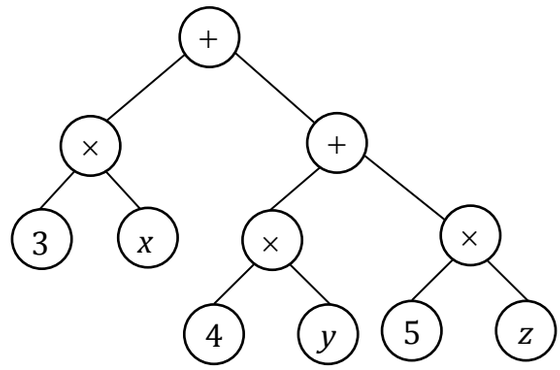
Friend's age = y

Algebraic expression = $(22 + x) + 6y$



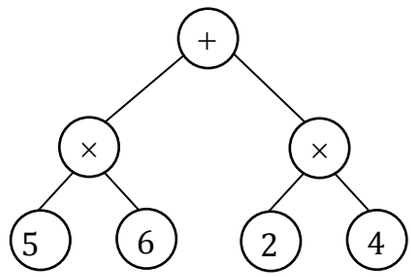
b. Let cost of pens be x, pencils by y and erasers be z.

Algebraic expressions = $3x + 4y + 5z$

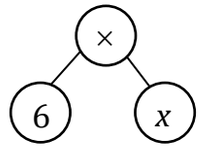


4. Draw tree diagrams for the following.

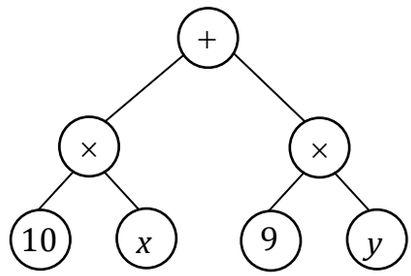
a.



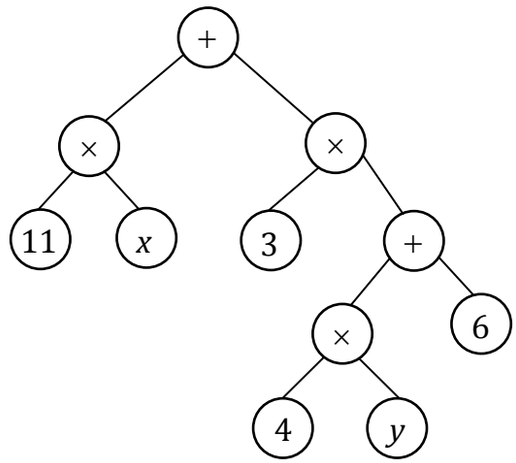
b.



c.



d.



CLASS : 6 KEY ANSWERS TERM : II

Chapter 1 HEAT

EVALUATION:

I. Who am I?

1. Clinical thermometer
2. Mercury
3. Sun
4. Kelvin

II. Identify whether the following are true or false; correct if it is false:

1. false - more in liquids
2. false - increases
3. false - 98.4°F
4. true
5. false - heat and light

III. Choose the correct answer:

1. silver
2. all
3. hot, cold
4. gas, liquid, solid
5. calorie

IV. Complete the following:

1. nichrome
2. combustion
3. more
4. liquid
5. thermal imaging

V. Answer the following questions

1. Oone form of energy
2. Temperature is a measure of degree of hotness or coldness of a body
3.
   - It is a natual sources of Vitamin D.
   - It helps plants prepare food.
   - It provides a heat and light.
   - It is an essential parts of water cycle.
4. To accommodate for expansion during summer.
5. Metal rims are heated so that it expands and then it is fixed over the wheel. Then it is cooled so that it has a tight fiting.
6. Those which allow heat energy to pass through them. Eg: copper, silver
7. Thermostats are fixed to heating devices to keep a constant temperature. They undergo thermal expansion and break the circuit if the required temperature is reached. This prevents overheating and hence conserve energy.
8. Yes. Friction produces heat energy.
9. a) From cup to body

   b) From air particles to body

   c) From body to air

VI. Match the following:

1. (e) Joule
2. (c) No heat transfer
3. (d) hot to cold
4. (b) Kelvin
5. (a) cracking of walls in summer

VII. H.O.T.S:

1. They contain a thermostat which expands and cuts off the circuit at the resent temperature.
2. Bakelite is used as it is non-conductor of heat.
3. Glass is poor conductor of heat; Hence expansion on the inner and outer sides will be uneven.

4. Cotton absorbs sweat and keeps us cool during summer. Wool and silk are bad conductors and hence holds our body heat, thereby keeping us warm.
5. Running hot water on a tight lid of a jar will loosen it due to thermal expansion.

Chapter 2 ELECTRICITY

Activity 2.1:

S. No.	Appliance	Source of current
1	Car	Battery and fuel (petrol or diesel)
2	Wrist watch	Cell
3	Grinder	AC power supply
4	Mobile phone	Rechargeable battery
5	Satellite	Solar cell and battery
6	Torch light	Battery
7	Elevator	AC power supply

Activity 2.2:

S. No.	Material	Observation
1	Iron nail	Yes
2	Rubber band	No
3	Silver spoon	Yes
4	Brass spoon	Yes
5	Piece of wood	No
6	Glass rod	No
7	Pencil lead	Yes

Activity 2.4:

- Case 1 to 5 will not glow.
- In case 6 aluminium wire is a conductor. So bulb will glow.

EVALUATION:

I. Who am I?

1. Conductor
2. Magnetic compass needle
3. Electric eel
4. Tungsten
5. Nichrome

II. Choose the correct answer:

1. d 2. a 3. d 4. b 5. c

III. Complete the following:

1. Uranium or plutonium

//(Note to teacher: student can name any nuclear fuel. Nuclear fuel is also a correct answer)//

2. Battery 3. mechanical

IV. Match the following:

1. (b) AC Source
2. (c) DC Source
3. (d) glowing bulb
4. (e) open circuit
5. (a) grounding

V. Identify the odd one in each group; assign suitable reasons:

1.	Iron nail	It is a conductor. Others are Insulators
2.	Electric iron	Uses heating effect of current. Others use magnetic effect of current
3.	Hydro electric power station	generates electricity in large scale. Others generates electricity in smaller scales.
4.	Electroplating	Involves chemical effect of current. Others - heating effect

VI. Answer the following questions:

1.	Conductors:	steel spoon, silver spoon, copper wire, mercury, human body
	Insulator:	sand, salt (note to teachers: mention in class that salt, when dry is an insulator, but when it is dissolved in water, it is a conductor)

2. i) Hydro electricity
   ii) Thermal power stations
   iii) Wind mills
   iv) Nuclear power station
3. A closed path in which charges or current flows is called an electric circuit.
4. i) Usage of energy – saving CFL, LED bulbs instead of incandescent bulbs
   ii) Switch – off appliances when not in use.
   iii) Use stairs to go down instead of lift.
5. Both A and R are true. R explains A

Chapter 3 CHANGES AROUND US

EVALUATION:

I. Fill in the blanks:

1. slow, fast
2. chemical
3. endothermic
4. Periodically
5. Saturated

II. Choose the most suitable answer:

1. reversible
2. slow, irreversible
3. fast, periodic
4. irreversible, exothermic
5. desirable, slow
6. man-made
7. A is true and R is false

III. Answer in 1 or 2 sentences:

1. Changes that require long time to get completed eg: growth of plant, rusting of iron, ripening of fruits.
2. Periodic changes occur repeatedly at definite intervals of time. Non-periodic changes occur at any time and are not repeated at regular time intervals.
3. Changes that are useful to us are called desirable changes. For example, ripening of fruits and cooking of food. Changes that are not useful or cause difficulties to our normal day to day life are called undesirable changes. For example, breaking of things and earthquakes.
4. In some reactions, heat is released. They are called exothermic reactions. Eg: burning of paper, coal, petrol.

   In some reactions, heat energy is absorbed, they are called endothermic changes, e.g. glucose dissolved in water, ice changing to water.
5. Yes it is. The folded paper boat can be unfolded into sheet of paper carefully.
6. When air is blown, balloon expands. When it is released, air goes out and balloon regains its original nature. This is reversible. When we prick a balloon, a hole is formed. Hence it cannot be expanded if we blow, as air will leak through the hole. This is irreversible.

IV. Circle the odd one and give a reason:

1. Germination of seed – slow change

   Bursting of crackers, burning of paper, bursting of balloon – fast change
2. Rusting – Irreversible change

   Melting, condensation, freezing – reversible changes

V. Analogy:

1. Evaporation
2. Exothermic

VI. True or False. Correct if false:

1. True: The pieces cannot be joined to get original shape of vase.
2. False: It involves absorption of heat. Hence it is an endothermic change.
3. True: It takes place in a very short time.
4. True: Small particles have small area and are more soluble.
5. True: Camphor kept in open will sublime.

VII. Answer the following in detail:

1. *Refer textbook - Page No. 30*
2. (a) It is a slow change as it takes long time for coal to burn.
   (b) It is an irreversible process as coal cannot be got back.
3. Iron undergoes physical change as its shape alone is modified.
4. Curdling of milk with lime is a fast irreversible chemical change.
5. The two components of a solution are solute and solvent. *Refer textbook - Page No. 33*

VIII. Higher Order Thinking Skills:

1. **Heating**
   - When heated, body becomes hot and no new substance is formed.
   - Hot substance can be cooled.
   - It is reversible.
   - Eg: heating water, heating a table spoon.

   Burning
   - While burning the substance combines with oxygen in air to form new substances.
   - It is irreversible.
   - Burning of paper, burning of wood.
2. Making of dry clay into wet clay is reversible (we have to supply water to make clay wet).

   Making pots out of wet clay is also reversible (shape of the pots can be varied when clay is wet).

   Baking of the pots is irreversible (once the pots are baked then supplying water or breaking it have no effect on it. It is irreversible).
3. Rusting: The pot hanger is made of iron and may rust due to contact with moist air.

   Photosynthesis: Plants prepare food by a chemical irreversible change called photosynthesis.

   Combustion: Burning of candle is due to combustion of wax.

   Digestion: Digestion is an exothermic chemical irreversible change where food is broken down to give energy.

   Anaerobic respiration is a periodic process.

   Cooking is an endothermic chemical change.

IX. Group activity to be done by students.

X. Application in real life:

1. It is an undesirable change.
2. Silver articles can be protected by keeping them in moist free air tight boxes.

Chapter 4 AIR

EVALUATION:

I. Match the following

1. Weather Changes
2. Ozone
3. Coldest layer
4. Charged Ions
5. Space shuttles

II. Complete the following:

1. Earth
2. Gravity
3. Antoine Lavoiser

4. Nitrogen
5. Joseph Priestly
6. Oxygen
7. Greenhouse gases or carbon dioxide

III. Answer the following:

1. Lithosphere, hydrosphere, atmosphere and biosphere.
2. The realm where the land, water and air meet is called biosphere.
3. It is considered a blanket because it keeps the earth warm.
4. According to Indian philosophy the panchabuthas are Earth (prithvi) Water (Jala) Fire (tejas) Wind (Vayu) and Space (akash).
5. Joesph Priestly used a sealed inverted transparent container in which he used a lighted candle, a live mouse and both together with a plant to test the properties of air.
6. The candle extinguishes after sometime, because it uses up all the oxygen in the container.
7. The mouse dies after sometime as it uses up the available oxygen and the mouse does not have any more oxygen to breathe.
8. Priestly put a plant in the container along with a mouse. Then he observed that the mouse did not die. He inferred that there was something in air that helped the moue live. Without the plant the mouse consumed all of that substance. With the plant, it seemed like the substance that helped the mouse live got replenished. Hence the mouse lived.
9. Priestly put a plant in the container along with a burning candle. Then he observed that the candle fire extinguished. He inferred that there was something in air that helped the candle burn. Without the plant the candle consumed all of that substance. With the plant, it seemed like the substance that helped the candle burn got replenished. Hence the candle continued to burn.
10. Put some hydrilla in an inverted funnel filled with dechlorinated water. Place attest tube filled without air bubbles with the same water over the funnel. Keep it in sunlight for atleast 8 hours.

    You will slowly start seeing some air bubbles in the test tube. Carefully empty the water in the test tube without disturbing the air bubble and seal the test tube with your thumb. Light a match stick and hold it near the mouth and release your thumb. You will find the matchstick bursting into a flame. This proves that the bubble inside was oxygen released by the hydrilla as oxygen is a highly flammable.
11. The easiest test for detecting carbon dioxide is to pass it through a solution of lime water. This is because carbon dioxide reacts with calcium hydroxide solution to give calcium carbonate which is insoluble. Take a solution of lime water in a beaker. Blow bubbles through a straw. You will find that the lime water slowly turns milky proving that the air blown has carbon dioxide.
12. When you take a container just out of the fridge, due to the temperature difference the water vapour around the container condenses in water droplets. This is why you see water on a container just taken out of the refrigerator.
13. *Refer textbook Page No. 43 - "The atmosphere... rainfall".*
14. *Refer textbook P. No. 43* - "Solids ... processes".
15. Burning of a substance in air to give out heat and light is called combustion.
16. *Refer textbook P. No. 44 & 45 - Section 4.5.1.*
17. *Refer textbook P. No. 45 - Section 4.5.2.*
18. Carbon dioxide + Water $\xrightarrow[chlorophyll]{sunlight}$ carbohydrate + oxygen
19. *Food + oxygen → Carbon dioxide + water + energy*

IV. Analogy:

1. Carbon dioxide: support extinguishes fire
2. Ozone: stratosphere

V. Higher Order Thinking Skills:

1. No. Lack of atmosphere survival of plants or animals.
2. The air in the coastal area is humid because of the presence of sea. Rate of evaporation will be higher near coastal areas.

Chapter 5

STRUCTURAL ORGANISATION OF A CELL

EVALUATION:

I. Who am I?

1. Cell
2. Mitochondria
3. Nucleus
4. Vacuole
5. Lysosome
6. Chlorophyll (Plastids with pigment)

II. Fill in the blanks:

1. Microscope
2. Robert Hooke
3. Plant cell
4. Amoeba/Bacteria
5. Water
6. Cell organelles
7. Ribosomes
8. Nucleus

III. Say whether the following statements are 'true' or 'false':

1. True
2. False
3. False
4. False
5. True

IV. Arrange in a correct sequence:

1. Insect egg, Hen egg, Ostrich egg
2. Bacteria, Spirogra, Mango tree

V. Analogy:

1. Neem tree
2. Multicellular

VI. Answer the following questions in one or two lines:

1. Plastids are cell organelles that are found only in plant cells.
2. Cell membrane is the outermost layer of an animal cell.
3. Leucoplasts are colourless plastids.
4. Plant cells have a large central vacuole while in animal cells, there is either no vacuole or a small vacuole that acts as a storage compartment.
5. Ribosomes are organelles that stick on to the endoplasmic reticulum giving it a rough appearance.

VII. Answer the following questions:

1. Lysosomes destroy any pathogens like bacteria that enter the cell. If required they can destroy their own cells if the entire cell is defective. Hence they are known as the 'suicide bags' of the cell.
2. The nucleus contains chromosomes with genes. These are responsible for transfer of characters from one generation to the next.
3. The cell membrane is semipermeable because it allows entry and exit of only certain substances in and out of the cell through its tiny pores.
4. An animal cell does not have a rigid cell wall around its cell membrane. This enables them to develop different shapes and structures.

Chapter 6

ORGANISATION IN ORGANISMS

EVALUATION:

I. Match the following:

1.	Vitamin D synthesis	d	iii
2.	Process of taking in air	a	iv
3.	Production of various blood cells	e	i
4.	Walls of blood vessels and lining of internal organs	b	v
5.	Secretion of hormones	c	ii

II. Rearrange in the right order, the levels of organisation in the living world :

Cells, Tissues, Organs, Organ system, Organism

III. Identify the systems these organs belong to:

1. Nervous system
2. Digestive system
3. Excretory system
4. Circulatory system
5. Integumentary system

IV. Answer the following questions in one or two lines.

1. Digestion is the breakdown of foods into a soluble form that can be absorbed by the blood and carried to all parts of the body. The main parts are the mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus and the associated glands or digestive glands like the liver and pancreas.
2. The male gametes are produced in the testes, and the female gametes in the ovaries.
3. The skeletal and muscular system are involved in movement and locomotion.
4. The heart pumps blood to all parts of the body.

V. Answer the following questions:

1. The nervous system consists of the brain, the spinal cord and the nerves. The nervous system is divided into the central nervous system and the peripheral nervous system.

   The brain and the spinal cord, make up the central nervous system (CNS). The cranial nerves attached to the brain, and the spinal nerves attached to the spinal cord, make up the peripheral nervous system (PNS).

2. Hormones are chemicals secreted directly into the blood stream, to be carried to their target organs. They are secreted by ductless glands present in our body that make up the endocrine system. The pituitary, thyroid, pancreas and adrenal are examples of endocrine glands.

3. Oxygen is taken in by the respiratory system from the air and is carried to different parts of the body by blood. The process of taking in air is called inspiration. This oxygen is used to breakdown the digested food to produce energy. Carbon dioxide, which is produced during this process, is eliminated out of the body.The process of giving out air that is rich in carbon dioxide is called expiration.

4. Since the skeletal muscles are attached to the bones, they help in giving shape to the body and make movements possible. The muscular system helps us to maintain our posture when we walk, stand or sit. They generate heat as a by-product of muscle activity, which helps in maintaining body temperature. Smooth muscles and cardiac muscles are involuntary and help in movement of the organs concerned.

CLASS : 6 KEY ANSWERS TERM : II

HISTORY

Chapter 1

CHANGES WROUGHT BY IRON

I. Fill in the blanks:

1. Rig veda
2. Cattle
3. Rajan
4. Cattle rearing and agriculture
5. Grey ware

II. Write short notes on:

1. **Rig Vedic Period**

   Early vedic period is called the Rig vedic period. Main occupations of the people were cattle rearing and agriculture. The chief of the tribe was called as Rajan. Jana [tribe] and vish [clan] consisted of a group of villages. They used Bronze and Copper. They worshiped nature gods such as Varuna [water], Agni [fire], Atithi [the mother of the Gods] and Ushas [dawn].

2. **Megalithic Period**

   Huge rocks of different sizes and shapes are called Megaliths [In Greek, Megas means 'great' lithos means 'stone']. The practice of erecting mega liths is believed to have bigen over 3000 years ago. The period associate with megaliths is known as mega lithic Age. Adichanallur in as Thoothukudi district in south Tamil Nadu and Keezhadi in Sivaganga districts are megalithic sites.

III. Answer the following briefly:

1. **Early Vedic Period:**
   a) People worshipped nature gods such as Indra, Agni, Atithi and Ushas.
   b) Sacrifices and Chanting of verses started gaining significance.

   Later Vedic Period:
   a) People worshipped Brahma, Vishnu and Shiva.
   b) Yagas or rituals were conducted.

2. Rig Vedic man prayed to nature to gain natural favour of Varuna [water], Agni [fire], Atithi [the mother of gods].

3. **Megaliths:**
   Megaliths are structures made up of large stones without using cement or mortar.

   Microliths:

   Microliths are small stones usually made of flient or chert typically a centimeter in length and half centimeter wide.

4. Iron age in India emerged in the Vedic period [1500-600 BCE]. Several type in the Vedic period [1500-600 BCE]. Several types of Iron weapons, such as spades, knives, swords, javelins, spears, hatches and daggers were used. Iron weapons were heated and hammered into shape rather than cast, making them stronger, less brittle and more reliable.

IV. Answer in the following in detail:

1. In the vedic period the people paid a lot of emphasis to cattle because:
   - Cow is considered as a sacred animal as it provides milk.
   - Cow is considered as a symbol of divine bounty of earth.
   - Cow is used for ploughing the land for agriculture.
   - Cow is considered as Devata because it takes less from us and gives us more(like milk and ghee).

2. The large scale spread of agriculture in an area under thick forest coverage was possible only on greater use of iron tools and implements for clearing land.
   - Iron was also used for making weapons.
   - Iron axes helped in the clearance of fertile gangetic plain. As a result agricultural production increased.
   - Iron implements were also used for hunting.
   - Iron was harder than copper and bronze. It was cheap and available in plenty.

3. - The tribe was under the rule of Rajan.
   - Rajan exercised his powers accordingly to the will of sabha and samiti.
   - Rajan was seen as the custodian of social order and the protector of the state.
   - The position of the rajan started to become hereditary. (i.e. going from father to son).
   - Rajan controlled the production of resources.

4. Brahmagiri megalithic site:

   Skeletons were found with gold beads, stone beads, copper bangles and a conch shell. Other skeletons had been buried with only a few pots.

   a. These differences shows that some were rich, others poor, some chiefs and others followers.

   b. The remains excavated also suggest the use of iron tool and implements.

   c. The archaeological evidence and Iron artifacts that have been found show that people were engaged in several different occupations. These include carpenters, cobblers, craftsman and gold smiths.

   d. In Adichanallur megalithic site 160 burial urns were found.

   e. This area shows evidence of having mining centers where ores if gold, copper and iron were extracted.

   f. A figurine of Mother Goddess tell us about religious beliefs.

   g. Keezhadi: Excavation site on the banks of river vaigai in sivagangai district shows that there was trade with Rome in Italy.

V. Tick the appropriate answer:

1. a) Both A and R are true and R is the correct explanation of A.

2. d) Jana<Grama<Kula<Vis<Rashtra

Chapter 2

AWAKENING: THE WISDOM OF NON-VIOLENCE

I. Fill in the blanks:

1. Siddhartha
2. 24
3. Hinayana, Mahayama
4. Lichchhavi clan

II. Write short notes on:

1. The Four Noble Truths
   - Life is full of suffering.
   - Desire is the cause of suffering.
   - Suffering can be dispelled by giving up desires.
   - We can give up our desires by following Noble Eightfold path.

2. The Noble Eightfold Path
   a. Right observation
   b. Right intention
   c. Right speech
   d. Right conduct
   e. Right livelihood
   f. Right effort
   g. Right mindfulness
   h. Right meditation

3. Numerous religious sects arose in the middle Gangetic plains in the 6th century BCE. Vardhamana Mahavira and Gautama Buddha both disputed the authority of the Brahmanas.

III. Match the following:

1.	Buddha	-	Sarnath
2.	Jainism	-	Digambaras
3.	Samyak darshana	-	Triratnas
4.	Mahavira	-	Kevala Jnana

IV. Analytical thinking:

1. a) Society was divided into different caste based on professions.

   b) The caste system lead to inequality in society.

   c) Common people could not afford to spend on expensive religious rituals.

   d) Most of the common people could not understand Sanskrit which was the language of the scriptures.

   e) There were caste clashes.

2. People who were following complex rituals and blind beliefs were drawn to Buddhism for its simplicity and religious tolerance.

   People could easily understand and follow the Eight Fold path.

   Buddhism (preached in Prakrit) was easily understood by the common people.

   Buddha's calm composure, sweet words, his simple philosophy and his life of renunciation drew the masses to him.

   Buddhism was inexpensive and had no rituals.

   Buddhism did not believe in caste distinctions.

   Nalanda and Vikramasila Universities played an important role in the spread of Buddhism because the students of these universities were attracted towards Buddhism.

3. Ahimsa, is a term meaning non violence or 'to do no harm'. Buddhists and Jains always condemned the killing of all living beings. Vegetarianism was favoured by both religions.

4. Salvation means moksha or mukti which means liberation or release from the cycle of births and deaths.

   Right view: Our actions have consequences so our perception should be correct.

   Right intention: This aims at peaceful renunciation.

   Right speech: No lying and no rude speech.

   Right conduct: Proper behavior with due respect to all.

   Right livelihood: Only possessing, what is essential to sustain life.

   Right effort: To do the right in order to achieve the goals.

   Right meditation: Placing the mind's focus on the truth.

   Right mindfulness: Right and positive thinking with the aim of doing good.

V. Answer the following in detail:

1. The chief objective of life according to Mahavira is to attain salvation.

   He wanted to practise ahimsa for which advocated Tri Rathnas or Three Jewels that is Right faith, Right knowledge and Right character.

   Non Violence (ahimsa), Truthfulness (satya), Non stealing (asteya), Chastity (brahmacharya), Non-possession (aparigraha) were observed by Jain monks.

   Mahavira treated all the people equally and treated them with respect and dignity.

   Mahavira also opposed the caste system as it is.

   From his teachings it is evident that Mahavira was more of a reformer than a founder.

2. **Similarities:**

a) Both Gautama Buddha and Mahavira belonged to princely families and to priestly families.

b) Both denied the existence of God, performing sacrifices and rituals.

c) Both accepted the theories of Karma, Rebirth and Moksha.

d) Both of them preached in prakrit, the language of the common people.

e) Ahimsa was the prominent principle of both the religions.

f) Three gems of Jainism were Right philosophy, Right knowledge, Right character.

Three gems of Buddhism were Buddha, Dhamma ad Sangha.

Differences:

a) Buddhism did not believe in the existence of soul whereas Jainism believed that it existed.

b) Buddhism emphasized eight noble truths whereas Jainism emphasized on Right faith, Right knowledge and Right character.

c) Buddhism spread to foreign countries but Jainism did not travel outside the boundaries of India.

Chapter 3

THE AGE OF SECOND URBANISATION: FROM CHIEFDOM TO EMPIRE

I. Fill in the blanks:

1. Ashwamedha Yagna
2. 16
3. Vajji
4. Asmaka
5. Gana mukhya

II. Write short notes on:

1. **The Second Urbanisation:**

The time period between 6th century BCE to 3rd century BCE which witnessed large-scale growth of urban centres and towns in the middle Gangetic basin, came to be known as the period of second urbanization.

2. **Trade in the Mahajanapadas:**

The use of iron implements in agriculture lead to improvement in agricultural production.

Internal and external trade flourished through land and sea routes.

3. **Punch-marked coins:**

As trade expanded, punch-marked copper and silver coins came into use for the first time in India during the period of Mahajanapadas.

III. Match the following:

1. Chola – Sangam period
2. Magadha – Bimbisara
3. Alexander – Macedonia
4. Assaaka – Godavari
5. Vajji – Ganasangha

IV. Answer in the following in detail.

1. a) Magadha was located close to rivers like the Ganga and Son. These rivers made the land fertile for agriculture.

b) Magadha had large deposits of iron ore. The use of iron weapon was instrumental in the growth of Magadha politically and economically.

c) Magadha attained prosperity with the progress of agriculture and trade.

d) Elephants which could be trained to be used in wars, helped Magadha organize a huge army.

e) Rulers of Magadha annexed other Janapadas, thus making it a larger kingdom.

2. The growth of trade and industry formed rich trading and industrial communities in towns. Later this led to the formation of several sub-caste.

3. **Mahajanapadas**

   Many of the cities were fortified.

   This might have been done to protect the territory form the attack of enemies.

   Indus Valley
   Most of the cities had a raised area called the citadel.

   It is believed to have been used by the security guards to check the approach of enemies.

4. **Mahajanapadas**
   The rajas of the janapadas fought among themselves for control over land.

   Most mahajanapadas were monarchical in structure with the king as the supreme leader.

   Vedic period
   The Ashwamedha yagna was conducted to determine the power of a particular raja.

   The rajan was seen as the custodian of social order and protector of the state.

5. With the expansion of population in the Gangetic area, large tracts of land were made ready for agriculture, and settlements were formed. The extensive use of Iron in agriculture and weapony led to surplus agricultural production and the formation of large territorial states.

V. Answer the following questions:

1. Probably for the first time in Indian history the kings of the mahajanapadas began to collect regular taxes from common people who were engaged some form of employment.

   The taxes were used to expand and safeguard territory, build forts and employ a standing army.

2. **First urbanization:**
   First Urbanisation in India started around 3000 BCE.

   It was centered on the bank of the river Indus known as Indus Valley civilization.

   People did not know the use of Iron.

   In trade, the barter system was followed.

   The people worshipped mother goddess Mahayogi, Pasupathi, Sivalinga trees, snakes and bulls.

   Second Urbanisation:

   The second urbanization in India took place in about 600BCE.

   It was centered in the middle Gangetic basin.

   The use of iron became extensive and lead to surplus production.

   With expansion of trade, punch-marked copper and silver coins came into use.

   Two important religions Buddhism and Jaininsm arose at this time.

3. By the 6th century BCE the Aryan population had expanded to the Gangetic plains. By this time, same changes were taking place in the ways in which the rajas were chosen. In very early times, the raja was probably chosen by the people. Later some man came to be recognised as rajas by performing very big ritual sacrifies. The Ashwamedha was one such ritual conducted to determine the power of a particular raja.

   With the expansion of population in the Gangetic area, large tracts of land were made ready for agriculture, and settlements were formed.

   The extensive use of iron in agriculture and weaponry led to surplus agricultural production and the formation of large territorial states.

   These new settlements had well developed trading centres and towns. They came to be known as janapadas instead of janas and their leaders came to be known as rajas.

The janapadas had well-defined territories which extended up to the Godavari basin. This time period 6th century BCE to 3rd century BCE, which witnessed large-scale growth of Urban centres and towns in the middle Gangetic basin came to be known as the period of second urbanisation. The first urbanisation was that of the Indus valley civilisation.The rajas of the janapadas fought among themselves for control over land. Whoever controlled the maximum territory was considered the most powerful. The more powerful states that defeated several smaller states came to be known as the Mahajanapadas. Sixteen mahajanapadas gained prominance by the 6th century BCE. Ancient Buddhist texts like the Anguttara Nikaya make frequent reference to them.

Chapter 4 THE RISE OF EMPIRES

I. Fill in the blanks:

1. Chandragupta Maurya
2. Chanakya
3. Megasthenes
4. Kalinga war

II. Match the following:

1. Kautilya - Arthashastra
2. Chandragupta - Jainism
3. Ashoka - Buddhism
4. Indika - Megasthenes

III. Answer the following:

1. Ashoka the Great (304-232 BCE) was a brilliant commander who crushed revolts in Ujjain and Taxila. He was ambitious and aggressive. After his father Bindusara's death , he attacked Pataliputra defeated his brothers and ascended the throne.
2. The empire was divided into four provinces (pradeshas) with the imperial capital at Pataliputra. No individual was allowed to own land privately.

   Communications along the land and riverline routes were developed to administer the Empire.

   Army was an important tool for not only extending the territories of empire but also for administering them. There was also a navy.

   Ashoka held his Empire together by propagating the doctrine of Dhamma. The doctrine propogated the ideas of peace, non-violence and respect towards the elders.
3. Chandragupta Maurya is one of the most remarkable emperors of the ancient India. Before the arrival of Chandragupta on the Indian political scene. India was divided into several small Kingdoms into one kingdom and gave them central leadership. That's why we call the Mauryan kingdom as an empire. Chandragupta was considered as the first Indian empire builder.
4. The Kalinga war was fought in INDIA between the Mauryan Empire under Ashoka and the state of Kalinga located on the east coast. The Kalinga war is considered as one of the Fiercest battles in Indian History. The loss of nearly 1 lakh lives in this war changed Ashoka's life forever. He found his consolation in Buddhism.
5. a) Asoka died in 232 BCE and this was followed by a succession of weak kings due to which the empire gradually began to decline.

   b) The wakened empire could not resist the frequent attack from the north.

   c) Many of the outlying provinces broke away from the empire.
6. The major remnants of Mauryan are art and architecture discovered by archeologist belong to the period of Ashoka. They can be classified into stupas, pillars, caves, palaces and pottery. The lion capital on the Ashoka pillar at Sarnath is now India's national emblem.

IV. Answer the following in detail:

1. **Ashoka's Administration:**
   a) No killing of animals or birds was allowed in the kingdom.
   b) Wells, houses, roads and shelters were built all over the kingdom to help poor and needy people. Trees were planted for the convenience of travellers.
   c) He built around 84,000 stupas (pagodas) across his empire to house the sacred relics of Lord Buddha.
   d) Respect for other faiths and religions like Jainism and Hinduism co-existed.

2. Organisational structure of mauryan administration:

   The Mauryan empire was geographically extensive. Mauryan rule was backed by a structured administration with the organization of the empire in line with Kautilya's Arthashastra. The empire was divided into four provinces (pradeshas), with the imperial capital at pataliputra. Each with its own governor. The emperor was assisted in administration by his mantra parishad (council of ministers).

3. **Ashoka and Buddhism:**
   Emperor Ashoka was the first ruler in ancient India who embraced Buddhism as a tool for consolidating his empire. Ashoka's patronage led to the expansion of Buddhism not just across the Mauryan empire, but to other kingdoms and even to other countries from about 250 BCE. Ashoka made Buddhism the state religion around 260 BCE. He implemented the Dasa Raja Dharma or the ten precepts outlined by Lord Buddha as the duty of perfect ruler. He undertook the propagation of Buddhist philosophy by engraving rock edicts and pillars and placing them at strategic places in his kingdom.

GEOGRAPHY

Chapter 1 RESOURCES

I. Choose the correct answer in the following questions.

1. paper
2. leather shoe
3. minerals
4. thermocole sheet
5. porcelain cup

II. Define the following terms.

1. Renewable and non-renewable resources:

   A renewable resource is that which can be used repeatedly and replaced naturally.

   A non renewable resource is that which does not renew itself at a sufficient rate for sustainable economic extraction within human life frame.

2. Flora and fauna:

   Flora refers to the plant life that occurs in a particular region or at a particular time, generally naturally occurring.

   Fauna is all of the animal life of any particular region or time.

3. Eco friendly objects and materials:

   They are things that do very little or no harm to the environment in any way and their residues or by products also are environment friendly.

4. Conservation:

   This means to prevent over use. It is the well planned or careful use of resources.

III. Distinguish between the following.

1. Natural resources and manmade facilities:

Natural Resources	Manmade Facility
They are components of eco system obtained from nature Eg. soil, water, air etc.	They are manmade things Eg. Paper, pen, computer etc.

2. Evergreen forest and Deciduous forests:

Evergreen forest	Deciduous forests
Trees in these forests remain green all through the year.	The trees of these forests shed their leaves during dry season.
Trees like pine and shrubs grow here	Trees like teak and sal grow here

3. Troposphere and Stratosphere:

Troposphere	Stratosphere
It is the first layer on the earth surface	It is the second layer of the atmosphere next to troposphere.
Weather changes happen here	Ozone layer that absorbs the harmful radiation is a part of this layer

4. Reduce, Reuse and Recycle:

Reduce: The amount of waste produced should be reduced.

Reuse: Certain materials can be reused again.

Recycle: Certain materials like paper etc., can be recycled.

IV. Answer the following in points:

1. a) Forest gives us wood and timber that we use for construction, making furniture, wooden carts and plough.
   b) It provides us with fire wood.
   c) It prevents soil erosion.
   d) The trees supply large amount of oxygen to the environment.
   e) It helps to reduce Global warming.

2. a) We should preserve the precious resources like water, soil and minerals.
   b) Avoid plastics and also recycle paper, glass and metals.
   c) To convert vegetable wastes and garden wastes into manure.
   d) Always follow 'Reduce, Reuse and Recycle.
   e) Usage of fossil fuels to be reduced.

3. a) Mountains are the source of many rivers and beverage crops like coffee and tea, rubber, apples and pear.
   b) Mountains are rich variety of flora and fauna.
   c) Mountains receive heavy rainfall. Very high mountains are covered with snow, which gives waters to the rivers.
   d) Preferred tourist's destinations.

CIVICS

Chapter 1

NATIONAL SYMBOLS AND THEIR SIGNIFICANCE

I. Fill in the blanks:

4. Strength and courage
5. Rabindranath Tagore, Bankim Chandra Chatterjee
6. 26th January
7. "Satyameva Jayate"

II. Match the columns:

1. National Bird – Peacock
2. National Aquatic Animal – Gangetic Dolphin
3. National Animal – Tiger
4. State Emblem – The Lion Capital of Ashoka
5. National River – Ganges

III. Who am I?

1. Indus
2. Lotus
3. Field Hockey
4. Indian Banyan Tree

IV. Answer the following in one or two lines:

1. National Symbols of India:
   a) National Flag – INDIAN TRICOLOUR FLAG
   b) National Emblem: THE LION CAPITAL OF ASHOKA.
   c) National Flower- INDIAN LOTUS
   d) National Fruit: MANGO
   e) National Tree: INDIAN BANYAN TREE (OR) INDIAN FIG TREE
   f) National Animal: ROYAL BENGAL TIGER
   g) National Bird: PEACOCK

2. **Religious Festivals:**
   Pongal or Makar Sankranti, Diwali, Rama Navami, Buddha Poornima, Mahaveer Jayanti, Bakrid, Ramzan, Christmas.

3. **National Festivals:**
   Independence Day (15th August), Republic Day (26th January) and Gandhi Jayanthi (October 2nd) remind us of our common nationality.

4. **National Currency:**
   The Symbol was designed by Udaya Kumar, a post graduate in design from Indian Institute of Technology, Mumbai.

V. Answer the following questions:

1. **National Festivals:**
   National festivals are an important unifying force. Independence day, Republic day, and Gandhi Jayanthi are celebrated by all Indians, regardless of language or religion. These festivals remind us that we are all Indians.

   Independence Day:

   It is celebrated across the country every year on 15th August. It was on this day, in 1947, that India was declared Independent from British rule and the leaders of the country took over control.

   On this day, the Prime minister of India hoists the National Flag at the Red Fort, New Delhi.

   Republic day:

   It was on the 26th of January in the year 1950 that India declared itself a sovereign, Democratic and Republic state and adopted the Constitution.

   Every year on this day, the President of India unfurls the National Flag at New Delhi.

   Religious Festivals:

   Religious Festivals like Pongal, Makar Sankranti, Diwali, Durga Pooja or Navarathri by Hindus, Ramzan by Muslims, Christmas by Christians, Guru Nanak Jayanti by Sikhs. Buddha Poornima by Buddhists, Mahaveer Jayanti by Jains are all celebrated through out India and help the people come together in universal brotherhood.

2. **Independence Day:**
It is celebrated across the country every year on 15th August. It was on this day, in 1947, that India was declared Independent from British rule and the leaders of the country took over control.

On this day, the Prime minister of India hoists the National Flag at the Red Fort, New Delhi.

3. **National Flag:**
It is a horizontal tricolor with saffron at the top, indicating strength and courage; while in the middle, indicating peace and truth and green at the bottom, indicating the fertility, growth and auspiciousness of the land. All three colours are equal in proportion. In the centre is a navy blue wheel with twenty-four spokes known at the Ashoka Chakra.

4. **National Anthem:**
'Jana Gana Mana' was officially adopted by the constituent Assembly as the Indian National Anthem on Januaary 24th 1950. It is composed by the late poet Rabindranath Tagore and was written originally in Bengali.

We must show respect to our National Anthem and always stand attention while singing it or hearing it. It should be sung in 52 seconds.

Chapter 2

INDIAN CONSTITUTION

I. Fill in the blanks:

1. 552
2. President
3. Supreme court
4. Indian National Congress (INC), Bharatiya Janata Party (BJP)
5. Privacy

II. Match the columns:

1. Lok Sabha	–	The Lower House
2. Prime Minister	–	Head of State
3. Chief Justice of India	–	The Supreme Court
4. President	–	Head of Government
5. Rajya Sabha	–	The Upper House

III. Answer the following in one or two lines:

1. He plays a major role during a crisis such as a Hung Parliament. He can declare a state of Emergency.

2. In India, we have National Parties and State Parties. The two main parties at the national and state level are the Indian National Congress and Bharatiya Janata Party.

3. It means that every citizen above the age of 18 years has the right to vote.

4. Directive Principles of state policy was given by the constitution to ensure equality and justice to all though they are not enforceable by law.

IV. Answer the following questions:

1. The Executive branch consists of the President, the Vice president, the Prime Minister and his Council of Ministers.

The PRESIDENT:
He is the Head of state of India and the Supreme Commander of the Defense forces.

The Vice President:
The Vice President chairs the Rajya Sabha. His term of office is for five years.

The Prime Minister:
The Prime Minister is the head of the government. He is appointed by the President on the nomination of the majority party in the Lok Sabha.

The Council of Minister:
The Minister are appointed by the President on the recommendation of the Prime Minister.

2. It consists of the President and the two houses of the Parliament.

   a) **The Lok Sabha:**
   It is the house of the people. It members are elected directly by the people on the basis of secret Ballot and Universal Adult Franchise.

   Currently the Lok Sabha functions with 545 members, 530 from the states, 13 elected from the territories and 2 nominated from the Anglo- Indian Community.

   Lok Sabha is formed for a five-year term, after which it is automatically dissolved.

   b) **The Rajya Sabha:**
   The Upper house is the Rajya Sabha or the council of States. It cannot be dissolved.

   Out of 250 members, 12 are nominated and 238 are elected indirectly. Sometimes a joint sitting of the 2 houses is held.

3. **The Judiciary:**
   The Supreme Court in New Delhi is the highest Judicial body in our country.

   There are 26 judges including the chief justice of India. All of them are appointed by the President or the Prime Minister's recommendation.

   They serve until the age of 65.

   The High court is the highest Judicial body of a state which can have control over more than one state.

   Each high court consists of a chief Justice and other Judges.

4. **Right to Equality:**
   It ensures equal rights for all the citizens restricting discrimination. This right prohibits inequality on the basis of caste, Religion, place of birth, race or gender.

   Right to Freedom:

   It includes the rights of freedom of speech, freedom of expression, freedom of assembly without arms, freedom of association etc.

   Right against exploitation:

   It condemns and punishes acts of human trafficking, child labour, forced labour and compelling a person to work without wages.

   Right to Freedom of Religion:

   It guarantees religious freedom. All religious should be treated equally and impartially. We have the right to preach any religion of our choice.

   Cultural and Educational Rights:

   It conserves the heritage and protects the cultural, religious, linguistic minorities against discrimination. Educational rights ensure education for all without any discrimination.

   Right to Constitutional Remedies:

   This right allows us to approach the Supreme Court in case of violation of our Fundamental Rights. The Court awards compensation for affected individuals.

ECONOMICS

Chapter 1

ECONOMICS-AN INTRODUCTION

I. Questions corresponding to the illustration given:

1. The data is about GDP of major countries and the EU.
2. United States
3. Russia
4. Brazil
5. Fifth place
6. China
7. Russia
8. Six countries

II. Fill in the blanks:

1. Gross Domestic Product
2. Recorded or Unrecorded
3. Domestic
4. Directly
5. Production function

III. Answer the following in detail:

1. Economics tells us about how a country produces, distributes and consumes material commodities. It also tells us how the income from different activities distributed between businessmen, workers etc.

2. Economics gives rational solutions to human problems that arise due to scarcity of resources. Hence it is called the "Queen of Social sciences".

3. It is a means of knowing exactly how much money is coming in and exactly how much money is going out. For this, we should note down every single expense and every single income.

IV. Explain in detail:

1. GDP (Gross Domestic Product) is the overall market value of all the goods and services produced within our borders in one year.

   The overall market value of all the goods and services that the country produces is known as GDP.

   C + G + I + NX = GDP

   Where, C = > Individual consumer Spending

   G = > Government spending

   I = > Business spending

   NX = > Net exports (Exports-Imports)

   The value is equal to the economic wealth of the country and includes all the things that can be bought or sold through Recorded or Unrecorded Transactions.

2. **Consumption:** It is the final purchase of goods and services by individuals becomes consumption. It is directly proportional to production.

   Production: It is an act of creating wealth in the form of output, goods or a service which has value and contributes to the consumption of individuals.

   Distribution: Distribution refers to the way the total output of the income or the wealth is distributed among the individuals. It can be done in various forms like rent, wages, interests, profits which are production factors.

3. Food items like bread and roti are highly consumed and are in heavy demand. Hence wheat is produced on a large scale.

   A lot of labour, power, space, water and raw materials are required for wheat production.

   Post production wheat has to be transported to different places for consumption as well as production of various wheat products.