Class: 8 KEY ANSWERS TERM : II

Chapter - 1 Life Mathematics

Try This! (Page No. 3)

a) 50% b) 25% c) 12.5% d) 75%
e) $33\frac{1}{3}\%$ f) $66\frac{2}{3}\%$ g) 20% h) 5 %
i) 4% j) 2%

Page No. 3 and 4

Exercise: 1.1

1. i) (c) ii) (d) iii) (a)

2. a) false b) true c) true

3. a) 100% b) 9% c) 70%
d) 75% e) 230%

4. a) 20% b) 52% c) 75%
d) 55% e) 43.75%

5. a) $\frac{18}{25}$ b) $\frac{2}{25}$ c) $\frac{17}{20}$ d) $\frac{9}{10}$ e) 5

6. a) 0.03 b) 0.52 c) 0.7 d) 3 e) 2.5

7.

	30	200	550	705	973
10% of	3%	20%	55%	70.5%	97.3%
20% of	6%	40%	110%	141%	194.6%
25% of	7.5%	50%	137.5%	176.25%	243.25%
60% of	18%	120%	330%	423%	583.8%
1% of	0.3%	2%	5.5%	7.05%	9.73%
12½% of	3.75%	25%	68.75%	88.12%	121.62%

8. $x = 150$

9. a) 70% b) $33\frac{1}{3}\%$ c) 2%
d) 25% e) 50%

H.O.T.S: 21. Yes. Both percentages represent fractions and multiplication of fractions is commutative.

Page No. 8 and 9

Exercise: 1.2

1. a) 56 b) 799

2. $x = 200$

3. $x = 100$

4. No change.

5. $x = 150$; Cricket-45; Volleyball-42; Badminton-33

6. ₹670

7. Pass% = 87%

8. $x = 400$

9. loss % = $33\frac{1}{3}\%$

10. $r = 4\%$

11. $x = 110$

12. 87%

13. Total marks = 300

14. $x = 14.52\%$

15. $\frac{x}{y} = \frac{44}{125}$

Challenging Problem

1. $x = 300$

2. T3, $93\frac{2}{3}\%$

3. 476

4. 100

5. 6, 0.8%

Page No. 22 and 24

Exercise: 1.3

1. a) profit b) ₹100
c) ₹360 d) ₹450

2. a) $11\frac{1}{9}\%$ b) P% = 50%
c) 3500, 53.85% d) loss % is 4%

3. CP = ₹960, SP = ₹1152

4. ₹Discount of 8% is better

5. 200, 13.33%

6.

Article	CP(₹)	P or L	P% or L%	SP(₹)
a) Crayon Box	300	L = 35	L% = 11.6%	265
b) Wall Hanging	650	P = 130	P% = 16.6%	780
c) Shirt	900	P = 90	P% = 11%	990
d) Tennis racket	2500	L = 125	L% = 5%	2375

7. ₹6820

8. SP = ₹3835, P% = 14.47%

9. 60%

10. x = ₹60000

11.

	MP(₹)	D	D%	SP(₹)
a) Bicycle	9500	760	8%	8740
b) Sofa Set	84000	21000	25%	63000
c) Necklace	128000	9600	7.5%	118400
d) Umbrella	336	112	$33\frac{1}{3}\%$	224

12. ₹5400

13. 20%

14. ₹2000

15. ₹1134

16. ₹18000

17. ₹4000000

18. ₹1440

19. ₹1600, P% = 5.25%

20. ₹15000

21. ₹920

22. 10%

23. 8%

24. ₹9000, ₹4500

25. $2\frac{2}{9}\%$

26. 40%

27. 15%

28. SP = ₹8280, GST= ₹414, MP = ₹9200,
CP = ₹8000, P = ₹280, Profit% = 3.5%

29. a) ₹840 b) ₹728 c) ₹900 d) ₹2065
e) ₹36480 TOTAL BILL: ₹41013

Page No. 31 and 32

Exercise: 1.4

1. a) ₹3362, ₹162 b) ₹4936.8, ₹936.8
c) ₹26772, ₹2272 d) ₹10875

2. a) ₹347.28, ₹47.28 b) ₹104000, ₹4000
c) ₹5300, ₹300 d) sum = ₹8000
e) Difference - ₹104

3. 46.22%

4. a)₹1874.99 b)₹14000 c)₹60606.89 d)₹20000

5. ₹0.50

6. a) $1\frac{1}{2}$ year b) 2 year
c) 3 year d) 1 year

7. a) ₹76.80 b) ₹1143

8. 14%

9. ₹16000

Challenging problems:

1. 700 cm **3.** 3 years

2. ₹22949 **4.** 30%

Chapter - 2 Alegbra

Try this! (Page No. 35)

$-6n^2 + 8mn + n$	–6, 8, 1	trinomial
$x^2 + 7y^2$	1, 7	binomial
$-3c^5 d^4$	–3	monomial

Try this! (Page No. 36)

1. $6(t + \frac{1}{2}s)$

2. $3r - 2w$ or $2w - 3r$

3. $\frac{5x}{y} - z$

Try this! (Page No. 37)

Linear equation: 1, 4, 8 and 9

Non-linear equation: 2, 3, 5, 6, 7 and 10

Match

a-(iv) b-(v) c-(ii) d-(i) e-(iii)

Page No. 42

Exercise: 2.1

1. a) $x = \frac{-1}{5}$; b) $x = -5$; c) $x = 0.5$;
d) $x = \frac{1}{5}$; e) $x = 5$; f) $x = -0.5$

2. a) Doing-Undoing b) 2
c) cubic d) one
e) transposition

3. a) $x = 4$ b) $z = 3$ c) $x = -11$
d) $x = \frac{13}{2}$ e) $x = 10$ f) $y = \frac{-1}{6}$
g) $x = 11$ h) $x = -1$ i) $p = -1$
j) $x = -8$ k) $x = 11$ l) $m = -4$

Page No. 48 and 49

Exercise: 2.2

1. a) $b = -2$ b) $a = 1$ c) $b = \frac{-2}{3}$
d) $a = \frac{11}{2}$ e) $a = 22$

2. a) $1.5 + x = 3.5$
b) $x + (x + 1) + (x + 2) = 276$
c) $\frac{1}{4x} + \frac{2}{5x} = \frac{26}{5}$
d) $2x = \frac{1}{6x} + 84$
e) $4x + 5x + 6x = 180$
f) $x + (x - 15) = 90$

Frame The Equation & Solve:

1. 21, 3

2. $x = 20, y = 24, z = 14$

3. 27

4. Reji's age = 18 years, Her sister's age = 12 years

5. $l = 24, b = 8$

6. $\frac{13}{21}$

7. $y = 11$ units, P = 133 units.

8. (80, 10) Notes

9. Murali's age is 15 years, Thenmozhi's age is 20 years.

10. 63

11. a)True; b)False; c) False

12. 64.61 km

13. $b = 5$cm, $l = 8$cm

Objective Type Questions:

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

Page No. 53 and 55

Exercise: 2.3

1.

End pt	Q
A′ (–5, 1)	II
B′ (2, –2)	IV
C′ (9, –5)	IV
D′ (–4, 4)	II
E′ (–3, –3)	III

2. A′ = (0, 6) B′ = (2, 3) C′ = (6, 3)
D′ = (4, 0) E′ = (6, –4) F′ = (2, –4)
G′ = (0, 7) H′ = (–2, –4) I′ = (–6, –4)
J′ = (–4, 0) K′ = (–6, 3) L′ = (–2, 3)

3. A(–6, –4), B(4, –4), C(6, –2), D(–4, –2),
E(–6, 4), F(4, 4), G(6, 6), H(–4, 6)

4. Student's work

5. a) False b) True c) False
d) True e) False f) False

Try this! (Page no.58)

1. Y = 0 **2.** X = 0 **3.** (–1, 5)

4. Parallel **5.** Perpendicular **6.** Square

THINK! (pg-62) Points B, C, D lie on the graph.

Page No. 67 to 70

Exercise: 2.4

1. a) –4 b) (0, 8) c) perpendicular
d) X-axis e) IV

2. i) a ii) c iii) c iv) a v) d

3. (–8, –3), Equations of four sides: $x = -8$, $x = 2$, $y = -3$, $y = 7$

4. Students work

5. Students work

6. (0, 0) and (0, 8)

7. Students work

8. Students work

9. Students work

10. a) ₹150 is the fixed rate to rent a car.
b) ₹600
c) 11 hours
d) x axis: 1 cm = 1 hour
y axis: 1 cm = ₹150

11. Students work

12. a) P = 1000 ml, Q = 800 ml
b) X-axis: 1cm = 10 min
Y-axis: 1 cm = 100 ml
c) 40 min, 400 ml
d) P

13. Students work

14. $y = 100x + 500$, ₹1200, 6 months

15. $y = 2500x + 1000$, ₹13500

Miscellaneous Problems:

1. a) –2 b) $\frac{40}{9}$ c) 5 d) 2

2. 17

3. 6 years, 36 years.

4. 14 cm

5. 44 years

6. 12

7. 7, 8, 9

8. 9

9. 55°, 60°, 65°

10. $\angle A = 78°$, $\angle B = 68°$, $\angle C = 34°$

11. 15

12. Rekha- ₹450, Hema- ₹310

13. 54

14. 4 km

15. Students Work

Chapter - 3 Geometry

Page No. 73

Exercise: 3.1

1. 80°

2. 44°, 56°, 90° cannot be the angles of triangle.

3. $x = 72°$ angles: 92°, 32°, 56°

4. a) $x = 40°$, $y = 115°$, $z = 75°$
b) $x = 100°$, $y = 45°$, $z = 35°$

5. x = 20 cm, y = 2 cm

6. d = 170 cm

7. BC = 8 cm, AC = 12 cm, BD = 6 cm

Page No. 79

Exercise: 3.2

1. a) True b) False c) False d) False
e) False f) False g) True h) True
i) True j) False

Page No. 84 to 88

Exercise: 3.3

1. a) 5 cm
b) a = 12 cm, b = 35 cm, c = 37 cm
c) 10.44 d) 17 e) 6 cm

2. i) a ii) b iii) a iv) c
v) b

3. It is satisfied

4. d = 30 inches

5. d = 35

6. d = 35 m

7. It is right angle triangle hypotenus - 3.7 cm

8. By Phythagoreus Theorem,

$$AP^2 = AK^2 + KP^2$$
$$= AK^2 + AK^2 \ (AK = KP)$$
$$AP^2 = 2AK^2$$

Hence proved

9. l = 25ft

10. Proved

11. a) x – 21; y – 29
b) x – 29.71; y – 16

12. l = 65 m

13. 24 inches, No.

14. 7.5 m

15. Yes

16. AR = 28ft

17. P = 98 cm

18. 240 sq. units

19. 15 cm

Challenging Sums:

1. 22.5 cm

2. x = 8cm; y = 10m

3. 50cm, 150 sq. cm

4. AB = 24 cm, BC = 14 cm
CA = 28 cm
area = 168 sq. cm

5. x - 18.38 ft
y - 18 ft

H.O.T.S:
length - 84 cm, b - 42 cm
Area - 3528 sq. cm
Area of IR = 1800 sq. cm, Diagnol of IR = 86.48 cm

Chapter - 3 Practical Geometry

Page No. 95 and 100

Exercise: 3.4 and 3.5

Student's work

Chapter - 4 Information Processing

Page No. 107

Exercise: 4.1

Student's work

Page No. 109

Exercise: 4.2

1. Student's work

2. PQ = $\sqrt{n}$

3. Student's work

4. Area = $4(3+\sqrt{2}+\sqrt{3})$sq.cm
Perimeter = $2(5+\sqrt{5})$cm

Page No. 112 and 113

Exercise: 4.3

1.

Number of dots on the sides	4	8	12	16	20	...	4n
Number of dots inside the square	1	5	13	25	41	...	$n^2 + (n-1)^2$
Total number of dots	5	13	25	41	61	...	$2n^2 + 2n + 1$

Fun Activity 1 (Page No. 114)

Crack the code: Good Morning

"CODING IS FUN"

Fun Activity 1 (Page No. 115)

See the star in the night sky.

Fun Activity 2 (Page No. 116)

P V SINDHU IS THE FIRST INDIAN WOMAN TO WIN A GOLD MEDAL AT BWF WORLD CHAMPIONSHIP.

Page No. 119 and 120

Exercise: 4.4

1. Student's work

2. a)

Alphabet	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Cipher text	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y

b.

Alphabet	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Cipher text	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V

3. 32114423153211442413 43 2443 442315 4145151533 3421 43132415331315

4. Mathematics is key and door to the sciences

5. Monday–b. Tuesday–c Wednesday–e Thursday-a Friday–d

6. 7 and 8 - Student's work

Fun Activity 3 (Page No. 121)

a) From Park town station take orange line.
b) Get down at St Thomas mount station.
c) Travel to Alandur station by green line.
d) From Alandur take the red line to go to airport.

Page No. 122

Exercise: 4.5

1. a. True b. True c. False
d. False e. True

2. The cipher text using the key 3: MS AH SFNT I U

M				S							
	A		H				S		F		N
		T				I				U	

The cipher text using the key 4: MI A SN TS UH F

M						I					
	A						S				N
		T		S						U	
			H						F		

They are not same.

3.

P		R		L		E		O		R		M		I						P		C		A				U		D		I		A		E		A	
	A		A		L		L		G		A				S		A		S		E		I		L		Q		A		R		L		T		R		L

PRLEORMI PCA UDIAEA AALLGA SASEILQARLTRL

5. a) COMPUTER

b) (i) PET (ii) MOP (iii) COPE (iv) MORE (V) TOP

Class: 8 KEY ANSWERS TERM : II

Chapter - 1 HEAT

I. Choose the best answer:

1. c - thermal energy
2. d -All the above
3. d -All the above
4. c - Gas
5. c - freezing
6. a -solid

II. Fill in the blanks:

1. heat transfer between systems
2. Specific heat capacity
3. the temperature of a system at a constant
4. deposition
5. increase
6. reduce

III. State True or False. If false, correct the statement:

1. True
2. False - The dimensions increase if the temperature is increased.
3. False - It is called sublimation.
4. False - Convection is the process by which thermal energy flows in liquids.
5. False - It is the product of mass and specific heat capacity.
6. False - In a thermos flask, the silvered walls reflect radiated heat back to the liquid in the bottle.

IV. Match the following:

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

V. Answer briefly:

1. **Applications of conduction in our daily life:**
   i. We cook food in vessels made up of metals. When the vessel is heated, heat is transferred from the metal to the food.
   ii. When we iron dresses heat is transferred from the iron box to the cloth.
   iii. Handles of cooking utensils are made up of plastic or wood because they are poor conductors of heat.
   iv. The temperature inside igloo (snow house) is warm because snow is a poor conductor of heat.
2. **Effects of heat:**
   i. Increase in temperature of an object
   ii. Expansion of an object
   iii. Change in state of an object
3. Convection, Conduction and radiation are the three types of heat transfer.
4. The process of transfer of heat in solids from a region of higher temperature to a region of lower temperature without the actual movement of molecules is called conduction.
5. Convection is the flow of heat through a fluid from places of higher temperature to places of lower temperature by movement of the fluid itself. Convection takes place in liquids and gases (fluids).
6. It is the amount of heat energy required to raise the temperature of unit mass of a substance (1 kg) through 1°C or 1 K. It is denoted by c. Its units are joule per kelvin per kilogram or J/(kg K). It is independent of mass of the substance. It is given by the formula: $c = \frac{Q}{m\Delta T}$
7. One calorie is the amount of heat energy required to raise the temperature of 1 gram of water through 1°C.
8. We can use a calorimeter to compare the specific heat capacities of two liquids. We can measure the heat capacity of each individually and then compare them.

VI. Consider the statements labelled as Assertion and Reason and choose the correct option:

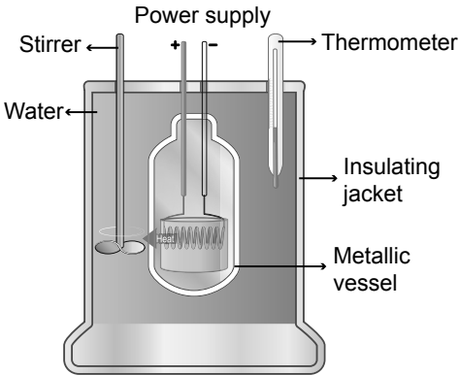
1. (d) Assertion is false, but reason is true.

   Correct Explanation: Radiation is the emission or transmission of energy in the form of waves or particles through space or through a material medium.

2. (a) Both assertion and reason are true and reason is the correct explanation of assertion.

VII. Answer in detail:

1. Calorimetry is a method to measure the heat exchange of process which can be *physical changes* such as melting, evaporation or it can be a *chemical changes* such as acid-base neutralisation. A **calorimeter** is a device designed to measure the amount of heat absorbed or released in a chemical or physical process.



Parts and working of a calorimeter:

i. **Metallic vessel:** A vessel made of metals like copper or aluminium which are good conductors of heat and electricity.

ii. **Insulating Jacket:** The metallic vessel is kept in an insulating jacket to prevent heat loss to the environment. There are two holes in it.

iii. **Thermometer:** Through one of the holes of an insulating jacket, a thermometer is inserted to measure the temperature of a substance.

iv. **Stirrer:** It is inserted through another hole of an insulating jacket for stirring the substance taken in the vessel and distributes heat throughout the vessel.

v. **Power Supply:** The vessel is filled with liquid which is heated by passing current through the heating element. Using this device we can measure the heat capacity of the liquid in the container.

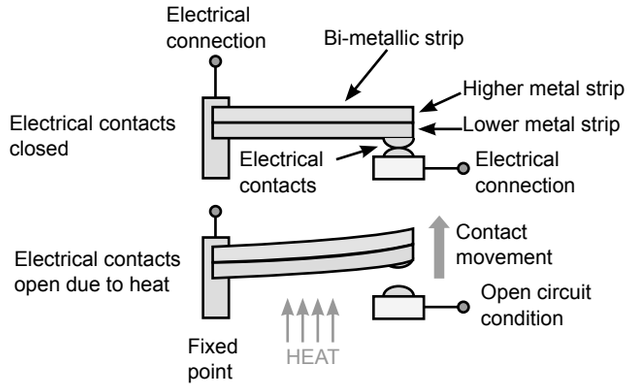
2. Thermostat is a device to detect temperature changes for the purpose of maintaining the temperature of an enclosed area essentially constant. It will automatically cool the room when it is hot and heat it up when it is cold according to a pre-set temperature.

Working of thermostat:

A traditional thermostat uses a bimetallic strip to work. This has two pieces of different metals that are welded together.

i. In a thermostat, the strip works as a bridge in an electrical circuit connected to it.

ii. When the strip is straight and connected, the circuit is complete. Hence, the strip carries electricity through the circuit, and the heating is turned on.



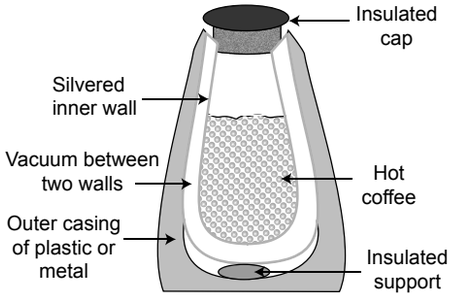
Working of the bimetallic strip in a thermostat

iii. As the temperature of the surroundings increases, the strip gets hot. This causes one of the metals to expand more than the other. This causes the whole strip to bend. This causes the circuit to break, and the electricity switches off.

iv. As the room cools, the strip also cools and bends back to its original shape. This makes the electricity flow again, so the heating switches back on.

v. By adjusting the temperature dial, we can change the temperature at which the circuit switches on and off.

3. A thermos flask can keep a liquid hot or cold for a long period of time. A thermos flask has three components that help it reduce heat loss through conduction, convection and radiation.



i. **Insulated cap:** This is an insulator. It prevents heat loss by conduction through the opening of the flask. It also stops any gas from moving out of the flask, reducing heat loss by convection.

ii. **Outer casing of plastic or metal:** Both plastic and glass are poor thermal conductors. This reduces the heat loss by conduction through the walls. This also holds the vacuum in between to further eliminate the heat transfer by convection and conduction.

iii. **Silver inner wall:** A shiny surface is a poor emitter of radiation. This will avoid the heat transfer through radiation.

4. Radiation is the flow of heat from one place to another by means of electromagnetic waves.

Applications of radiation in daily life:

i. Heat energy from the Sun reaches the Earth by radiation.

ii. While standing near fire we feel the heat which is transferred as radiation.

iii. Black surfaces absorb heat radiation so that the bottom of the cooking vessels is painted black.

iv. While colour reflects heat radiation. That's why we are advised to wear while cloth during summer.

5. (a) **Melting Vs Freezing**

Melting or Fusion	Freezing or Solidification
The process in which a solid is converted to liquid by absorbing heat is called melting or fusion.	The process in which a liquid is converted to solid by releasing heat is called freezing or solidification.
The temperature at which a solid changes its state to liquid is called **melting point**.	The temperature at which a liquid changes its state to solid is called **freezing point**.

(b) **Boiling Vs condensation**

Boiling or Vaporisation	Condensation
The process in which a liquid is converted to vapour by absorbing heat is called boiling or vaporisation.	The process in which a vapour is converted to liquid by releasing heat is called condensation.
The temperature at which a liquid changes its state to gas is called **boiling point**.	The temperature at which vapour changes its state to liquid is called **condensation point**.

(c) **Sublimation Vs deposition**

Sublimation	Deposition
The process in which a solid is directly converted to gaseous state without going through the liquid state is called sublimation.	The process in which a gas directly converts into solid without passing through the liquid state is called deposition.
Heat is absorbed during this process.	Heat is released during this process.
Examples: Dry ice (solid CO_2), naphthalene balls.	Example: Frost formation from water vapour.

VIII. Higher Order Thinking Skills (HOTS):

1. The main reason that lakes doesn't freeze all the way through is:

   i. That as we go down till the bottom of the lake the pressure increases. The increase in the pressure increases the temperature as pressure is directly proportional to temperature. Increase in temperature down the lake doesn't create the favourable conditions for freezing of the lake.

   ii. Also as ice is less dense as compared to water that is why ice always floats on water and doesn't settle down at the bottom or that is the reason why the lake doesn't start to freeze from the bottom.

2. b) Steel > Water > Wood

   Thermal conductivity is defined as the heat flow per unit time or ability to conduct heat. It is highest in solids, and lower in liquids. However, it is lower in non-metals than in metals. Hence, Option b is correct.

IX. Solve the numerical:

1. Given: amount of heat required (Q) = 1000 J;
   rise in temperature (ΔT) = 20°C – 0°C = 20° C

Heat capacity,

$$(C) = \frac{\textit{the amount of heat energy} \text{ required}}{\textit{rise in temperature}} = \frac{Q}{\Delta T}$$

$$= \frac{1000}{20} = 50 \text{ J/° C}$$

2. Heat capacity $(C) = \frac{Q}{\Delta T} = 8000 \text{ J/°C} = 8000 \text{ J/K}$

$$\text{Specific heat capacity, } c = \frac{Q}{m\Delta T} = \frac{1}{m}\left(\frac{Q}{\Delta T}\right)$$

$$= \frac{8000}{100} = 80 \text{ J/(kg K)}$$

Chapter - 2 ELECTRICITY

I. Choose the best answer:

1. a – negative
2. c – electrons
3. b – Energy Source, Wire, Load
4. b – positive
5. d – a protective device for breaking an electric circuit

II. Fill in the blanks:

1. Transfer of electrons
2. positive
3. Lightning arresters or lightning conductors
4. Electric fuse
5. Series circuit

III. State True or False. If false, correct the statement:

1. True
2. True
3. True
4. True
5. False – In parallel circuit, voltage remains the same in all components.

IV. Match the following:

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

V. Give reasons for the following:

1. When you rub a glass rod with the silk cloth, electrons are attracted away from the atoms in the glass and transferred to the silk cloth. This leaves the glass rod with more positive than negative charge, so you get a net positive charge.
2. When we comb our hair, the electrons (negative charge) from the atoms in your hair were transferred to the comb. Due to the addition of electrons, the surface of the comb now carries a negative charge. The paper bits are neutral - they carry both positive and negative charges. The extra electrons (negative charges) from the comb attract the positive charge of the paper bits. The attraction is so strong that the paper bits fly and stick to the comb.
3. The leaves of an electroscope diverge because when a glass rod is touched on the metal disc, the charge travels through the metal rod to the leaves. Since, like charge repel, the charge travels till the leaves and then open up as both the leaves have like charges.

4. The connecting rod and leaves in an electroscope are essential conductors (in which electrons are free to move) that aid in the working of the electroscope. Hence, they are made of metals, which are good conductors.

5. During thunderstorms, lightning occurs in the sky. Lightning can discharge its charges onto any tall conductors that are available on Earth's surface. An open umbrella could be the only tall object in an open field whose rod and its supporting wires are made up of metals. Hence, it is not advisable to use an umbrella while crossing an open field during a thunderstorm.

VI. Consider the statements labelled as Assertion and Reason and choose the correct option:

1. (a) Both assertion and reason are true and reason is the correct explanation of the assertion.

2. (d) Assertion is false, but reason is true.
Correct Explanation: Lighting is attracted to the tallest tip of a conductor. If the tip of a tree is struck by lighting and a person is standing under the tree, then the current from the lighting may travel down the tree and jump towards the human conductor. Therefore, it is not wise to stand under a tree during a thunderstorm.

VII. Answer briefly:

1. Rubbing certain materials with one another can cause the built-up of electric charges on the surfaces. So, charges are produced by friction.

   Example: On brushing hair with a comb, the charges are transferred from the hair to comb due to friction.

2. This process by which excessive electric charge is channeled to the earth is called earthing.

3. The path in which the electrons flow from one terminal to another from a source (battery) is known as an electric circuit.

4. **<u>Uses of electroplating:</u>**

   i. Preventing iron nails from rusting.

   ii. Preventing automobile parts made of iron from rusting.

   iii. To prevent iron bridges from rusting.

5. Differences between static electricity and current electricity:

Static electricity	Current electricity
Static electricity is a stationary electric charge, typically produced by rubbing two different materials (to create friction) which causes sparks or crackling or the attraction of dust or hair.	Current electricity has a continuous movement of electrons through electrical conductors (like copper wires).
Static electricity is an excess of electric charge trapped on the surface of an object.	It can be stopped or started by opening or closing the ire connection (through switches). Electric current flows when there is voltage present across a conductor.
Examples: Rubbing feet on the carpet, rubbing a balloon on the head, brushing hair with comb vigorously.	**Examples:** Current electricity runs through wires at our homes, transfer of electric current through transmission lines which bring electricity from power plants to individual houses, offices, industries, hospitals etc.

6. A fuse is a simple device that can be connected in a circuit inside any electrical appliance. It is designed to withstand heat up to a certain temperature. When excessive current flows through the fuse, it melts because of the high temperature. When the fuse melts, it opens (or breaks) the circuit to save the device from damage. Hence, materials that have a low melting point are used in fuses. A fuse is made of an alloy of lead and tin.

VIII. Answer in detail:

1. The transfer of electrons takes place in three ways:

Transfer by friction: This method of charging an uncharged body by rubbing it against another body is called charging by friction.

Example: While combing hair charges are transferred from the hair to comb due to friction.

Transfer by conduction: Charges can be transferred to an object by bringing it in contact with a charged body. This method of transferring charges from one body to other body is called transfer by conduction.

Example: When the ebonite rod is rubbed with woolen cloth, electrons from the woolen cloth are transferred to the ebonite rod. Now ebonite rod will be negatively charged.

i. When it is brought near the paper cylinder, negative charges in the rod are attracted by the positive charges in the cylinder.

ii. When the cylinder is touched by the rod, some negative charges are transferred to the paper. Hence, the negative charges in the rod are repelled by the negative charges in the cylinder.

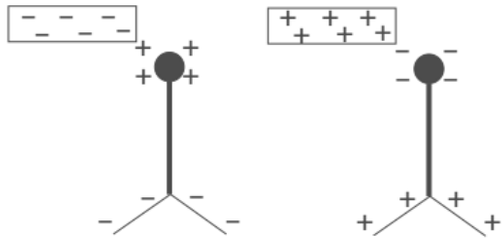
Transfer by induction: The process of charging an uncharged body by bringing a charged body near to it but without touching it is called induction.

Example: We can charge an uncharged object when we touch it by a charged object. But, it is also possible to obtain charges in a body without any contact with other charges like the working of electroscope.

2. Electroscopes are instruments used to detect the presence of electric charges on a body and measure its magnitude. They are helpful in demonstrating the principles of static electricity and charge interactions.

Working of electroscope:

i. When a positively charged material touches the brass disc, it attracts the negatively charged particles on the disc towards itself. This leaves the positively charged particles on the gold leaf. Now, as both the leaves possess the same (positive) charge, they repel each other, making an inverted 'V' shape.



Charge movement in electroscope

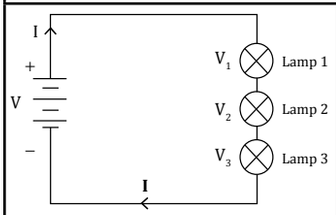
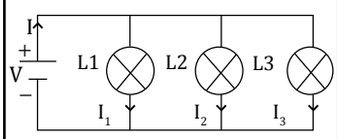
ii. When a negatively charged material touches the brass disc, it attracts the positively charged particles towards it, leaving the negatively charged particles on the leaves. Again, the leaves repel each other as they bear like charges.

iii. After some time, the leaves come back to their original state because they 'discharge' the charge they bear. When the top disc is touched, it causes a discharge through the human body and brings the leaves back to their original shape. This can also be done by placing a metal rod on the brass disc.

iv. The process by which electrical discharge can be safely collected away from an electrical device is known as **earthing or grounding**. This also helps the gold leaves from tearing as a result of stretching when they come across highly charged materials.

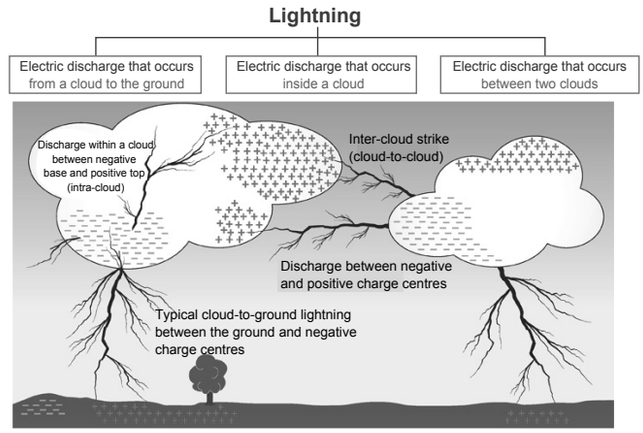
3. **Differences between series and parallel circuits:**

Series circuits	Parallel circuits
When all the components of a circuit are connected end to end, they are said to be connected in series.	In a parallel circuit, the components are connected parallel to each other.
In this arrangement, the electrons will have only one path to flow.	In this arrangement, the electrons can branch out and flow across the circuit.
In this type of circuit, the current (I) across each of the components remain the same but the voltage (V) differs.	In this type of circuit, the voltage (V) across each of the components remain the same but the current (I) differs.

The voltage across the circuit is divided across all the devices connected through the circuit. If '**I**' is the current across the circuit and the supply voltage is **V**, it can be written as $\mathbf{V = V_1 + V_2 + V_3}$.	If '**I**' is the total of the individual current flowing through the components and $\mathbf{I_1}$, $\mathbf{I_2}$, $\mathbf{I_3}$ is the current across each of the components, then, $\mathbf{I = I_1 + I_2 + I_3}$.
	
As the current flows through a series circuit, the voltage reduces as it flows through each of the components. The lamp at the end of the circuit dims because of the low supply of voltage.	When one lamp is defective, it does not affect the whole circuit. The other lamps continue to glow because of the uninterrupted flow of current through the other branches.
Current controlling devices are always connected in series with the device that they protect. **Example:** Fuses are connected in series with the device they protect.	Parallel circuit connection is very common in use. **Example:** Various lamps and electrical appliances in our homes are connected in parallel so that each of the lamps and appliances can be operated independently.

4. During a thunderstorm, air moves rapidly and carries small ice crystals upward. At the same time, the heavy water droplets from the clouds move downwards. Hence, the upper part of a storm cloud is positively charged, and the lower part of the cloud is negatively charged.

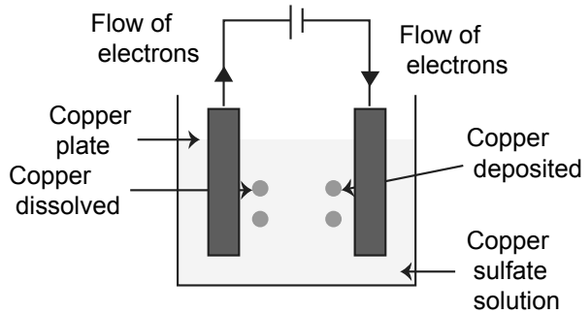
- When the positive and negative charges grow large enough, a giant spark -lightning occurs between the two charges within the cloud. This is similar to static electricity sparks, but much bigger in scale.
- When enough charge is built up in the lower part of the cloud, it meets the accumulated positive charges near mountain tops and trees, causing it to discharge rapidly. This is what we see as flashes of lightning that occur from a cloud to the ground. Thus, lightning can be of three types as shown in the figure below.



5. **<u>Electroplating:</u>** Electroplating is one of the most common applications of chemical effects of electric current. The process of depositing a layer of one metal (usually Zinc) over the surface of another metal by passing electric current is called electroplating.

<u>Explanation:</u>

i. Take a beaker filled with Copper Sulphate ($CuSO_4$) solution.



ii. To the positive end of a battery, connect a copper plate.

iii. To the negative terminal of the battery, connect an iron object, such as a spoon or a plate.

iv. Dip both the plate and the iron object in the Copper Sulphate solution. Let the current to flow for some time.

v. On passing the electric current, electrolysis of the copper sulphate happens. This causes copper ions to be formed.

vi. The positively charged copper ions are attracted to the negatively charged iron rod. Hence, a thin layer of copper is deposited on the surface of the iron rod.

vii. The amount of copper deposited on the iron rod is equal to the amount of copper lost from the copper plate.

6. **Effects of electric current:**

a) **Filament bulb:** The filament in an electric bulb is made of a metal called tungsten. It has very high resistance to conduct electricity. When electricity passes through the filament, it gets heated up. This causes tungsten to glow and emit visible light. Tungsten has a high melting point. This helps it reach higher temperatures without melting.

b) **Electric cooker:** In electric cookers, the heating coil is placed at the bottom of the cooker. The inner pan is also made of a metal (generally aluminium). The coil is made of high resistant metal. The heat produced in the coil is absorbed through conduction and is used for the process of cooking.

c) **Electric kettle:** In electric kettles, the heating filament made of highly resistant material is placed at the bottom. The liquid heats up because of the heat produced in the coil.

d) **Electric irons:** Electric irons also use the principle of heating of a filament due to high resistance. This produces heat energy, which is then conducted to a heavy metal base. The heavy metal base is what presses the clothes. Thus, electrical energy can be transformed into other forms of energy and put to use.

Chapter - 3 AIR

I. Choose the best answer:

1. d. Supports burning
2. c. Carbon dioxide
3. d. sodium carbonate
4. a. blue litmus to red
5. b. Nitrogen
6. b. Nitrogen
7. b. Nitrogen

II. Fill in the blanks:

1. Metal oxide, basic
2. Lighter
3. Nitrogen
4. Refrigerant
5. Rusting

III. Match the following:

1. Nitrogen - Fertilizer
2. Oxygen - Respiration in living animals
3. Carbon dioxide - Fire extinguisher
4. Dry ice - Refrigerant
5. Water vapour - Humidity

IV. Answer briefly:

1. Most of the oxygen is a colorless, odourless has produced by the process photosynthesis in which the chlorophyll present in the leaves of plants uses solar energy to produce glucose and releasing oxygen.

2. Some of the physical properties of oxygen are:
   a. It is a colourless, odourless and tasteless gas
   b. It is a bad conductor of heat and electricity
   c. It dissolves freely in cold water
   d. It can be liquefied at very low temperature and high pressure.
   e. It is denser than air.
   f. It supports combustion.

3. **Physical properties of carbon dioxide:**
   a. It is a colorless, odourless gas.
   b. It is heavier than air.
   c. It dissolves in water.

4. **Uses of nitrogen:**
   a. Used as a refrigerant in liquid state and for preservation of fresh food.
   b. Used to provide an inert atmosphere for conducting certain chemical reactions and in reducing fire hazards.
   c. Used to prepare ammonia (by Haber's process), this is then converted into fertilizers and nitric acid.
   d. Used for inflating tyres of vehicles.
   e. Used in manufacturing of stainless steel.

f. Used as a part of the gas in incandescent light bulbs and for filling the space above mercury in high temperature thermometers to reduce evaporation.

g. Many explosives such as TNT (Trinitrotoluene), nitroglycerin, and gun powder contain nitrogen

5. Nitrogen reacts with non-metals like hydrogen, oxygen at high temperature to form their corresponding nitrogen compounds.

$$\text{Non-metal} + \text{Nitrogen} \xrightarrow{\Delta} \text{Nitrogen compound}$$

$$3H_2 + N_2 \xrightarrow{\Delta} 2NH_3$$

Hydrogen Nitrogen Ammonia

6. The green house gases are CO_2, N_2O, CH_4, CFC (Chlorofluoro carbon) etc. The increase in the levels of these gases results in the gradual increase of temperature of the earth's surface. This increased green house effect is caused due to increase in the air pollutants and it results in the average increase of temperature of the atmosphere. This is called as Global warming.

7. The carbon dioxide gas in its solid form is called dry ice. It is used as a refrigerant. It is so cold that moisture in the air condenses on it, creating a dense fog which is used in stage shows and movie effects.

8. **Nitrogen fixation:**

Nitrogen in available in elemental state or in combined form. It is essential for the growth of plants. However, plants cannot use elemental nitrogen from air directly. This is because plants need soluble compounds of nitrogen. Thus, plants depend on certain processes for the supply of nitrates.

Any process that converts nitrogen in the air into a useful nitrogen compound is called nitrogen fixation. This process can occur naturally (in a specific group of plants) or can be done artificially converting nitrogen to ammonia, ammonium nitrate or any other compound useful for plants.

V. Answer in detail:

1. When a limited amount of CO_2 is passed through lime water turns milky due to the formation of insoluble calcium carbonate. When an excess amount of CO_2 is passed through lime water, it first turns milky and the milkyness disappears due to the formation of soluble calcium hydrogen carbonate, $Ca(HCO_3)_2$.

$$Ca(OH)_2 + CO_2 \longrightarrow CaCO_3 + H_2O$$

Calcium hydroxide Calcium carbonate

2.

a) Carbon dioxide, CO_2 and carbon monoxide, CO

b) Sulphur dioxide, SO_2

c) Phosphorus reacts with oxygen, usually forming two oxides depending on the amount available oxygen: P_2O_3 when reacted with a limited supply of oxygen, and P_2O_5 when reacted with excess oxygen

d) Magnesium oxide, MgO

e) Ferric oxide, Fe_3O_4

f) Sodium oxide, Na_2O

3. a) $4K + 3CO_2 \rightarrow 2K_2CO_3 + C$

Potassium Potassium carbonate

b) When a limited amount of CO2 is passed through lime water, it turns milky due to the formation of insoluble calcium carbonate.

$Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$

Calcium carbonate When an excess amount of CO_2 is passed through lime water, it first turns milky and the milkyness disappears due to the formation of soluble calcium hydrogen carbonate, $Ca(HCO_3)_2$.

c) Sodium hydroxide (base) is neutralized by carbon dioxide (acidic) to form sodium carbonate (salt) and water.

Base + Acid → Salt + Water

$2NaOH + CO_2 \rightarrow Na_2CO_3 + H_2O$

Sodium carbonate

4. Acid rain affects us in many ways. Some of the consequences are given below.

a) It irritates eyes and skin of human beings.

b) It inhibits germination and growth of seedlings.

c) It changes the fertility of the soil, destroys plants and aquatic life.

d) It causes corrosion of many buildings, bridges, etc.

Acid rain and its effects can be controlled by the following ways.

a) Minimizing the usage of fossil fuel such as petrol, diesel etc.,

b) Using CNG (Compressed Natural Gas).

c) Using non-conventional source of energy.

d) Proper disposal of the industrial wastes.

5. The cycle of photosynthesis and respiration maintains the balance of carbon dioxide and oxygen on earth. Photosynthesis in plants requires carbon dioxde which is converted to makes glucose and oxygen is released. It is the released oxygen that is used by us and most other organisms for cellular respiration. We breathe in that oxygen, which is carried through our blood to all our cells. In our cells, oxygen allows cellular respiration to proceed.

The glucose is then turned back into carbon dioxide, which is used in photosynthesis. While water is broken down to form oxygen during photosynthesis, in cellular respiration oxygen is combined with hydrogen to form water. While photosynthesis requires carbon dioxide and releases oxygen, cellular respiration requires oxygen and releases carbon dioxide.

VI. Higher Order Thinking Skills (HOTS):

1. The coefficient of expansion of gases is large. Therefore, the gas in the bottle expands. Hence, the pressure inside the bottle increases. Thus, the bottle may burst in hot summer.

2. Animals undergo a process called respiration which is essential for us to live. Similarly plants go through two processes - Respiration and Photosynthesis. These two processes are completely different from each other. In photosynthesis the plants take in carbon dioxide and release oxygen while in respiration there is intake of oxygen and release of carbon dioxide. These two processes are always done by the plants. During the day there is enough sunlight and the plants carry photosynthesis on a large scale but during the night respiration takes place. So at night these plants release carbon dioxide and there is lack of oxygen. That is why it is not advised to sleep under a tree during night.

3. Fishes respire with the help of their gills. Gills are richly supplied with blood capillaries and can readily absorb the oxygen dissolved in water. The water contains some dissolved oxygen in it. When the water enters the fish through its mouth, the dissolved oxygen is taken inside and carbon dioxide is given out through the gills. In this way, the fish breathe in water. When fish are taken out of water, the supply of oxygen to the fish is cut as the fishes cannot absorb and breathe the oxygen present in the atmosphere. Hence, they die after some time.

4. Water, which is made of oxygen and hydrogen atoms bonded together, is also used to maintain oxygen supply on the International Space Station. Using a process called electrolysis, which involves running electricity through water, astronauts and cosmonauts are able to split the oxygen from the hydrogen.

5. The atmosphere contains oxygen as a component of air. It is with the help pf this oxygen that meteoroids burn up in the atmosphere.

However, beyond the earth's atmosphere, there is no air. Due to absence of oxygen, meteoroids cannot burn and continue to revolve in space.

VII. Analyse the following:

Sewing needles, knives etc. are made of steel. Iron is one of the metals used to make steel. Iron undergoes rusting when exposed to air.

These items can be coated with a thin layer of oil or wax and wrapped in tissue paper or a towel to prevent exposure to moist air.

Chapter - 4 ATOMIC STRUCTURE

I. Choose the best answer:

1. b. definite proportion
2. c. negatively charged particles
3. a. 1:8
4. c. elements are made up of atoms
5. c. the atomic number is same and the mass number is different

II. Fill in the blanks:

1. Atom
2. Same
3. Protons, neutrons and electrons
4. Anion, cation
5. Electron
6. Negatively

III. Match the following:

1. Law of conservation of mass – d. Lavoisier
2. Law of constant proportion – c. Joseph Proust
3. Cathode rays – a. Sir William Crookes
4. Anode rays – e. Goldstein
5. Neutrons – b. James Chadwick

IV. Answer briefly:

1. The law of conservation of mass states that during any chemical change, the total mass of the products is equal to the total mass of the reactants.

2. The **law of constant proportions** states that chemical compounds are made up of elements that are present in a fixed ratio by mass. This implies that any pure sample of a compound, no matter the source, will always consist of the same elements that are present in the same ratio by mass.

3. Properties of Anode rays:
   a) Anode rays travel in straight lines from the anode to the cathode.
   b) Anode rays are made up of material particles.
   c) Anode rays are deflected by electric and magnetic fields. Since, they are deflected towards the negatively charged plate; they consist of positively charged particles.
   d) The properties of anode rays depend upon the nature of the gas taken inside in the discharge tube.
   e) The mass of the particle is the same as the atomic mass of the gas taken inside the discharge tube.

4. Valency of an element can be defined as the number of hydrogen atoms which combine with one atom of that element. For example a molecule of hydrogen chloride consists of an atom of hydrogen combined with a chloride ion. Hence valency of chlorine is 1. In hydrogen chloride molecule, one hydrogen atom combines with one chlorine atom.

5. When an atom gains an electron it has more number of electrons and thus it carries negative charge. At the same time when an atom loses an electron it has more number of protons and thus it carries positive charge. These atoms which carry positive or negative charges are called ions.

6. A chemical equation is a short hand representation of a chemical reaction with the help of chemical symbols and formulae. Every chemical equation has two components: reactants and products. Reactants are the substances that take part in a chemical reaction and the products are the substances that are formed in a chemical reaction.

7.
   a) Carbon monoxide
   b) Nitrous oxide
   c) Nitrogen dioxide
   d) Phosphurus pentachloride

8. a. cation - calcium ion
      anion - sulphate ion
   b. cation - magnesium ion
      anion - chloride ion
   c. cation - ferrous ion
      anion - oxide ion

9. Electrons - are negatively charged particles. Their mass is very very low.

   Protons - are positively charged particles. Their mass is nearly that of hydrogen atom.

10. a. Na (11) — 1e
    b. N (5) — 3e

V. Answer in detail.

1.

Sl. No.	Compound	Name of the cation/ anion	Formula for cation/ anion	Valency of cation / anion
a.	NaCl	Sodium	Na^+	1
b.	CO_2	Carbon	C^{4+}	4
c.	$Al(PO_4)$	Aluminium	Al^{3+}	3
d.	$Ba(NO_3)_2$	Barium	Ba^{2+}	2
e.	$CaCl_2$	Calcium	Ca^{2+}	2

2.

a) Al_2SO_4 c) MgO

b) $AgNO_3$ d) $BaCl_2$

3.

Sl. No.	Skeletal equation	Balanced equation
a.	$C + O_2 \rightarrow CO_2$	$C + O_2 \rightarrow CO_2$
b.	$P + Cl_2 \rightarrow PCl_5$	$2P + 5Cl_2 \rightarrow 2PCl_5$
c.	$S + O_2 \rightarrow SO_2$	$S + O_2 \rightarrow SO_2$
d.	$Mg+HCl \rightarrow MgCl_2+H_2$	$Mg+2HCl \rightarrow MgCl_2+H_2$

4.

a) $4Na + O_2 \rightarrow 2Na_2O$

b) $3\ Ca + N_2 \rightarrow Ca_3N_2$

c) $N_2 + 3H_2 \rightarrow 2NH_3$

d) $CaCO_3 + 2HCl \rightarrow CaCl_2 + CO_2 + H_2O$

e) $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2$

5. **Dalton's atomic theory proposed that**

- all matter was composed of minute particles called atoms.
- Atoms are indivisible and indestructible building blocks.
- Dalton's atomic theory also stated that compounds were composed of combinations of these atoms in certain small ratios.
- Dalton also postulated that chemical reactions resulted in the rearrangement of the reacting atoms.

6. Valency may be defined as the number of electrons an element can accept or donate or share to acquire a stable configuration.

The reactivity of an atom is dependent on the number of electrons present in its outermost orbit or the valence shell. If the outermost orbit of an atom has reached its maximum capacity of electrons, then the atom will be chemically inert or stable. Such an element will not react easily with any other elements.

Inert gases have complete outermost orbits with duplet or octet state, making it difficult for these elements to react with any other elements.

7. Atoms of some elements combine with atoms of other elements and form more than one kind of compound. The elements are said to have variable valency.

The suffix-ous is attached at the end of the name of the metal such as cuprous, ferrous etc. to indicate lower valency.

In case of the higher valency the suffix ic is attached at the end of the name of the metal or use is made of the Roman numeral such as I, II, III, IV etc. to indicate valency.

For example, copper combines with oxygen and forms two products namely cuprous oxide (Cu_2O) and cupric oxide (CuO).

Cu^+ Cupros (or) Copper (I)

Cu^{2+} Cupric (or) Copper (II)

Fe^{2+} Ferrous (or) Iron (II)

Fe^{3+} Ferric (or) Iron (III)

Hg^+ Mercurous (or) Mercury (I)

Hg^{2+} Mercuric (or) Mercury (II)

8. **Main features of Rutherford's Model of an atom**

In the year 1911, Ernest Rutherford, a British physicist, proposed an atomic model. The main features of the model are as follows:

- An atom consists of subatomic particles namely, protons, electrons and neutrons.
- Protons and neutrons are found at the centre of an atom, called the nucleus.
- Electrons revolve around the nucleus in a circular path, called orbits or shells.
- An atom has one or more orbits and each orbit has a definite number of electrons.

VI. Higher Order Thinking Skills (HOTS):

1. A light paddle wheel, when placed in the path of the cathode rays, began to rotate because the small particles of the cathode rays (electrons) have mass and energy. This energy is used in rotating the paddle wheel.
2. By observing the deflection of electrons in electrical and magnetic fields.
3. a) He observed all the compounds with two or more elements and noticed that each of such compounds had the same elements in same proportions, irrespective of where the compound came from or who prepared it.

   b) Law of constant proportions – It states that in a pure chemical compound the elements are always present in definite proportion by mass.

Chapter - 5 BODY MOVEMENTS

I. Choose the best answer:

1. (a) (i) and (iii)
2. (b) Snail
3. (c) Upper jaw and skull
4. (a) To swim easily in water
5. (b) cartilage
6. (a) leg
7. (a) Cervical – 7

II. Fill in the blanks:

1. locomotion
2. movement
3. skeleton
4. skull, sternum, ribs, vertebral column
5. shoulder (pectoral) girdle, pelvic girdle
6. joint
7. Non striated / Smooth / Involuntary muscle
8. Radial

III. State True or False. If false, correct the statement:

1. True
2. True
3. False. Pelvic girdle is a part of the appendicular skeleton.
4. True
5. False. Cardiac muscle is an involuntary muscle.
6. True.

IV. Answer in one or two sentences:

1. The human body is made up of a frame work of bones which helps in its movement. It is called the skeleton.
2. Eight bones of the skull are fixed together and form the cranium. These bones that form the cranium also called the brain box are connected together by immovable joints.
3. The vertebrae in the backbone are joined by gliding points that allow the body to bend backwards, forwards or sideways; slight movement.
4. The axial skeleton consists of all the bones along the central line or axis of the human body. The skull, facial bones, sternum, ribs, and vertebral column form the axial skeleton. The bones in the appendages as well as the structures that connect the appendages to the axial skeleton form the appendicular skeleton. The bones of the pelvic and pectoral (shoulder) girdle, and the bones of the upper limbs (hand, arm, wrist) and lower limbs (foot, ankle, leg) are a part of it.

5. Short bands of tough, flexible connective tissue that connect one bone to another are called ligaments.
6. Muscles are long bundles of contractile tissue that can contract and relax. They are important for movement in the body.
7. Ligaments are short bands of tough, flexible connective tissue that connect one bone to another.Tendons are fibrous elastic chords of tissues that attach muscle to bone

V. Answer briefly.

1. a.

Movement	Locomotion
A change in the shape, direction, place, position, etc., of one or more body parts.	the ability of the body to move from one place to another.
Occurs at the cell, tissue and organisms level.	Occurs only at the organism level.
It can be voluntary or involuntary.	It is only voluntary.

b.

Exoskeleton	Endoskeleton
The skeleton that is found on the exterior layer of the body.	The skeleton that is found inside the body.
It originates from the embryonic ectoderm or mesoderm.	It originates from the mesoderm.
It protects and preserves the inner organs.	Forms the main body structure and framework.
Examples are the scales in fish, feathers on birds and the outer hard layer of the tortoise.	Example - Almost all vertebrates.

c. The pectoral girdle is formed by the collar bone (clavicle) at the front, and the shoulder blade (scapula) at the back. The collar bone is supported by the breast bone at one end and the shoulder blade at the other. The shoulder bone encloses a socket like cavity into which fits the ball of the upper arm forming a ball and socket joint.

The pelvic girdle is formed from strong bones as it balances the weight of the entire body. It is formed from five fused vertebrae at the back and it forms a cavity in the centre while it reaches the front. The three bones namely ilium, ischium and pubis are fused together. The femur or the thigh bone fits into the girdle on either side through a ball and socket joint.

d.

Ball and socket joint	Hinge joint
The round ball shaped head of one bone fits into the hollow cup like socket of another bone.	The convex surface of one bone fits into the concave surface of another bone.
It allows rotational movement and the maximum range of movement, in three planes.	It allows movement only in one direction. (bending and straightening only).
Examples - hip and shoulder joint.	Examples - elbow, knee and ankle joints.

e.

Voluntary/ Striated /Skeletal	Involuntary / Non striated / Smooth
Attached to the bones Found in arms, legs, neck.	Attached to soft parts of the body like the walls of the internal organs, blood vessels, bronchi, iris, and the skin.
Long, slender, cylindrical, unbranched	Spindle shaped
Multinucleate, Striated dark and light bands.	Single, central nucleus Non striated.
Voluntary	Involuntary
Movement of bones, holding the bones together, shape.	Movement of internal organs.

2. Most muscles work in pairs. They work against each other and are called antagonistic pairs.

Examples are the biceps and triceps in the upper arm. The biceps is bulging (contracted) on the upper arm, when we fold our arm at the elbow, and the triceps is found below the humerus or the bone of the upper arm, when it is relaxed. When the biceps contracts the lower arm is raised and the arm bends. In this position the triceps muscle is relaxed. The opposite happens when we extend or straighten the arm. The triceps contract and the biceps relax.

3. All the features of the bird's body are designed for flight. The streamlined body offers least resistance while moving in the air. The skeleton is made up of pneumatic or hollow bones with air spaces between making them light but strong. This makes their body light and helps them in flight. Their forelimbs are modified into wings and the strong flight muscles attached to the wings; help them to flap their wings. Both the wings and the tail have long feathers to help them fly.

4. The functions of the skeletal system are as follows:

- The skeleton provides structure, shape and a framework to our body and gives it support.
- It surrounds and protects delicate internal organs like the heart, lungs and the brain.
- The bones help us to move our body as the skeletal muscles are attached to them. They act as levers for muscular action. Muscular movement would not be possible without tendons and ligaments.
- The bone marrow is the seat of production of various blood cells.
- Bones store various minerals like calcium and phosphorous that are required for regulatory functions in the body.

VI. Answer in detail.

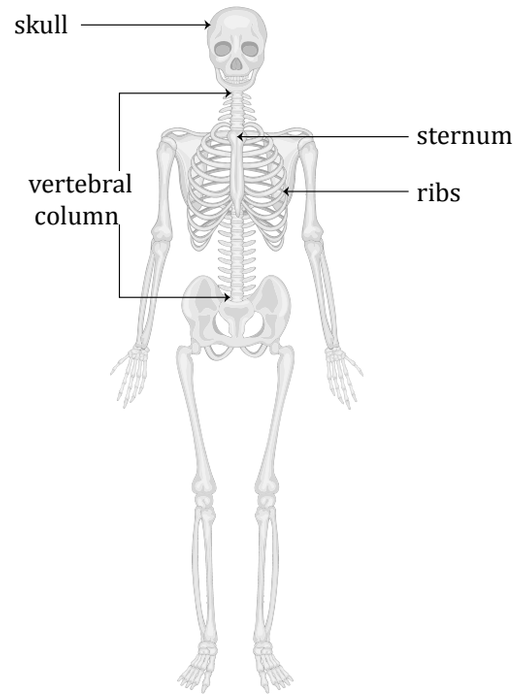
1. Based on their movement, joints can be classified in the following manner.

   Fixed/ Immovable / Fibrous joints are joints allow no movement between the connected bones. The bones are held together, with the help of fibrous connective tissue. They do not have a synovial cavity. Bones of the skull are connected by these joints.

   Cartilaginous / Slightly moveable joints are joints allow little movement between the connected bones. The bones are held together with the help of a cartilage with no synovial cavity. Bones of the vertebra, and the ribs and the breast bone, are connected by these joints.

   Freely movable joints are joints allow varying degrees of movement and easy movement between the connected bones. There are six major types of freely movable joints. Example ball and socket joint in the hip and shoulder.

2. The axial skeleton consists of all the bones along the central line or *axis* of the human body. The skull, facial bones, sternum, ribs, and vertebral column form the axial skeleton. The skull is positioned at the top of the backbone and can be moved upwards, downwards and sideways. It is hard and made up of small bones. There are 22 bones in all. Running down the back of the body in the trunk region is the vertebral column, also called the spine or the backbone. It supports the upper part of the body and is made up of 33 individual bones, called vertebrae. The ribs along with the vertebral column form a conical cage known as the ribcage. The ribcage protects the delicate organs like the heart, lungs, part of the liver and the upper part of the digestive canal. The sternum lies in the middle of the chest. There are 12 pairs of ribs attached to the sternum in front and the vertebral column at the back, forming the ribcage.



3. There are different types of movement seen in organisms, ciliary, flagella, amoeboid and muscular movement.

Ciliary movement: Cilia are tiny hair like processes that extend out from the epithelium. In lower organisms, they help in locomotion. In higher organisms, like man, some of the internal organs are lined with ciliated epithelium. They help in the movement of materials and fluids as is seen in the lymphatic system

Flagellar movement: Unlike cilia that cover the entire body of the organism, a flagellum is a thin, long, whip like structure seen usually at one end of the organism. Euglena and chlamydomonas are examples of organisms that move with flagella.

Amoeboid movement: This movement is seen in amoeba because of the streaming movement of the protoplasm within the organisms to form pseudopodia. It is also seen in some blood cells like leucocytes and macrophages.

Muscular movement: This type of movement is observed in humans and higher vertebrates that help them to move. The muscular and skeletal systems help with this movement.

4. A streamlined body means narrow at the ends and broad at the centre to reduce resistance through a stream of water or air Fish have streamlined body help the fish to reduce friction and overcome the resistance offered by water while they swim. It helps them to move smoothly with the flowing water. Birds also have a streamlined body that helps them to reduce the friction and resistance offered while flying through the air.

5. Voluntary/ Striated /Skeletal muscles are attached to the bones and found in the arms, legs and neck. They are long, slender, cylindrical, unbranched. They are multinucleate, and striated with dark and light bands. They are voluntary muscles. The functions include movement of bones, holding the bones together and shape.

Involuntary / Non-striated / Smooth muscles are attached to soft parts of the body like the walls of the internal organs, blood vessels, bronchi, iris, and the skin. They are spindle shaped, non striated with a single, central nucleus and involuntary. Functions include movement of internal organs. Cardiac muscles are found in the walls of the heart. They are branched, striated and involuntary with 1-3 central nuclei. Their function is to help in the beating of the heart.

Chapter - 6 REACHING THE AGE OF ADOLESCENCE

I. Choose the best answer:

1. c) 11 to 19
2. a) puberty
3. b) girls
4. c) larynx
5. c) sweat and sebaceous
6. a) Hormones
7. b) LH hormone
8. c) ceased
9. d) Calcium

II. Fill in the blanks:

1. anti pituitary
2. menarche
3. menstrual cycle
4. Iodine
5. anemia

III. State True or False. If false, correct the statement:

1. True
2. False – The release of the ovum from the ovary is called ovulation.
3. False-During pregnancy, the corpus luteum starts to degenerate and stops producing estrogen and progesterone.
4. False – Making use of disposable napkins or tampons decreases the chances of infections.
5. True

IV. Match the following:

1. Puberty - Sexual maturity
2. Adam's apple - Change in voice
3. Androgen - Muscle development
4. ICSH - Testosterone
5. Menopause - at 45 to 50 years of age

V. Answer briefly:

1. Adolescence is a transitional stage of human development, both physical and mental, occurring between puberty and adulthood. It is a transition period between childhood and adulthood.
2. The different changes that occur in puberty are; changes in body size, changes in body shape and proportion, change in voice, development of primary sex organs and development of secondary sex characteristics.
3. There are certain distinct features that appear during puberty and adolescence that cause dissimilarities between boys and girls. These are secondary sexual characteristics, and are due to hormonal changes that occur during puberty.
4. The stage of getting the first menstrual flow at the beginning of the first menstrual cycle is called menarche. It starts around the age of 12 years. At this time due to the onset of puberty, the ova begin to mature. It marks the beginning of adolescence, during which time physical growth is more pronounced and mental and emotional maturation occurs.
5. Cleanliness is very important during the time of the menstrual cycle and girls must take special care of cleanliness and personal hygiene to reduce the spread of germs and chances of catching any infections.

VI. Answer in detail:

1. The physical changes that occur in boys and girls during adolescence are as follows:

Girls:

- Development of hair under the armpits (axillary hair), and in the pubic region
- Development and enlargement of the breasts
- Broadening and rounding of the hips due to the widening of the pelvic region and more fat deposition around the hip
- Increase in muscles, which gives shape to the arms, shoulders, and legs
- The voice becomes shrill
- Beginning of the menstrual cycle
- Like in boys, the skin becomes coarser and the pores enlarge

Boys:

- Development of facial hair such as a beard and a moustache
- Development of hair under the armpit, on the chest and in the pubic region
- The body becomes more muscular and broad shouldered because the strength of the muscles increases and it gives shape to the arms, legs and shoulders
- The voice changes and it becomes deeper and husky as the larynx enlarges. The volume increases and there is a drop in pitch
- Increase in body weight
- The skin becomes coarse and the pores in the skin enlarge

2. The ovaries and testes, which are part of the reproductive system, start secreting the sex hormones only at puberty. In males, the hormone testosterone helps in the production of sperm (male gamete). In females, the hormones, oestrogen and progesterone, are responsible for the maturity of the female gametes, i.e. the ova or eggs. Follicle Stimulating Hormone (FSH) in females is responsible for the growth and development of the Graafian follicle and the secretion of estrogen. In males it is required for the development of seminiferous tubules, and spermatogenesis. Luteinizing hormone in females is required for ovulation, and for the secretion of the luteal hormone progesterone. It is also required for the final maturation of the Graafian follicle. It stimulates the interstitial (Leydig) cells of testes in males and the secretion of testosterone and is therefore also known as the Interstitial Cell Stimulating Hormone (ICSH). Sperm is then actively produced. Sperm production in males begins at puberty and continues through life. The main function of prolactin (lactogenic hormone) is the secretion of milk during lactation. Oxytocin is responsible for the expulsion of milk from the mother's breast.

3. The menstrual cycle is as follows: begins with the shedding of the endometrium of the uterus and bleeding.

   In females at puberty the sex hormones are released into the blood causing some of the ova in the ovaries to mature. Usually, every 28 days, one mature ovum is released from one of the ovaries. This is known as ovulation. Before ovulation the endometrium starts to thicken and is full of tiny blood vessels as it prepares to receive the fertilised egg. If no fertilisation takes place then the inner lining of uterus is no longer required and is shed. Along with the blood vessels and the unfertilised egg it comes out of the vagina in the form of a bleeding known as menstruation.

4. Nutritional needs are higher during adolescence than any other time in our life. Adolescents need a high calorie diet due to the growth and development spurt and increased physical activity that happens during that period.

Nutrition and physical growth are interrelated. If growing children or adolescent children are not given sufficient quantities of a high calorie, balanced diet with all the nutrients, it may not only result in retarded physical growth, but also reduces the intellectual development and delays sexual maturation. It should be balanced to combat any illness that can set in during that period.

Nutrition is also important to prevent diet related diseases like osteoporosis, cardio vascular problems, hypertension, etc.

A balanced diet contains all the nutrients proteins, carbohydrates, fats, minerals and vitamins in the required quantities. The diet of adolescents should be high in proteins that help in growth, apart from carbohydrates – the energy giving nutrient. They should consume considerable amount of fats and vitamins in the required proportions. They need basic minerals like calcium, iron, phosphorous, etc., in their diet. Apart from these, iodine is also essential.

Class: 8 KEY ANSWERS TERM : II

HISTORY

Chapter – 1
EDUCATIONAL DEVELOPMENT IN INDIA

I. Choose the correct answer:

1. a. Sanskrit
2. a. Gurukula
3. c. Bihar
4. c. 1980
5. d. Portuguese
6. 6. a. Charter Act of 1813
7. b. Radhakrishnan Commission, 1948
8. d. 1968

II. Fill in the blanks:

1. Knowledge
2. Alexander Cunningham
3. Firozshah Tughlaq and Sikandar Lodi
4. 1992
5. SSA
6. Tamil Nadu

III. Match the following:

1.	I-Tsing	-	Chinese scholar
2.	Francis Xavier	-	University at Kochin
3.	Wood's Despatch	-	Magna Carta of Indian Education
4.	Sarafoji II	-	Saraswathi mahal
5.	Sir Thomas Munroe	-	Western Education in Madras

IV. Consider the following statements and tick the appropriate answer

1. d. i, ii and iii are correct

V. Find out the correct pair:

b. Macaulay's English education - Minutes of 1835

VI. Answer the following in one or two sentences:

1. The students were expected to work hard and lead a life of chastity and obedience.

   In Gurukula, They spent their time in gaining knowledge and skills.

   The guru made up the curriculum as per the need of the individual student.

2. Nalanda university and university in ancient Taxila are the most notable universities that evolved in ancient India.

3. Taxila was first identified by the British army officer and archaeologist Alexander Cunningham in the 19th century. The famous men connected with Taxila are Panini the grammarian, Kautilya, the minister of Chandra-gupta Maurya and Charaka one of the two leading authorities of Indian medical sciences. The city was declared a World Heritage Site by the UNESCO in 1980.

4. Education centres in Chaturvedimangalam and Tirubuvanai and Temples in Nataraja temple in Chidambaram and the Big temple in Tanjavur flourished in the Chola period.

5. **SSA**

   The SSA (Education for All) was a programme launched in 2000 by the government of India whose objective was universalisation of elementary education. It also focuses on developing lifeskills, girls education and education for children with special needs.

   RMSA

   The RMSA (National Mission for Secondary Education) is another scheme launched by the

government of India in 2009 (eleventh five year plan). Its intentions are universalisation of access and provision of quality education at the secondary stage – to all children in the 15–16 age group. Through this scheme the government provides science labs, libraries, in–service training for teachers, computer–aided education and co–curricular activities.

6. **RTE**

Right of Children to Free and Compulsory Education Act (RTE 2009) are sought to be implemented. The RTE provides for free and compulsory education to all children between the ages of six and fourteen.

VII. Answer the following in detail:

1. Panini developed Sanskrit grammar. Books written by Aryabhata (5th century CE – mathematician), Katyayana (grammarian and mathematician), Patanjali (grammar/ yoga) and medical texts written by Charaka and Sushrutha were used by students are the sources of education in India.

2. Warren Hastings was the first governor general to establish an educational institution in India. He set up a 'Madarsa' (madrasa) at Calcutta in 1781.

- A Sanskrit college was started at Banaras in 1792 by JonathanDuncan.
- In 1800, Lord Wellesley established the Fort William College in Calcutta for the training of British civil servants of the Company in the languages and customs of India. This interest in lndian literature, sacred texts, her history and culture led to the revival and encouragement of a learning system that had existed prior to the arrival of the British in India.
- **Lord Macaulay's Minutes** Written by Thomas Babington Macaulay formed the basis of the English education.
- **Wood's Despatch on Education** is described as the 'Magna Carta' of English education in India.
- Lord Ripon appointed an Education Commission under Mr. W.W. Hunter in 1882 to review the progress of education in these areas since Wood's Despatch of 1854. The commission submitted its report in 1883.

3. National Policy on Education (NPE) in 1968. As a result a uniform pattern of education 10+2+3 system was initiated all over the country.

The policy aimed at restructuring Indian education at all levels and at providing equal educational opportunities to its citizens to achieve national integration and greater cultural and economic development.

In 1986 the Indian government introduced another national educational policy called the New Education Policy (NEP), which focussed on greater educational opportunities for weaker sections like Scheduled Castes, Scheduled Tribes and women, promotion of adult education and open universities for rural India. It stressed on child–centric educational approach and launched Operation Blackboard to improve primary level education.

The New Education Policy of 1986 was modified in 1992 and it envisaged the formulation of a new National Curriculum Framework, common entrance tests for professional courses across the country and streamlining of evaluation practices at the secondary education level.

4. Temples became active centres of teaching and learning during the Chola period.

The Chola rulers were enthusiastic patrons of Tamil learning and literature. Consequently, their times witnessed immense literary output in Tamil.

Chola inscriptions tell us about the nature of education, method of teaching, the qualifications of teachers, and royal support, in financial terms, to schools attached to temples. Institutional and residential arrangements were made by the Chola rulers for selected students.

Temple schools from the 12th and 13thcenturies were present at the Nataraja temple in Chidambaram and the Big temple in Tanjavur. The Chola rulers supported Sanskrit learning as well. Inscriptions of their reign mention the presence of Vedic institutions in such places as Chaturvedimangalam and Tirubuvanai.

VIII. Higher Order Thinking Skills:

1. The SSA (Education for All) was a programme launched in 2000 by the government of India whose objective was universalisation of elementary education.

   The universalisation was achieved through RTE. Right of Children to Free and Compulsory Education Act (RTE 2009).

   The RTE provides for free and compulsory education to all children between the ages of six and fourteen. The SSA also focuses on developing lifeskills, girls education and education for children with special needs.

Chapter – 2

DEVELOPMENT OF INDUSTRIES IN INDIA

I. Choose the correct answer:

1. d. Smelting of Iron
2. a. Textile
3. c. Kanpur
4. c. To built a strong industrial base
5. c. Industrial policy of India

II. Fill in the blanks:

1. Trade
2. mid of 18th century
3. 1839
4. 1855
5. Suez canal

III. Match the following:

1.	Travenier	-	French traveller
2.	Dacca	-	Muslin
3.	Dadabai Naoroji	-	Drain theory
4.	Ballygunj	-	Paper Mill
5.	Smiths	-	Artisan

IV. State True or False:

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

V. Consider the following statements and tick the appropriate answer

1. c) iii and iv are correct
2. a) A is correct and R is correct explanation of A
3. **Which one of the following is wrongly matched?**

   d) Economic Liberalisation – 1980

VI. Answer the following in one or two sentences:

1. Gold and silver jewellery, brass,copper and bell metal wares and marble work are the traditional handicraft industries of India.

2. Dadabhai Naoroji wrote the famous and influential book 'The Drain of Wealth: UnBritish Rule in India'. In it he demonstrates with statistical evidence how India became poor under the British by losing her wealth to Britain.

3. The invention of the spinning jenny, the cotton gin and the flying shuttle made the production of textiles large scale.

4. The CII is a non-government, non-profit industry sponsored and managed trade/ business association. It was set up in 1895 in Bengal under the name Engineering and Iron Trades Association by Indians to put pressure on the British government to place government orders for iron and steel and engineering goods with Indian companies based in India. The CII works with the government on policy issues with the aim of contributing to the development of industry in India.

5. India lost her status as a leading manufacturing country and became a consumer of British goods. Reduced internal demand and the absence of outside markets led to deindustrialisation of India in the late 19th century.

VII. Answer the following in detail:

1. **Loss of Royal Patronage:**
   Indian industries and handicraft were patronised by the local rulers, who were also major consumers of the goods produced.

From Producer of Handicraft to Exporter of Raw Materials:

The Indian handicraft industry was collapsed as a consequence of the policies followed by the British rulers of India. During the period of industrial revolution, starting roughly in mid-18th century in England, machines began to replace human labour in the production of goods.

The result of this situation was that the Indian craftspeople were deprived of a market for their goods.

Competition from Machine-made Goods

The invention of the spinning jenny, the cotton gin and the flying shuttle made textile production faster in England leading to mass production of cotton textiles. The machine-made textiles were cheaper than the hand-made ones since they were produced on a large scale. The invention of the steam engine in England made transportation quicker. Indian handmade goods could not compete with these goods.

Trading Policy of the British

The trading policies and practices of the British rulers affected Indian economy and people adversely.

India's Deindustrialisation in the 19th century

India lost her status as a leading manufacturing country and became a consumer of British goods. Reduced internal demand and the absence of outside markets led to deindustrialisation of India in the late 19th century.

2. Increasing demand for Indian tea, coffee and indigo in the19th century in England led to the plantation industry being the first modern industry to be started and owned by the British and other Europeans. The Assam Tea Company was founded in 1839 to cultivate tea in Assam.

   Eastern India (Bengal and Assam) became centres of tea industry/production. South India (Karnataka, Kerala) became centres of coffee and rubber production under the British with the plantation owners being British/European.

3. The year 1991 ushered in a new era of economic liberalisation or free market economy in India.

   Some of the elements of the liberalisation policy are: ending the practice/policy of industrial licensing, simplification of the procedures for starting a business, dismantling price control mechanisms, allowing foreign capital into Indian industrial sector. Consequently, there was robust growth in the capital goods and the manufacturing sectors during the 8th, 10th and 11th Five Year Plan periods (1992 2012. The industrial growth touched a high of 10 percent during the year 2009–2010.

VIII. Higher Order Thinking Skills:

1. Indians made the goods they needed, used and enjoyed mostly with their hands with the required tools. Hence they were little costlier than the machine made.

   Production through machine is faster.

   Machine made goods were uniform in size and of good quality.

GEOGRAPHY

Chapter – 1

MIGRATION AND URBANISATION

I. Choose the correct answer:

1. a. Availability of clean drinking water
2. c. Better job opportunities
3. b. Emigrates
4. d. 10,00,000
5. c. Delhi
6. a. Rural to urban
7. a. Immigrant
8. c. Urban to Rural
9. c. Political
10. a. Production of food grains

II. Fill in the blanks:

1. Villages
2. Delhi
3. voluntarily
4. Industry

5. urban to rural
6. Brain drain
7. 2007

III. State True or False:

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

IV. Match the following:

1. Emigration – Out migration
2. Immigration – In migration
3. Pull factor – Employment opportunity
4. Push factor – Unemployment
5. Marriage – Socio-cultural migration

V. Answer the following in one or two sentences:

1. People change their place of residence from one place to another as individuals, family units or in large groups.

2. Temporary migration, Permanent migration and Seasonal migration/transhumance are the different types of migration.

3. People migrate in search of better studies, jobs, livelihoods and careers or simply for a better life.

4. Villages have become deserts. People move from urban wants leave their retire life calm and quiet.

5. Towns and cities grow in three ways:
   1. A small town can grow larger because of natural increase of its population.
   2. When more people migrate into cities, a city has to expand to make space for them.
   3. Villages could grow in population to be classified as towns and towns could grow in size to be classified as cities.

6. The process of society's transformation from rural to urban areas is known as urbanisation. This happens when more people move into towns and cities.

7. Tokyo, Delhi, Shanghai, Sao Paolo are some of the most populous cities in the world.

VI. Answer the following in detail:

1. **Impacts of Urbanisation:**

   Consequences of urbanisation

   The growth of towns and cities, while they have offered many people comfortable lives, have had a great impact in the deterioration of quality of life for a large number of them.

   i. The density of population is so high that a large number of people live in small areas and there is not enough space for comfortable housing.

   ii. Urban areas promote housing for the poor in slums as many workers are needed in cities. They cannot afford proper houses and live in temporary dwellings with poor sanitation and hygiene.

   iii. The environment gets polluted with tons of garbage piling with the authorities not knowing what to do with them; sewage disposal is a large problem and safe potable water supply is inadequate.

   iv. People resorting to traffic violations and accidents are also increasing in number.

2.

Push factor	Pull factor
Unsafe environmental conditions	Safe and secure regions.
poor economic conditions, lack of job opportunities.	Better job oppourtunities.
War, racial or religious discrimination, division of states or countries often lead to people becoming refugees	Favourable political policies that allow people to settle without discrimination; acceptance of refugees.
lack of proper services like health care, education, transport, water and sewage.	Availability of modern facilities like housing, with the required infrastructure for work as well as living.

When people belonging to a specific cultural or religious group have moved out, those left behind also do, not particularly due to discrimination but simply because of the changing circumstances.	The clustering of people of one group while welcoming and supporting others of the same kind.
lack of civil liberties due to societal or political restrictions, like restrictions imposed on style of dressing, freedom of speech and expression.	A free society that does not bind people to strict rules in their personal lives; availability of freedom to express themselves through all forms of expression.

3. **Types of Migration**

Based on time

We have temporary and permanent migrations. Some people move to other countries or cities on transfers or change their jobs, for short periods of time. This is short term or temporary migration.

Permanent migration or long-term migration is when people leave their place of residence for a long period of time without the intention of coming back..

Seasonal migration is when people move for a part of the year to another place. eg., Agricultural labourers movement shepherds who take their flocks of sheep to high alpine pastures for grazing during summer. This kind of seasonal migration is called **transhumance**.

Based on regions

- **National or internal migration**

It happens within a country. In India, as well as the rest of the world too, we have large numbers of people who have moved from villages to towns and cities.

Rural to urban migration adult workers leave their families in the village and go out to towns and cities for jobs.

People move from one village to another in search of fertile agricultural land. This is called rural to rural migration. Urban to rural migration is becoming rarer.

Workers who moved out because of lack of opportunities in villages sometimes come back when agriculture improves or when village services have become better. Some people like to retire into the village seeking the quiet and calm.

urban to urban migration happens when people move from small towns to large towns or cities or from one city to another.

- **International migration** happens when people leave one country for another.

Based on social needs

Women migrants are more prevalent as they move to their husband's place of residence after marriage. In modern societies, men try to find a job in their wives' place if the wife already has a good job.

Based on willingness to migrate

Sometimes migration takes place due to a person's desire to live in a better place.

So people move voluntarily. This is called voluntarily migration.

If migration happens by force like disasters, a famine etc. then it is termed as forced migration.

4. Human migration is the movement of people from one place to another with intention of settling, permanently or temporarily, at a new location. They move in search f better studies, jobs, livelihoods and careers or simply for a better life. Mankind has been moving and spreading across the world. They tend to live in groups or sometimes scatter far and wide.

Living and moving in groups gave people a sense of security. They could help one another especially in times of danger like natural calamities or attacks from animals. They supported and saved one another. Whether it was the hunters and gatherers or the nomadic herdsmen, they moved in groups. People living close to nature like hunters, herdsmen, foresters and farmers depend upon the environment for their daily living.

5. **Problems of Urbanisation:**

Lack of space for housing and reduction in the quality of housing in the urban areas due to increase in population.

Population is more in the Urban areas leading to overcrowding.

No proper water supply and sanitation is bad.

Traffic is heavy and increase in vehicles cause air pollution.

Industrial waste pollute the water sources.

Chapter – 2 HAZARDS

I. Choose the correct answer:

1. d. Andaman and Nicobar Island
2. c. Monsoon
3. d. Japenese
4. c. Pollutants
5. a. Chemical leak industries

II. Fill in the blanks:

1. Droughts
2. Natural
3. 2004
4. 1984
5. 78.09%
6. natural, tectonic
7. heavy rainfall, plains
8. Environmental, pollutant
9. Man made, Hiroshima
10. Secondary, cool season

III. Match the following:

1. Smog – Smoke + fog
2. Chernobyl disaster – 1986
3. Landslide – Ooty
4. Hazard – A game of dice
5. Cyclone – Low pressure centre

IV. Give a single term for the following:

1. Carcinogen
2. ozone
3. Tsunami
4. Storm surge
5. Particulate

V. Answer the following in one or two sentences:

1. There are eight types of hazards based on the origin.

Atmospheric hazards, Atmospheric hazards, Atmospheric hazard, Volcanic hazard, Biological hazard, Environmental hazard, Technological hazard, Human-induced hazards.

2. **Radioactive substance:**

Tools and unused fuel rods of nuclear power plants.

Biomedical wastes

Hypodermic needles, bandages and outdated drugs; human waste from surgeries.

3. There are three types of drought:

Meteorological drought , Hydrological drought, Agricultural drought

4. **Causes for flood:**

Meteorologicalcause

Heavy rainfall, cyclones, thunderstorms and cloud bursts.

Physical cause:

Large, flat plains with large catchment area providing copious water and melting snow; insufficient drainage by blocking flow by built-up areas and transport lines.

Man-made causes

Deforestation, faulty agricultural and irrigation practices, breaching of dams,siltation of water bodies and not maintaining them; rapid urbanisation by taking away open lands and filling up lakes.

5. Structural damage to buildings, fires, damage to bridges and highways, initiation of slope failures, death, loss of lives and tsunami. People become homeless.

6. Floods bring lot of problem to people. They are Loss of life and damage to buildings and other structures, including bridges, sewerage systems, roadways, and canals. Problem in power generation and water supply. It also causes lot of diseases.

VI. Distinguish between the following:

1.

Natural disaster	Man-made disaster
These occur completely due to natural forces. For example: Earthquakes, volcanic eruptions, Flood. They are also very difficult to predict.	These are caused solely due to human activities. For example: pollution from solid wastes, water pollution, air pollution, leakages of nuclear power plants etc. They occur due to human negligence and poor management and can often disturb the safety and health of people.

2.

Flood	Drought
A flood occurs when the land gets inundated with heavy rainfall.	Drought refers to a continuous period of dry weather. It results in inadequate water supply for daily life, crops and livestock.

3.

Primary pollutant	Secondary pollutant
These are wastes that get into the atmosphere directly from industrial activity. Burning of coal and oil, which are fossil fuels, releases carbon dioxide and carbon monoxide.	Particulate matter and all these poisonous gases descend during the cool season to mix with condensed vapour or fog to cause smog. Smoke combined with fog is called smog

4.

Earthquake	Landslide
An earthquake is a violent tremor caused due to the movement of tectonic plates. Shock waves may be felt in all directions from the place of origin. They are extremely violent.	A landslide is the rapid movement of soil, rocks, stones, boulders along with trees, houses and other structures down a slope due to gravity

5.

Smog	Fog
Smoke combined with fog is called smog	Fog is a visible aerosol consisting of tiny water droplets or ice crystals suspended in the air at or near the Earth's surface

6.

Hazard	Disaster
A hazard is a thing, person or event that causes harm or damage to human property or the environment.	A disaster is a serious disruption occurring over a relatively short period of time that causes great damage to property or loss of life

7.

Meteorological disaster	Atmospheric pollution
Meteorological disasters are caused by extreme weather, e.g. rain, drought, snow, extreme heat or cold, ice, or wind.	Atmospheric pollution is the release of a harmful chemical or material into the atmosphere.

8.

Sewage	Industrial effluent
Sewage (or domestic wastewater or municipal wastewater) is a type of wastewater that is produced by a community of people.	wastewater from industries treated or untreated - that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters".

VII. Answer the following in detail:

1. **Hazardous Wastes caused by modern technology:**

   The wastes that may or tend to cause adverse health effects on the ecosystem and human beings are called hazardous wastes. They could be the result of a process or activity

using modern technology by manufacture of chemicals and synthetic materials that are not bio-degradable.

The following are the major hazardous wastes:

Radioactive substances

Tools and unused fuel rods of nuclear power plants; used x-ray sheets and irradiated material from x-ray labs.

Chemicals

Synthetic organics, inorganic metals, salts, acids and bases, flammables and explosives.

Biomedical wastes

Hypodermic needles, bandages and outdated drugs; human waste from surgeries.

Flammable wastes

Organic solvents, oils, plasticisers and organic sludge that can catch fire easily.

Explosives

The wastes resulting from ordnance manufacturing and some industrial gases; fireworks factories, godowns and shops during Diwali.

Household hazardous wastes

Pesticides, waste oil, automobile batteries and household batteries.

E-waste

Used electronic gadgets like cell phones, computers other electronic equipment that use different kinds of metals.

2. **Causes of water pollution:**

Rapid urbanisation increasing the volume of freshwater consumption and at the same time letting out huge volumes of wastewater.

Industrial effluents without proper treatment of chemicals in the wastewater.

Directly letting out large volumes of domestic sewage into freshwater bodies.

- In agricultural fields, chemical fertilisers and pesticides are washed down through irrigation and flow into the rivers and lakes nearby. This is known as agricultural run-off. They also seep into underground water causing water pollution.
- Excessive extraction of underground water in coastal areas allows sea water to intrude or come into underground aquifers. So the water turns salty.
- Large urban areas generate thousands of tons of garbage. They are all dumped in lakes or nearby. Mountains of garbage leach pollutants into the nearby water bodies and underground water.

3. Identifying the hazard and prescribing the correct preventive measures for it.

- Studying areas that are most prone to particular hazards. This is known as vulnerability study. For example, people living in low-lying areas are vulnerable to floods.
- Immediate response with aid is a must, otherwise many lives may be lost and people will bear heavy economic losses.
- Prevention is better than cure. India is a country that faces multiple kinds of disasters in various geographic regions. Preventing major losses is important for a developing country like India. We have to work hard to make economic progress.

4. When the proportion of the gases change, it becomes hazardous to human beings and other life forms. Air pollution is the contamination of indoor and outdoor air. Pollutants are substances or energy that causes pollution.

Causes:

Smoke from industries, vehicles, other sources add particulate matter; burning of fossil fuels adds more carbon di oxide causing global warming; other pollutants like lead oxide and sulphur di oxide

Effects:

Smoke mixes with natural fog to cause smog; oxides of lead cause cancer; H_2SO_4 mixes with water vapour to cause acid rain.

Preventive measures:

Use industrial filters and other devices to recover particulate matter; find alternate sources of fuel and energy resources.

5.

Zone V (very high level of risk)

This region comprises of the entire north- eastern states, Northern Bihar, Kutch region of Gujarat and states of Uttarakhand, Himachal Pradesh, parts of Jammu and Kashmir and Andaman & Nicobar Islands.

Zone IV (high level of risk)

This region covers Delhi, northern part of Uttar Pradesh, West Bengal, remaining parts of Bihar and Jammu and Kashmir, small portions of Maharashtra near the west coast and Rajasthan.

Zone III (moderate risk)

The regions of Kerala, Goa, Lakshadweep Islands, Madhya Pradesh, Jharkhand, Chhattisgarh, Maharashtra, Orissa, Andhra Pradesh, Tamil Nadu and Karnataka.

Zone II (low risk)

This covers remaining parts of our country. in parts of Rajasthan, Haryana, Punjab, parts of Uttar Pradesh, Madhya Pradesh, Chatthisgarh, Jarkhand, Odisha, central and eastern Deccan regions.

CIVICS

Chapter – 1 UNDERSTANDING SECULARISM

I. Choose the correct answer:

1. c) An attitude of tolerance and peaceful coexistence on the part of citizens belonging to any religion
2. c) Both (1) & (2)
3. b) 1976
4. d) Preamble of the Constitution
5. d) Fundamental rights
6. a) Religious instruction
7. c) does not give importance to a particular religion

II. Fill in the blanks:

1. animosity
2. equal rights
3. Atheism
5. discrimination
4. unity, integrity

III. Match the following:

1. Atheism – lack of belief in god
2. Children – future citizen
3. Din-i-Illahi – divine faith
4. Constitution – 1950
5. Holyoake – coined the word secularism
6. Rajaram Mohan Roy – social reformer

IV. State True or False:

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

V. Which of the following statements are true? Tick the appropriate choices:

1. d) i, ii and iv only
2. b) Both A and R are true and R is the correct explanation of A.
3. a) A is correct and R is the correct explanation of A.
4. a) Din-i-Illahi – A book

VI. Answer the following in one or two sentences:

1. Mahatma Gandhi, B.R. Ambedkar, Rabindranath Tagore, Raja Ram Mohan Roy, Sir Syed Ahmad Khan contributed to the spread of secularism.
2. Secularism means an attitude of tolerance towards other religions. It means the peaceful coexistence of citizens belonging to all faiths.
3. The objectives of secularism are as follows:

- To ensure that one religious community does not dominate another.
- To ensure that some of the members belonging to a particular religious community do not in any way dominate the others members of the same community.
- To ensure that the state does not enforce any particular religion on its citizens.

- To ensure that the state does not take away the religious freedom of any of its citizens.

4. It is important to separate religion from the state so that every citizen is free to propagate, practice, and profess their faith, change it or not have one, according to their conscience.

5. *Any three Constitutional provisions given in the lesson - Refer Text book.*

VII. Answer the following in detail:

1. Education plays an important role in preparing citizens to live a purposeful life within a secular society. Secularism is very essential in education. It means freeing public education of any religious dominance. There should be no religious dominance in learning development. Since children are the future citizens, education imparted to them, should aim at developing their moral behaviour and character and not be biased by religion. Secular education can be identified by the following characteristics:

- It develops a moral and humanistic outlook, training youth to be better citizens.
- It helps to develop an attitude of appreciation and understanding towards another's point of view.
- It helps in the development of a wider vision of life.
- It helps to develop and strengthen democratic values like equality, liberty, fraternity and co-operative living.
- It is a synthesis of materialism and spiritualism.
- It strives towards preventing religious hatred and fanaticism.
- It helps to remove narrow mindedness and foster liberal attitudes and values.

2. The spirit of secularism is very important in a country like India that is working every day to prevent religious domination of any kind. Secularism strives towards allowing every Indian to enjoy all the blessings of life, liberty and happiness, and to maintain the unity and integrity of the country. This is guaranteed through the Fundamental Rights within the Indian Constitution that are based mainly on secular principles and is one of the main achievements of democracy in our country. For a multi-religious country like India, secularism is the key, as it encourages us to live civilly, respect each other's religions and grant equal rights to all irrespective of one's religious beliefs.

Chapter – 2 HUMAN RIGHTS AND THE UNO

I. Choose the correct answer:

1. a) UNO
2. a) Beijing
3. b) 1993
4. a) Girl
5. b) 10th December
6. a) UDHRC
7. b) Any retired Chief Justice of the Supreme Court.
8. b) 30
9. d) 5 years or upto 70 years of age
10. a) Delhi

II. Fill in the blanks:

1. right
2. fundamental
3. 17th April 1997
4. child labour
5. 24th October 1945

III. Match the following:

1. Eleanor Roosevelt – Human Rights Commission
2. The Cyrus Cylinder – world's first charter of Human Rights
3. Eve Teasing Act – 1997
4. Child help line – 1098
5. Civil right – freedom from slavery
6. Political right – right to vote

IV. State True or False:

1. False
2. False
3. True

4. False

5. The Economic and Social Council (ECOSOC)

V. Answer the following in one or two sentences:

1. In 1948, the UN General Assembly adopted the Universal Declaration of Human Rights (UDHR) a milestone document in the history of Human Rights. This crucial declaration is often referred to as the modern International Magna Carta of Human Rights.

2. Article 45 provides that the state shall endeavour to provide early childhood care and education for all children until they complete the age of six years.

3. **Right to Education Act:**
   Article 21-A, Right to Education Act, was inserted into the Constitution of India, through The Constitution (Eighty-sixth Amendment) Act, 2002, to provide free and compulsory education to all children in the age group of six to fourteen years as a Fundamental Right in a way the State may, by law, determine.

4. *Any three legislations from the chapter in the textbook.*

5. *Any of the political rights mentioned from the chapter in the textbook.*

6. The five primary categories of Human Rights are civil rights, political rights, economic rights, social and cultural rights.

VI. Answer the following in detail:

1.

Human Rights	Civil Rights
They are basic rights inherent by birth.	They are rights created by society.
They belong to everyone, everywhere, regardless of age gender, nationality race, religion or sexuality.	They are enjoyed by virtue of citizenship in a particular country or state.
They are universal to all human beings and in all countries.	They are related to a nation's Constitution and vary among countries and between different governments.
No country may rightfully deprive an individual of Human Rights.	Different countries can grant or deny their citizens different civil rights and liberties.

2. Some of the basic characteristics of Human Rights are as follows:

- They are **inherent**. This means that they are not granted by any person or authority.
- They are **fundamental** rights because without these rights, the life and dignity of a human being is meaningless.
- Hunan Rights are **universal**. They apply to all humans irrespective of one's origin or status and are enforceable without national borders.
- These rights are **indivisible**. This means that they cannot be denied to a person even when other rights have already been enjoyed.
- **Interdependence** of Human Rights means that the exercising or fulfilment of one human right cannot be had without the realization of the other
- They are **inalienable**. This means that they cannot be taken away from an individual.

3. Our Indian Constitution has laid down principles to protect the Rights of Children against exploitation.

   Right to Education Act:

   Article 21-A, Right to Education Act, provides free and compulsory education to all children in the age group of six to fourteen years as a Fundamental Right in a way the State may, by law, determine.

   The Juvenile Justice (Care and Protection of Children) Act, 2000 – provides a framework for the protection, treatment and rehabilitation of children.

The Child Labour (Prohibition and Regulation) Act 1986 – prohibits the engagement of children who have not completed 14 and 15 years of age in certain employments and to regulate the conditions of work of children in certain other employments.

Protection of Children from Sexual Offences (POCSO) Act 2012 – deals with sexual offences against persons below 18 years of age, who are deemed as children.

Article 39 which states that children should be given opportunities to develop in a healthy manner and should be protected from exploitation.

Article 24 that prohibits child labour.

Article 45 which provides that the state shall endeavour to provide early childhood care and education for all children until they complete the age of six years.