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Chapter - 3
ECOSYSTEMS

Ex-A Fill in the blanks :

1. abiotic
2. biotic
3. producers
4. decomposers
5. sunlight
6. primary
7. Trophic
8. predator
9. food web
10. beneficial

Ex-B Choose the correct option :

1. (d) ozone
2. (c) biosphere
3. (d) Frog
4. (c) an apex predator
5. (a) producers
6. (c) predation
7. (c) canopy
8. (b) Ebony
9. (c) temperate evergreen forest
10. (d) Caribou

Ex-C Match the following :

1. Green plants	4
2. Mutualism	5
3. Parasitism	1
4. Tropical deciduous forest	2
5. Rainforest	3
6. Lion	7
7. Boreal forest	6

Ex-D Answer the following :

Ans 1: An ecosystem is a community of living beings in a given area that interact with each other and the nonliving components of the area to form a self-sustaining system.
Aquatic ecosystem — Fresh water & Marine ecosystem
Terrestrial ecosystem - Forest, Desert

Ans 2: Biome : Several connected ecosystems in a large area of land or sea together form a biome.

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Biosphere: All biomes together constitute the biosphere. It is the sum total of all the ecosystems on the earth.

Ans 3: An ecosystem consist of two components - biotic and abiotic.
Producers, consumers and decomposers make up the biotic component.

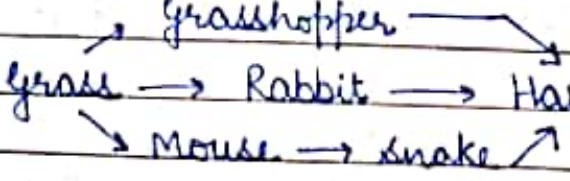
Ans 4: Types of consumers - herbivores, carnivores, omnivores and scavengers.
Human beings are omnivores.

Ans 5: Producers manufacture their own food and donot depend upon others. Eg- Green plants.
Decomposers decompose dead organic matter and draw nutrition from it. They also keep the soil fertile by releasing minerals into it and clean up the environment.

Ans. 6: A series of organisms linked with each other through the process of eating and being eaten forms a food chain.

Ans. 7: Food chain follows only one path but a food web is a network formed by several connected food chains.
Eg - Food chain → Grass → Deer → Tiger

Food Web →



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Ans 8: Predation is a type of ecological relationship between organisms in which one organism kill and eat another - Eg: 1. Lion eats deer · 2. Eagle eats snake.

Ans 9: Layers of forest — 1. Forest floor 2. Understorey 3. Canopy.

Ans 10: Types of forests :-
1. Tropical forest : Flora - Ebony, Rubber, Teak, Sal
Fauna - Pythons, Tigers, Sloth bears.
2. Temperate forest : Flora - Fir, Pine, Maple, Oak, Cedar
Fauna - Red foxes, hawks, black bears
3. Boreal forest : Flora - Spruce, Pine, Aspen
Fauna - Bisons, Grizzly bears

Ex-E Explain in brief :
Ans 1: Air, water, light, temperature and soil constitute the abiotic components of an ecosystem.
Abiotic components help the biotic components to survive —
1. Air : • It helps in regulating the temperature on the earth
• It has oxygen which is necessary for respiration and burning.
• It has CO_2 which is needed for photosynthesis.
• It has ozone that protects us from UV rays.
• Nitrogen is needed by living beings to make proteins.
2. Water : All living beings need water to carry out the basic life processes. Water provides habitat to all aquatic animals.
3. Light : Sunlight is the main source of energy. Plants need light for the process of photosynthesis.

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4. Temperature: The distribution of plants and animals depends on the range of temperature in different regions. Variation in temperature influences the behaviour or activity of an organism.
5. Soil: Being the storehouse of minerals and H_2O for plants, soil determines the type of vegetation a place has. And since animals depend on plants for food, it also determines the kind of animals living in a place.

Ans 2: It is a representation of the numbers of organisms at different trophic levels of a food chain. It shows producers at the base and consumers are arranged successively upwards.

The number of organisms generally decreases at each trophic level because at each trophic level a fraction of energy is lost. So to obtain enough energy, consumers at each level must eat a large amount of food.

Ans 3: Symbiosis is of 3 types -

1. Parasitism - In this relationship, one organism gets benefitted and other gets harmed. Eg - Lice, ticks live on the host's body and suck their blood.
2. Mutualism - It benefits both organisms in the relationship. Eg - Rhizobium live in the roots of leguminous plants. It obtain nutrition from the plant and in turn help the plant in protein synthesis.
3. Commensalism - In this relationship, one

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organism gets benefitted and other organism is neither benefitted nor harmed. Eg - Remoras attach themselves to sharks or whales and feed on their leftover food.

Ans4: They are called monsoon forest because they are situated at slightly higher latitudes and receive less rainfall than the rainforests but in wet season they receive maximum rainfall.

These forests have deciduous broadleaved trees. Teak, sal, sandalwood, silk cotton etc. plants are found in these forests. Tiger, deer, sloth bears, elephants, birds, snakes, lizards etc. are found in these forests.

Ans5: Significance of forests:

1- Forests are sources of timber, medicines, oils, resins, fuel, honey etc.
2. They regulate the climate, maintain the gaseous balance in air and control pollution.
3. They check soil erosion, control floods and recharge ground water stores.
4. Forests are home of innumerable species.

Conservation of forests:

1. Saplings must be planted to replace the felled trees.
2. Shifting cultivation must be discouraged.
3. Grazing in forests should be discouraged.
4. Protective and preventive measures should be taken against forest fires.

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Chapter-4
The Circulatory System

Ex-A Fill in the blanks:

1. lymphatic
2. two
3. O
4. AB
5. Rh negative
6. interatrial
7. bicuspid
8. oxygenated
9. pacemaker
10. cardiac arrest

Ex-B Choose the correct option:

1. (c) no antibodies
2. (c) interventricular septum
3. (a) pulmonary veins
4. (d) all of these
5. (d) both b and c
6. (d) left ventricle & aorta
7. (d) 140 mm Hg
8. (c) thymus gland

Ex-C True/False:

1. False, ~~right auricle~~ pulmonary artery.
2. True
3. True
4. False, ~~thicker~~ thinner
5. True
6. False, ~~donot~~
7. True
8. False, ~~pacemakers~~ electrical conduction
9. True
10. False, ~~same~~ different

Ex-D Answer the questions:

Ans 1: Components of blood:

1. Plasma: It transport blood cells, nutrients, proteins etc. throughout our body. It also transport waste to kidneys or liver for excretion.
2. RBCs: They carry both oxygen and carbondioxide.

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3. WBCs: They defend the body against infection.
4. Blood platelets: They help in clotting of blood.

Ans 2: There are four blood groups – A, AB, B and O. These are differentiated on the basis of the antigens on the surface of a person's RBCs.

Ans 3: Rhesus factor is a kind of antigen found on the RBCs of most people.

Ans 4: Three types of blood vessels are –
1. Arteries: They carry oxygenated blood from heart to body.
2. Veins: They carry deoxygenated blood from various parts of body to heart.
3. Capillaries: They help in diffusion of gases and nutrients to various tissues.

Ans 5: Coronary arteries supply oxygenated blood to the cardiac muscles and Cardiac veins carry the deoxygenated blood from these muscles to the right auricle.

Ans 6: The primary pacemaker of the heart is the sinoatrial node.
It generates electrical signals that are conducted throughout the muscles of the heart, stimulating the heart to contract and pump blood.

Ans 7: Palpitations are felt when the heart beats too hard or too fast or skips a beat.

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Ex - 2 Explain in brief :

Ans 1: Oxygenated blood from the lungs enters the left auricle through the pulmonary veins and flows into the left ventricle, from where it is pumped into the aorta to be circulated throughout the body.

Deoxygenated blood from the tissues is carried by the superior and inferior vena cava into the right auricle from where it reaches the right ventricle and finally the lungs through the pulmonary artery.

Dig 4.3 on Pg - 56 - draw this diagram.

Ans 2: The systemic circulation carries blood from the entire body to heart and from heart to entire body. But the pulmonary circulation carries blood from heart to lungs and back to the heart.

Ans 3: When a person's systolic pressure exceeds 140 mm Hg and diastolic pressure exceeds 90 mm Hg, the person is said to have hypertension.

Hypertension can damage the inner lining of the arterial walls which promotes the deposition of cholesterol. This leads to the blockage of arteries. Hypertension can also damage the eyes, kidneys and other organs of the body.

Ans 4: Heart attack is due to complete blockage of blood supply to the heart, while cardiac arrest happens

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When heart stop functioning altogether.

Ans 5: The lymphatic system consists of lymph, lymph vessels and lymph nodes like tonsils. It also includes thymus glands, the spleen and bone marrow.

Functions - 1. It drain tissue fluid from the intercellular spaces into the blood stream.
2. Lymphoid organs and bone marrow produce lymphocyte.
3. It kills harmful cells (like cancer cells)
4. It fights infections and supply nutrients and oxygen.
5. It carries digested fats away from small intestine.

Lymph is formed from fluid that seeps through the thin walls of capillaries into the body's tissue. It lacks RBCs, platelets and some proteins found in blood.

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Chapter - 1
TRANSPORT IN PLANTS

Ex-A Fill in the blanks:

1. Diffusion
2. semipermeable
3. hypertonic
4. lower, higher
5. Carrier protein
6. Tracheids and vessels
7. phloem
8. Phloem fibres
9. Transpiration
10. lenticels, cuticle
11. Calcium
12. nitrogen, iron

Ex-B Choose the correct option:

1. d	2. b	3. a	4. b	5. c
6. b	7. d	8. d	9. b	10. d

Ex-C Match the following:

1. micronutrient
2. cell will gain water by osmosis
3. connected to sieve tubes by pores
4. porous transverse wall of sieve tube
5. helps cool the plant body
6. Active transport
7. Macronutrient
8. Separated by retting

Ex-D Answer the following:

Ans 1: Diffusion is a process in which particles of a substance move from an area of higher concentration to an area of lower concentration until they are evenly distributed.

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Examples - 1. Plants can absorb minerals by diffusion.
2. Diffusion helps in gaseous exchange with the atmosphere.
3. It also helps in release of water vapour through stomata.

Ans 2: Osmosis is the movement of solvent molecules through a semipermeable membrane from an area of higher concentration to an area of lower concentration.
Diffusion can occur in solids, liquids and gases but in osmosis only water molecules can cross the membrane.

Ans 3: Active Transport is the movement of molecules against their concentration gradient, from an area of lower concentration to an area of higher concentration. It requires expenditure of energy.

Ans 4: Xylem - tracheids, vessels, xylem parenchyma and xylem fibres.
Phloem - sieve tubes, companion cells, phloem parenchyma and phloem fibres.

Ans 5: Transpiration is the process by which plants release water in the form of water vapour.

Ans 6: 1. It helps to concentrate the cytoplasm of cells which promotes the absorption of water by osmosis.
2. It helps to distribute water and minerals.

throughout the plant body.
3. It has cooling effect on the plants.

Ans 7: Macronutrients - Calcium, potassium, magnesium, phosphorus, nitrogen and sulphur.
Micronutrients - Zinc, copper, manganese, iron, sodium, boron and molybdenum.

Ans 8:

Mineral	Deficiency symptoms
1. Nitrogen	- Slow growth, yellow leaves due to lack of chlorophyll (chlorosis)
2. Phosphorus	- Roots and shoots are too short (hypoplasia), late flowering, leaves fall prematurely.
3. Calcium	- Weak stem, death of tissues and yellowish leaf margins (necrosis)
4. Iron	- less chlorophyll in leaves (chlorosis)

Ex-E Explain in brief :

Ans 1: Take a large potato, peel it and cut off a slice from one end to make it flat. Scoop out a chunk of potato from the other end to make a cavity. Fill the cavity partially with concentrated sugar solution and mark its level with a pin. Now place this potato in a beaker containing water so that it remains partially submerged in water. After 2 hours, observe the level of sugar solution within the cavity and mark it with other pin. We will see that the level of sugar solution has risen because water from beaker enters the cavity by osmosis.

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Draw diagram from Pg = 3 (Fig. 1.4)

Ans 2: If a cell is placed in a hypotonic solution, the cell gains water by osmosis.
If a cell is placed in a hypertonic solution, it releases water into its surroundings and shrinks.
If a cell is placed in an isotonic solution, there is no change in its size.

Ans 3: Four types of cell are found in xylem tissue -
1. Tracheids - They are elongated, tubular cells with tapering ends and thick lignified walls. Tracheids are dead cells.
2. Vessels - They are also dead, elongated, tubelike structures with lignified walls. They are made of cells called Vessel elements.
3. Xylem parenchyma - These are living parenchymatous cells that conduct water laterally and store food.
4. Xylem fibres - These are dead sclerenchymatous cells that provide mechanical strength to the tissue.

Draw diagram from Pg. - 5 (Fig. 1.8)

Ans 4: Phloem has four types of cells -
1. Sieve tubes - These are living, slender, elongated tube like cells placed end to end.
2. Companion cells - These are thin walled cells with a dense cytoplasm and an elongated nucleus.
3. Phloem parenchyma - These are living parenchymatous

cells that store and conduct food.

4. Phloem fibres - These are dead sclerenchymatous cells that provide mechanical strength to the tissue. These cells are also called bast fibres

Draw diagram from Pg - 5 (Fig. 1.9)

Ans 5: A stomatal pore is surrounded by two guard cells. Guard cells help to open and close a stoma by regulating their own water content. The concentration of glucose increases within the guard cells during the day. So they draw in water from the surrounding cells by osmosis. As a result, they bulge outwards, opening the stoma and allowing exchange of gases with the atmosphere. The opening of the stoma also allows water vapour to escape. This is called Transpiration.

Factors that affect transpiration are - light, soil water, humidity, temperature, winds and atmospheric pressure.

Ans 6: Take a healthy, well watered potted plant and cover pot with a rubber sheet properly to avoid evaporation from the surface of the soil. Place this plant in sunlight and cover it with a bell jar to make it airtight. After few hours we will see moisture on the inner wall of bell jar. This is due to water vapour released during transpiration.

Ans. 7: The active transport of minerals into the root

hairs increases the concentration of minerals in these cells. This promotes the absorption of water from the soil by osmosis, until it reaches the xylem vessels. More water in the xylem vessels creates an upward pressure that pushes water and minerals up through the stem. This is how root pressure develops.

Ans 8: Take a healthy, well-watered potted plant. Cut off the stem a few inches above the soil. Fix a long narrow glass tube to it with the help of rubber tube. Pour coloured water in the glass tube and mark its level. Put little oil on it to prevent evaporation.

After sometime you will see that the level of coloured water in the glass tube has risen due to water oozing out through the cut end of the stem because of root pressure.

Draw diagram from Pg. 10 (Fig. 1.14)

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Chapter - 5

THE NERVOUS SYSTEM

Ex.-A Fill in the blanks :

1. axon hillock
2. neurotransmitters
3. neuromuscular junction
4. mixed
5. Cerebrum
6. hindbrain
7. cell bodies
8. hypothalamus
9. cranial
10. reflex action

Ex-B Choose the correct option :

1. d 2. c 3. d 4. d 5. a 6. b 7. b 8. a

Ex-C Match the following :

1. filled with cerebrospinal fluid
2. carry impulses to the cyton
3. raises the level of an organ's activity
4. controls eye adjustments
5. Deep within the cerebrum
6. Controlled by the pons
7. 31 pairs
8. controls emotions
9. concerned with learning
10. balance and posture

Ex-D Answer the following :

Ans 1: Nervous system, Endocrine system.

Ans 2: Neuron has a nucleus containing cell body, called the cyton or soma. Fibre like projections, called dendrons or dendrites, arise

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from cyton which carry impulses to the cyton. A long tube like fibre, called the axon, arises from a slightly thickened region of the cyton, called the axon hillock. The axon extends outwards from the cyton and end in many branches which further ends in synaptic knobs.

Ans 3:

Sensory neurons	Motor neurons
1. Carry impulses from sensory organs and other organs to the brain and spinal cord.	Carry impulsed from the brain and spinal cord to the effector organs.

Ans 4: A synapse between a motor neuron and a muscle fibre is called a neuromuscular junction.

Ans 5: Nerves are cable like structure made up of bundles of axons. Each nerve is covered with a layer of connective tissue and gets its nutrients from blood vessels.

Ans 6: Sensory, motor and mixed nerves.

Ans 7: Ventricles are the three interconnected cavities present in the cerebrum and are filled with cerebrospinal fluid.

Ans 8: It controls the eye adjustments to see things.

Ans 9: The peripheral nervous system consists of 43 pairs of nerves that connect the central

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nervous system with all parts of the body. 12 pair of nerves arise from the brain (cranial nerves) and 31 pair from the spinal cord (spinal nerves)

Ans 10: The sympathetic nervous system raises the level of an organ's activity but the parasympathetic nervous system decreases the organ's activity.

Ex-E Explain in brief :

Ans 1: An axon carries impulse away from the cyton. When impulse reaches at the end of an axon, it stimulates the release of neurotransmitters from the synaptic knobs. The neurotransmitters diffuse across the synapse and stimulate the dendrites of the next neuron.

Ans 2: Parts of forebrain -
1. Cerebrum - It controls learning, speech, memory, emotion, reasoning, voluntary activities, senses, response to pain and temperature.
2. Hypothalamus - It controls endocrine system and emotions.

Ans 3:

Grey matter	White matter
1. It consist of cell bodies of the neurons.	It consist of the axons of the neurons.
2. Located in the upper layers of the cerebral hemispheres.	Located in the deeper parts of the cerebrum.
3. It has grey colour due to grey nuclei in cell bodies.	It has white colour due to myelinated axons.

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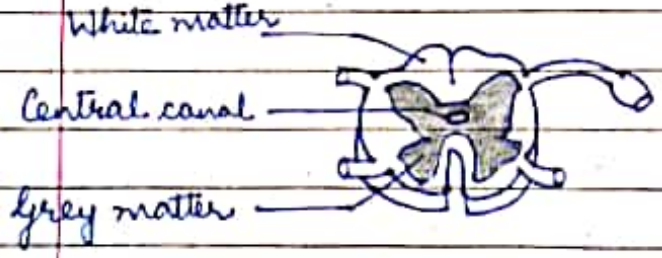
Ans 4: Parts of hind brain -
1. Cerebellum - It coordinates body movements, posture and balance, helps in learning new movements.
2. Pons - It relays information from the forebrain to the cerebellum and controls sleep, breathing, hearing, taste, etc.
3. Medulla oblongata - It controls involuntary activities.

Ans 5: Functions of the spinal cord -
1. It relays messages to and from the brain through nerves.
2. It acts independently to control reflexes.

Draw diagram from Pg - 70 (Fig 5.7) .... only spinal cord (cross section)



Spinal Cord (Cross section)

Ans 6: It is involuntary and immediate response to stimuli.
Eg - We withdraw our hand immediately when it touches a hot object.
We instantly blink when a strong light flashed in our eyes.

CH-3 Force and Pressure

(Workout)

A Fill in the blanks

1. Rest or motion
2. non-rigid
3. magnitude
4. arrow
5. Newton, kgf

B True or false

6. True 7. True 8. True 9. False 10. True

C

11. Thrust is the force acting perpendicular to a surface.
12. A body exerts a thrust on a surface equal to its own weight
13. It depends on pressure
14. Unit of thrust is newton.
15. Pressure is thrust per unit area
16. a) Thrust acting on a surface
    b) Area of the surface on which the thrust acts.
17. Pg no. 43 activity 3.2
18. Pressure increases when area decreases
19. S.I unit of pressure is Pascal.
20. Pg no. 44 activity 3.3 & Pg no. 47 activity 3.7 (only procedure)
22. a) The height of liquid column
    b) The density of liquid
    c) Acceleration due to gravity
23. Our earth is surrounded by bands of air called atmosphere.
24. Atmosphere causes pressure on the earth called atmospheric pressure.
25. It is 10^5 Pascal
26. It decreases

27. It is a push or pull which tends to change the state of rest or uniform motion of body.
examples :- * A football at rest when kicked moves
* length of rubber band increases when pulled

Unit of force is 'Newton'

28. Pg no. 37 Heading 'Turning effect of a force'
A force has - - - - - - - - - - Can turn.
axis of rotation → The axis about which the body turns is called axis of rotation
Factors → a) The magnitude of the applied force
b) The perpendicular distance of the applied force from the axis of rotation
examples → * In a bicycle the force is applied on the pedal to turn the wheel
* We push or pull a door to open or shut

29. It is the product of the magnitude of the force and the perpendicular distance of applied force from the axis of rotation
Unit → Nm

30. Thrust → Same as 15
Pressure → Same as 15
Examples :- Pg no. 40
Right side example 1 and 2

31. 1. Same as 20
2. Pg no. 45 activity 3.4
3. Pg no. 45 activity 3.5

32. Pg no. 46 activity 3.6
examples :- 1. Bleeding starts from nose at high altitudes due to pressure exerted by air
2. The atmospheric pressure acting on the drink exerts force on the drink and pushes

it into the straco.

3. Due to atmospheric pressure ink gets filled in a fountain pen.

33. $M = f \times d$

$= 10 \times 7 = 70$ Nm

34. $F = \frac{M}{d} = \frac{30}{10} = 3N$

21. Take a tin can and make three holes near the neck of the bottle at a same height from the bottom of the bottle. Now fill the water in the bottle you will observe that equal amount of water starts flowing through each hole. This shows that the liquid pressure at a depth is same in all directions.

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CH-4 **Energy**

Workout

Tick the Correct option

1. joule 2. both (c) and (b) 3. $P = \frac{w}{t}$
4. 1HP 5. No energy

True or false

6. T 7. T 8. F 9. T 10. T

Fill in the blanks

11. There is displacement 12. displacement
13. Energy 14. acceleration due to gravity
15. Watt

16. Match the following

(A) Joule (B) Conserves (C) Watt (D) newton

17. Work is said to be done if force applied on an object displaces the object through some distance. Unit is Joule

18. Energy is the Capacity of doing work
Unit is Joule

19. It is defined as the Rate of doing work by the body
Unit is watt

20. * if displacement is not there
* displacement is at right angles to the direction in which force acts

21. Work done is zero because direction of motion is perpendicular to force.

22. The energy had by a body due to its position or motion is called mechanical energy.

23. The energy possessed by a body due to its position is called potential energy. Potential energy is denoted as P.E or U. Its Unit is Joule (J)

24. In a pendulum potential energy and kinetic energy are inter-Convertible but it stops swinging after sometime It happens because of Air friction.

25. Pg no. 64 any 3 differences

26. Because there is no displacement

27. $F = 500\ N$, $S = 5m$

$W = F \times S = 500 \times 5 = 2500\ J$

28. $m = 10kg$, $h = 10m$, $g = 10\ ms^{-2}$

$U = mgh = 10 \times 10 \times 10 = 1000\ J$

29. $m = 5kg$, $g = 10ms^{-2}$, $h = 3m$

$U = mgh = 5 \times 10 \times 3 = 150\ J$

30. $m = 20kg$, $V = 1ms^{-1}$

$K.E = \frac{1}{2}mv^2 = \frac{1}{2} \times 20 \times (1)^2 = 10\ J$

31. $W = 5000\ J$ $t = 10s$

$P = \frac{W}{t} = \frac{5000}{10} = 500\ Watt$

32. Same as 17,

Examples :- a) A horse pulls a Cart
b) An ox ploughs a field
c) An engine pulls a train

Factors :- * Fosce * displacement

33. Same as 18

examples :- when a boy rides a bicycle and covers some distance thus, he spends energy in doing work.

34. Mechanical energy = $K.E + P.E$

examples :- Simple pendulum and Hydro power plant

35. Same as 23

examples :- a) Bent branch of a tree
b) Compressed spring c) Hammering

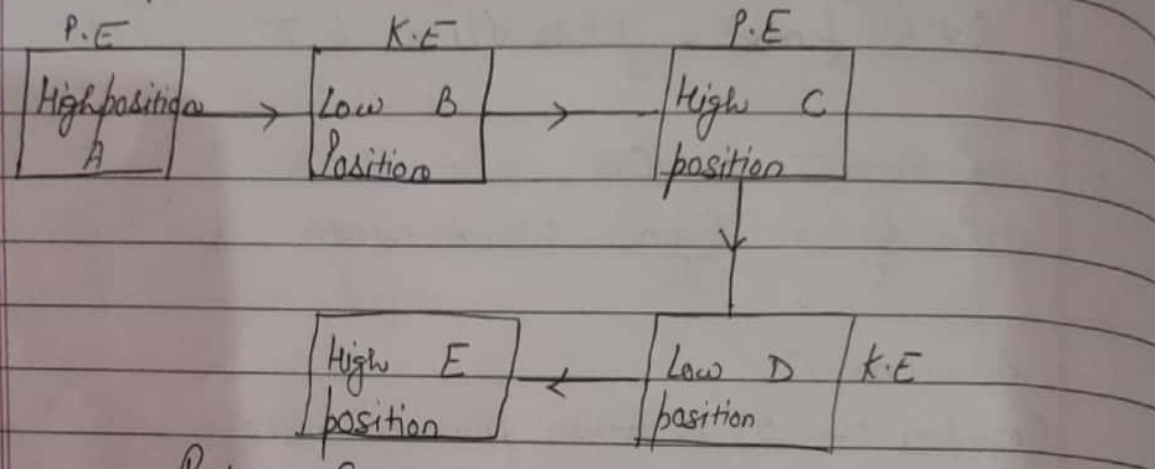
36. At a height above the ground is measured by the amount of work done in moving it upto that height against the force of gravity.

Factors :- * mass
* Height

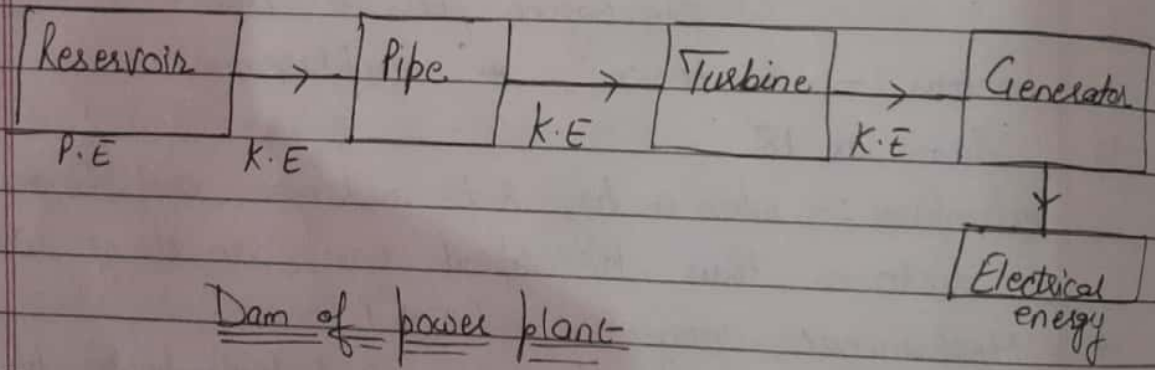
37. It is the energy possessed by it due to its motion. It depends upon mass and velocity.
examples: a) An apple falling from a tree
b) flowing water of river
c) Blowing wind
Differences on pg no. 60

38. It states that energy can neither be created nor be distroyed, it can only change its form.
example: Pendulum

39.



Roller Coaster



Dam of power plant

40. Same as 19. Differences on page 63 and 64

41. Yes
42. No
43. No
44. No
45. No
46. No
47. No
48. Yes
49. Potential energy
50. Kinetic energy
51. Potential energy
52. Compressed spring - potential energy.

ANSWER KEY (CLASS 8TH)

(CHEMISTRY)

CH-3

ELEMENTS, COMPOUNDS & MIXTURES

SHORT ANSWER QUESTIONS :

(1) An element is a substance that cannot be split into simpler substances by a chemical means.

(2) A compound is a substance that can be split into simpler substances by a chemical means.

(3) A mixture is a substance which can be split into two or more pure substances by a physical means such as filtration, sublimation and distillation.

(4) No. e.g. $CaCO_3$

(5) (a) Carbon and sulphur — HOMOGENEOUS

(b) Brass — HOMOGENEOUS

(c) Salt and water — HOMOGENEOUS

(d) Water and carbon tetrachloride — HETEROGENEOUS

(e) Sand and salt — HETEROGENEOUS

(f) Water and Oil — HETEROGENEOUS

(6) No, the constituent elements are always present in fixed proportion.

(7) Yes, because Sulphur is soluble in Carbon disulphide.

(8) Chromatography

(9) (a) Liebig Condenser
(b) Sublimation
(c) Adsorbent
(d) Chromatogram

(10) By Fractional distillation.

LONG-ANSWER QUESTIONS:

(1)

ELEMENT	COMPOUND
(i) An element is a substance that cannot be split into simpler substances by a chemical means.	(i) A compound is a substance that can be split into simpler substances by a chemical means.
(ii) It is represented by a symbol	(ii) It is represented by a formula
(iii) Examples: Hydrogen (H), Carbon (C), Oxygen (O), Nitrogen (N), Sulphur (S), etc.	(iii) Examples: Calcium carbonate ($CaCO_3$), Carbon dioxide (CO_2), Sulphur dioxide (SO_2), etc.

Long-Answer Questions

1. State the differences between an element and a compound.
2. Give three points of difference between a mixture and a compound. -31
3. Describe the separation of salt from sand. -30
4. Describe fractional distillation. - 27
5. How would you separate the dyes of an ink? -28, 29
6. Describe two methods to separate iron filings and sulphur powder from a mixture of the two. -30
7. A mixture contains carbon, sulphur and nitre. How would you separate them? -31

Objective Questions

Choose the correct option.

1. Which of the following is an element?
   (a) Hydrogen ✓
   (b) Salt
   (c) Water
   (d) Glucose
2. Ammonium chloride can be separated from sand by
   (a) decantation
   (b) fractional distillation
   (c) sublimation ✓
   (d) chromatography
3. Common salt can be separated from sand by
   (a) distillation
   (b) fractional distillation
   (c) using water as a solvent ✓
   (d) using a separating funnel
4. For separating the components of which of the following mixtures can a separating funnel be used?
   (a) Water + sodium chloride
   (b) Chalk + water
   (c) Alcohol + water
   (d) Oil + water ✓
5. The dyes of an ink are best separated by
   (a) filtration
   (b) using a separating funnel
   (c) fractional distillation
   (d) chromatography ✓

Match columns A and B.

A	B
(i) Sulphur	(a) A heterogeneous mixture 3
(ii) Sugar	(b) A homogeneous mixture 4
(iii) Mud	(c) An element 1
(iv) Alloy	(d) A compound 2

Fill in the blanks.

1. A ..... can be split into simpler substances by a physical means like filtration, sublimation or distillation. (mixture/compound)
2. The constituents of a compound are present in ..... proportion by mass. (a definite/any)
3. A fizzy drink is a ..... mixture. (homogeneous/heterogeneous)
4. Two ..... liquids may be separated by using a separating funnel. (miscible/immiscible)

Write 'T' for true and 'F' for false for the following statements.

1. An element contains more than one (only one) type of atoms. – False
2. A compound contains only one (more than one) type of atoms. – False
3. Air is a mixture of elements and compounds. – True
4. An alloy is a homogeneous mixture. – True
5. Common salt is manufactured by the evaporation of sea water. – True

Postscript

A Simple Experiment on Electrolysis

You can perform an interesting experiment on electrolysis at home.

Remove the plastic insulation from both ends of two copper wires. The naked ends are a shining brown-red. Use a naked end of one wire as the anode and that of the other as the cathode. Introduce the two electrodes into a glass containing distilled water. You can buy distilled water from a chemist's. Connect the other ends of the two wires respectively to the positive and negative terminals of a 3-volt battery. You will find that no change takes place. This is because distilled water does not allow an electric current to pass through it.

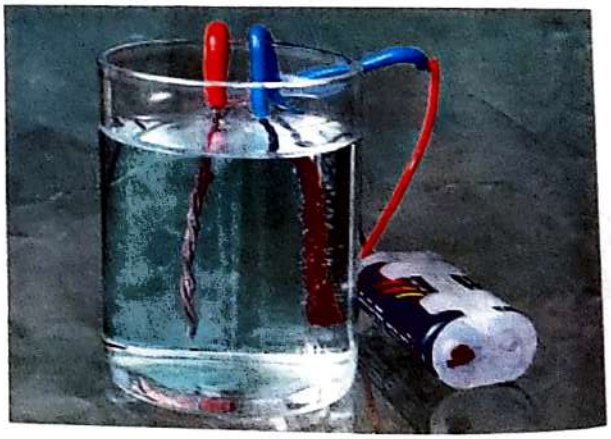


Fig. 3.14 Electrolysis of acidulated water

Now, pour a few drops of hydrochloric acid (bathroom acid) into the distilled water and make the connections as before. A gas begins to evolve at the cathode (negative electrode). The evolution becomes vigorous within a short while. The evolution of gas at the anode (positive electrode) is relatively slow. What is happening is the electrolysis of acidulated water.

Stop the electrolysis after some time. Take out the electrodes and examine them. You will find that the anode has become blackish. Why? On electrolysis, acidulated water gives hydrogen at the cathode and oxygen at the anode. The oxygen reacts with the copper (of the anode) to form copper(II) oxide, which is black.

❑

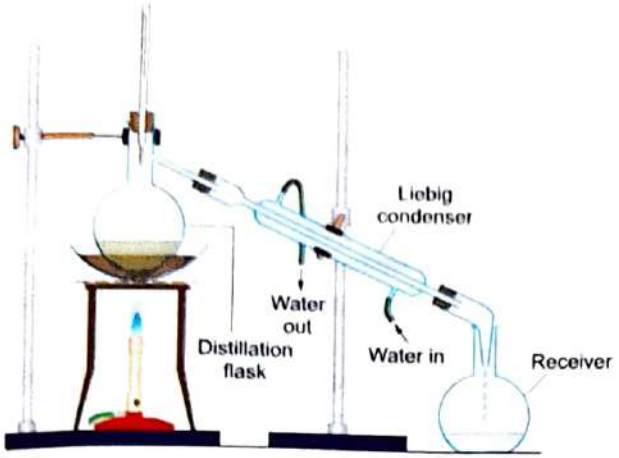


Fig. 3.9 Distillation

This is how distilled water is prepared in the laboratory.

7. Fractional distillation

By fractional distillation, we can separate liquids which differ in their boiling points by 20 °C or more.

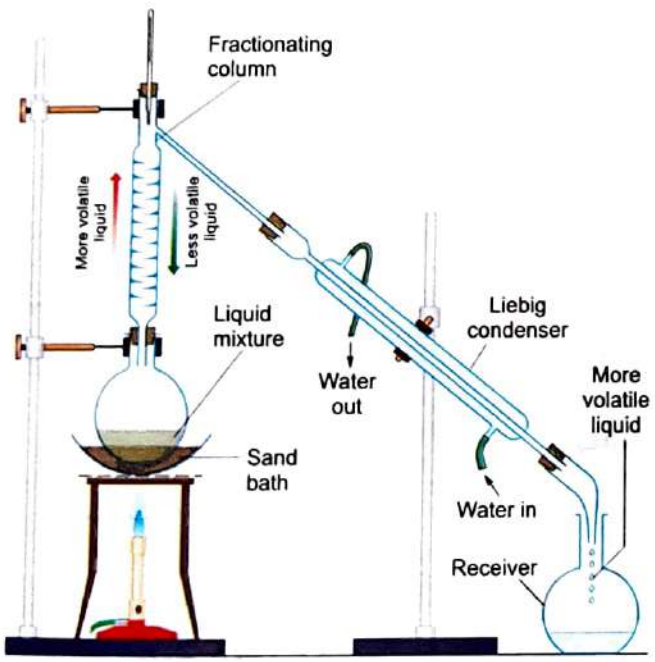


Fig. 3.10 Fractional distillation

The liquid mixture is boiled in the distillation flask fitted with a fractionating column and a Liebig condenser (Figure 3.10). The mixed vapours enter the fractionating column, where the vapours of the higher-boiling (i.e., less volatile) liquid condense and trickle back into the distillation flask. The vapours of the lower-boiling (i.e., more volatile) liquid, however, pass into the Liebig condenser, where they condense—the liquid is collected in the receiver.

The temperature of the boiling mixture remains constant till the lower-boiling liquid distils completely. Then the temperature again rises till the higher-boiling liquid starts distilling. The receiver is quickly changed to collect the higher-boiling liquid.

The liquids obtained by boiling a mixture at different temperatures are called fractions and the method of fractional distillation is also called fractionation.

By this method, we can separate

- benzene (boiling point 80 °C) from toluene (boiling point 110 °C),
- ethyl alcohol (boiling point 78 °C) from water (boiling point 100 °C), and
- petrol, diesel and kerosene from crude oil.

8. Using a separating funnel

A separating funnel (Figure 3.11) is used to separate two or more *immiscible* liquids. The mixture is placed in a separating funnel and allowed to stand. The different immiscible liquids form separate layers, which can be collected in different vessels one after the other.

By this method, we can separate an oil, benzene, toluene or ether from water.

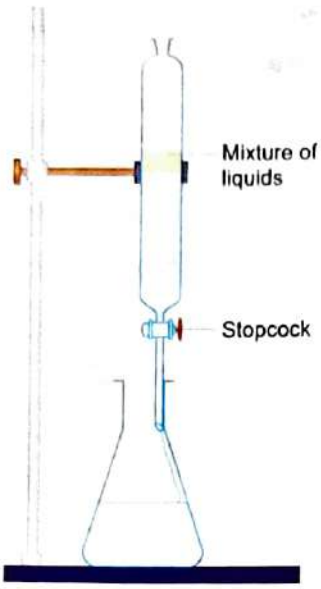


Fig. 3.11 A separating funnel

9. Sublimation

Using this method, we can separate a substance that sublimes (e.g., ammonium chloride, camphor or iodine) from one that does not (e.g., salt, sand or chalk). A funnel is inverted over the mixture placed in a china dish. A dry test tube is also inverted over the outlet of the funnel. The outlet of the funnel is loosely plugged with cotton. The mixture is heated.

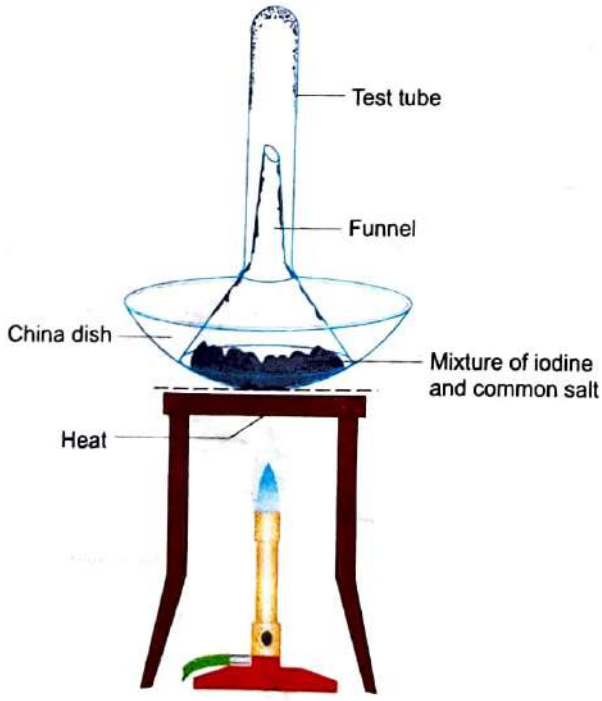


Fig. 3.12 Sublimation

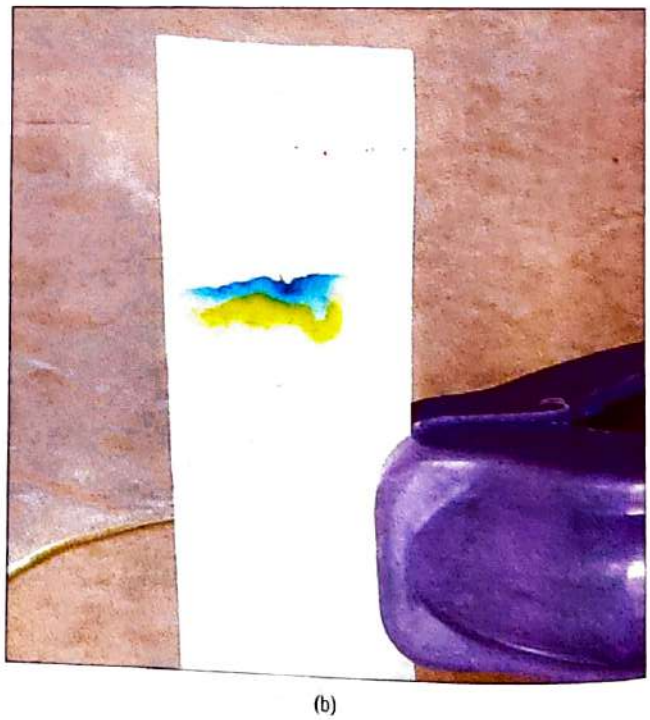
The sublimable component vapourises and the vapours solidify in the test tube and on the cooler part of the funnel.

10. Chromatography

LONG (5)

By chromatography, we can separate two or more solids from one another provided they are soluble in the same solvent. The solvent may be a pure liquid like water, alcohol or acetone, or a mixture of two or more of these.

(a)



(b)

Fig. 3.13 (a) The set-up used in paper chromatography. (b) The colour of the ink from a green sketch pen separates into blue and yellow.

LONG (5)

The method works on the principle of adsorption. One should understand the difference between adsorption and absorption. In absorption a substance gets equally distributed over the entire bulk of another substance, like dissolved air in natural water or carbon dioxide in a fizzy drink. Adsorption, however, is a surface phenomenon, in which a substance is held at the surface of another by a weak force. An example is a dye held on the surface of a fibre. The substance that is adsorbed (e.g., a dye) is called the adsorbate and the one at the surface of which it is adsorbed (e.g., a fibre), the adsorbent. In chromatography, we generally use cellulose, silica or alumina as an adsorbent. Cellulose is conveniently used in the form of blotting paper, filter paper (generally Whatman 41) or specially made chromatographic paper. We will now discuss the technique of paper chromatography.

You must have observed that a blotting paper soaks a liquid that spreads fast over the paper. The liquid moves even against gravity, i.e., upwards on a vertically placed blotting paper.

LONG (5)

A long strip of chromatographic paper or of a good-quality filter paper is cut out. A drop of a solution of the mixture (say the ink of a green sketch pen) is placed about a centimetre from one end of the strip and dried. A very small amount of the solvent is taken in a jar. The paper strip is suspended in the jar such that the end near which the mixture is placed just touches the solvent. The whole set-up is left undisturbed. After some time, one can observe that the green-ink spot has moved up the strip and separated into two colours—blue and yellow. (In fact, the blue and yellow make up the green.)

This happens because the different dyes (pigments), i.e., the different colouring substances, are held (i.e., adsorbed) by the adsorbent with different forces—some by stronger and some by weaker forces. The one that is held less strongly is driven faster by the solvent than that held more strongly by the adsorbent. As a result, the different pigments move with different speeds over the adsorbent surface under the influence of the solvent. And so they get separated.

The array of colours on a chromatographic paper is called a chromatogram. One can take a mixture of inks of different colorus to have a more colourful chromatogram.

The smaller strips of different colours are now cut out from the main strip. And the colouring matter can be obtained from each strip by dissolving it out in the solvent and evaporating the solvent.

In chromatography, the adsorbent part is called the stationary phase and the things that move, i.e., the solvent and the solution, are collectively known as the mobile phase. Different types of chromatographic techniques have been developed and named on the basis of the types of phases. Column chromatography is a commonly used technique, in which the stationary phase is a column of the adsorbent, i.e., the adsorbent is packed in a vertically placed wide tube. Other well-known types are gas–liquid chromatography (GLC) and high-proficiency liquid chromatography (HPLC).

Separation Methods: A Summary

A summary of the methods of separation of the components of mixtures is given in Table 3.3.

Table 3.3 Methods of separating the components of different types of mixtures

Type of mixture and method	When applicable	Example
Solid mixture		
1. Sieving	When the particle sizes of the components are different	Separating (i) bran from flour (ii) stones from sand
2. Magnetic separation	When one of the constituents is magnetic	Separating iron from sulphur
3. Sublimation	When one of the components sublimes and the other does not	Separating ammonium chloride or camphor from salt or chalk
4. Dissolution and evaporation	When one of the constituents is soluble	Separating salt or sugar from sand
5. Chromatography	When the whole mixture is soluble	Separating pigments of an ink or a flower
Solid–liquid mixture		
1. Sedimentation and decantation	When the mixture is heterogeneous	Separating sand or chalk from water
2. Filtration	–do–	–do–
3. Distillation	When the mixture is homogeneous or heterogeneous	Separating water from salt, sugar or sand
Liquid mixture		
1. Using a separating funnel	When the liquids are immiscible	Separating oil from water
2. Fractional distillation	When the miscible liquids differ in boiling point by 20 °C or more	Separating (i) alcohol from water (ii) benzene from toluene

Separation of mixtures—a few examples

Through the following examples, you will learn how to choose a method for separating the components of a given mixture.

1. A sand–water mixture Sand can be separated from water by filtration or distillation. In distillation, the water distils out, leaving the sand as residue.

2. A salt solution By distillation, the water can be obtained as the distillate and the salt as the residue. (By evaporation to dryness, the salt can be obtained but the water will be lost.)

LONG (3)

3. A salt–sand mixture The salt can be dissolved in water and the sand filtered out. The filtrate, on evaporation to dryness, yields the salt.

4. A sugar–chalk mixture Sugar is soluble in water but chalk is not. So, the sugar can be dissolved out in water, leaving the chalk behind. The mixture, on filtration, will give the chalk as the residue and the filtrate, on evaporation or crystallisation, will yield the sugar.

5. An iron filings–sawdust mixture As iron is magnetic and sawdust is not, magnetic separation will be a convenient method to separate them.

LONG 6

6. An iron filings–sulphur mixture Two methods can be used.

(i) Magnetic separation (Iron is magnetic but sulphur is not.)

(ii) Dissolution of the sulphur in carbon disulphide followed by the recovery of the sulphur from the solution by evaporation or crystallisation.

7. A carbon–sulphur mixture Knowing that sulphur is soluble in carbon disulphide but carbon is not, you can suggest the method.

8. A water–oil mixture As water and oil are immiscible, they will form separate layers

and can, therefore, be separated by using a separating funnel.

Remember that, like oil, chloroform, carbon tetrachloride and ether are also immiscible with water. So, the method will be useful for a mixture containing water and any of these liquids.

9. A benzene–toluene mixture As the difference in the boiling points of benzene (80 °C) and toluene (110 °C) is more than 20 °C, the two miscible liquids can be conveniently separated by fractional distillation.

10. An ink-mixture By paper chromatography.

11. A salt–sand–sulphur mixture Among the three components, only sulphur is soluble in carbon disulphide and only salt in water but sand in neither of the two solvents. So, the sulphur can be dissolved out in carbon disulphide. From the residue containing salt and sand, the salt can be dissolved out in water, leaving the sand behind. The sulphur and salt can be recovered from their solutions by evaporating the solvents.

Alternatively, first the salt can be dissolved out in water and then sulphur in carbon disulphide.

12. A carbon–sulphur–nitre mixture (gunpowder) Gunpowder is an explosive containing carbon, sulphur and potassium nitrate (nitre). Only sulphur is soluble in carbon disulphide and only nitre in water. So, the sulphur and nitre can be dissolved out successively in carbon disulphide and water, and recovered from the solutions by evaporating the solvents or by crystallisation. After the final dissolution, carbon will be left as the residue.

Alternatively, the nitre can be dissolved out first and then the sulphur.

Difference between a Mixture and a Compound

We can now conclude that a mixture differs from a compound as shown in Table 3.4.

Table 3.4 How a mixture differs from a compound

Mixture	Compound
1. It is an impure substance.	It is a pure substance.
2. The components can be present in any proportion.	The constituents must be present in a fixed proportion.
3. The components show their individual properties.	The constituents do not show their individual properties.
4. The components can be separated by a physical means.	The constituents cannot be separated by a physical means.

Points to Remember

- An element is a substance that cannot be split into simpler substances by a chemical means. It is represented by a symbol.
- A compound is a substance that can be split into simpler substances by a chemical means. It is represented by a formula.
- The constituent elements of a compound
  - can be separated from it only by a chemical means and not by a physical means,
  - are present in it only in a fixed proportion of atoms and of mass, and
  - do not retain their properties in it.

ANSWER KEY
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CHAPTER-5
The Language of Chemistry

* Short-Answer Questions:

1. A symbol is an abbreviation of the name of an element. It consists of one or two letters of the English or the Latin name of the Element.

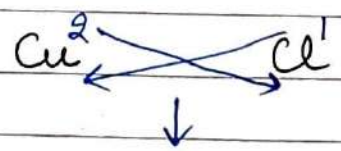
2. Carbon → C
Chlorine → Cl
Chromium → Cr
Cobalt → Co

3. Helium (He), Neon (Ne) and Argon (Ar).

4.

(Element)	(Latin name)	(Symbol)
Sodium	Natrium	Na
Potassium	Kalium	K
Iron	Ferrum	Fe
Copper	Cuprum	Cu

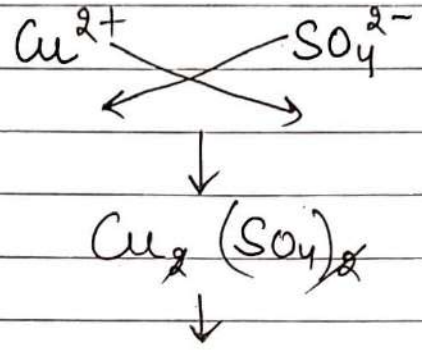
5. (i) Copper (II) chloride



$CuCl_2$

[Cupric or copper(II) chloride]

(ii) Copper (II) sulphate



6. FeO → Iron (II) oxide or Ferrous oxide.
   Fe_2O_3 → Iron (III) oxide or Ferric oxide.

7. $Al_2(SO_4)_3$

8. A chemical equation in which the number of atoms of each element on the reactant side is equal to that on the product side is called a balanced chemical equation.

9. 2 molecules of Hydrogen chloride will be forme
   i.e.

$$H_2 + Cl_2 \longrightarrow 2HCl$$

(1 molecule) (1 molecule) (2 molecules)

10. 2 molecules of Hydrogen will be required.

i.e. $2H_2 + O_2 \longrightarrow 2H_2O$
(2 molecules) (1 molecule) (2 molecules)

11. 2 molecules of Ammonia will be formed.

i.e. $N_2 + 3H_2 \rightleftharpoons 2NH_3$
(1 molecule) (3 molecules) (2 molecules)

12. $Ca(OH)_2(aq) + CO_2(g) \longrightarrow CaCO_3(s) + H_2O(l)$
(lime water) (carbon dioxide) (milky) (Calcium carbonate) (water)

* LONG-ANSWER QUESTIONS:

1. Pg- 48, 49
2. Pg - 49
3. Pg - 52, 53

} See Photograph.

* Objective Questions — (see Photograph)

Formulae

ıe formula of a molecule gives the ımber(s) of atoms of the same or different ements present in the molecule.

other words, it tells us how many atoms ich elements have combined together to he molecule.

ılae of Elements

an atom of an element combines nother atom(s) of the same element, a ule of the element is formed.

ıe number of atoms contained in a molecule called the atomicity of the molecule.

ules of nitrogen, oxygen, fluorine and ne contain two atoms of the element, ey are represented as N_2, O_2, F_2 and spectively and are said to be diatomic. mmon example of a triatomic gas is (O_3).

ı atom of a noble-gas element, e.g., n (He), neon (Ne), argon (Ar), etc., highly inactive, does not combine with atoms. Hence, a molecule of a noble ntains only one atom of the element. In words, noble gases are monoatomic.

e atomicity of phosphorus is 4(P_4) and f sulphur is 8(S_8).

alency of an Element

ıe combining capacity of an element with ıer elements is known as its valency.

is given by the number of hydrogen that one atom of the element combines r displaces from a compound.

e atom of Cl combines with one atom of H to form one molecule of hydrogen chloride. So, the valency of Cl is 1. But one atom each of O, N and C combines with two, three and four atoms of H to form a molecule of water, ammonia and methane respectively. Hence, the valencies of O, N and C are 2, 3 and 4 respectively. On the other hand, an atom of Na, Mg and Al displaces one, two and three atoms of H respectively from an acid. So, the valencies of Na, Mg and Al are 1, 2, and 3 respectively.

Elements with valencies 1, 2, 3, etc., are said to be monovalent, divalent, trivalent, and so on. The valencies of the first twenty elements, i.e., those having atomic numbers 1 to 20, are given in Table 5.1.

Table 5.1 Valencies of the first twenty elements

Valency →	1	2	3	4	3	2	1	0
Elements with atomic numbers	H 1							He 2
	Li 3	Be 4	B 5	C 6	N 7	O 8	F 9	Ne 10
	Na 11	Mg 12	Al 13	Si 14	P 15	S 16	Cl 17	Ar 18
	K 19	Ca 20						

When elements are arranged in increasing order of atomic number, we find that their valencies are also arranged in an order, as mentioned below.

Long Ans (1)

- The valency gradually rises from 1 to 4 and then falls to 1 and finally to 0.
- The elements in a column have the same valency. For example, Li, Na, and K as well as F and Cl have the valency 1. Similarly, Be, Mg and Ca as well as O and S have the valency 2.

- The elements He, Ne and Ar do not combine with other elements and are, therefore, assigned the valency 0 (zero). They are called noble-gas elements.

You will later learn that the above kind of trend in a property is known as the periodic nature or the periodicity of the property. The term *periodic* means appearing at certain intervals. Don't you find that valency has a periodic nature?

Molecule	Example
Monoatomic	He, Ne, Ar
Diatomic	H_2, N_2, O_2, F_2, Cl_2
Ttriatomic	O_3
Tetraatomic	P_4
Octaatomic	S_8

Formulae of Compounds

You have learnt earlier that the formula of a binary compound (i.e., a compound formed by only two elements) is obtained by transposing the valencies. Thus, the formula of the compound formed by the elements A (valency y) and B (valency x) is A_xB_y.

$\overset{y}{A}\ \overset{x}{B} \Rightarrow A_xB_y$

$\overset{1}{Na}\ \overset{2}{O} \Rightarrow Na_2O$

$\overset{2}{Ca}\ \overset{1}{Cl} \Rightarrow CaCl_2$

$\overset{3}{Al}\ \overset{2}{O} \Rightarrow Al_2O_3$

The numeral subscripts are divided by a common factor, if any. For example,

$\overset{4}{C}\ \overset{2}{O} \Rightarrow C_2O_4 \Rightarrow CO_2$

$\overset{2}{Ca}\ \overset{2}{O} \Rightarrow Ca_2O_2 \Rightarrow CaO$

$\overset{3}{Al}\ \overset{3}{N} \Rightarrow Al_3N_3 \Rightarrow AlN$

There are some exceptions, e.g., H_2O_2 (hydrogen peroxide), C_2H_2 (acetylene) and C_4H_{10} (butane) in which the numeral subscripts are not divided by a common factor. You will learn the reason in higher classes.

Variable valency

Some elements show variable valency, e.g., Cu (1, 2), iron (2, 3), phosphorus (3, 5) and sulphur (2, 4, 6). The valency of such an element in a compound is often indicated in Roman numerals in the name of the compound, as shown below.

$\overset{1}{Cu}\ \overset{2}{O} \Rightarrow Cu_2O$ copper(I) oxide

$\overset{2}{Cu}\ \overset{2}{O} \Rightarrow CuO$ copper(II) oxide

$\overset{2}{Fe}\ \overset{2}{O} \Rightarrow FeO$ iron(II) oxide

$\overset{3}{Fe}\ \overset{2}{O} \Rightarrow Fe_2O_3$ iron(III) oxide

As an exercise, you can guess the valency of P in PCl_3 and PCl_5, and those of S in SO_2 and SO_3.

Compounds containing radicals

You remember that

> a radical is a kind of entity that can be an atom with a charge on it or a group of atoms behaving as a single atom with a charge on the group.

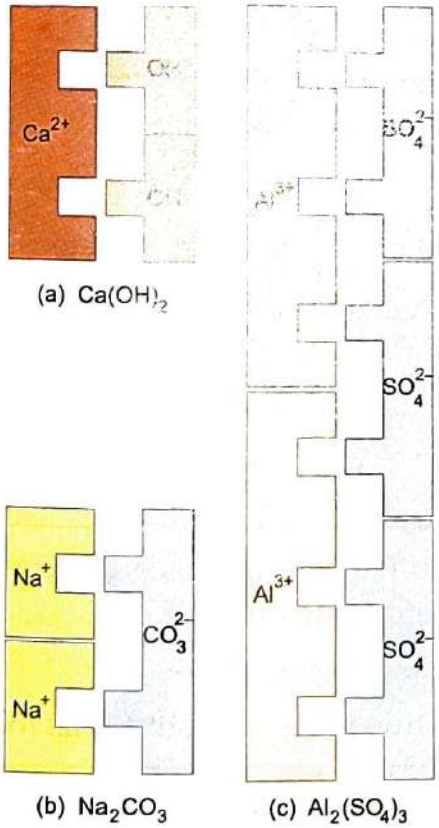
It has a valency which is the same as its charge (without sign).

Positive radicals (e.g., Na^+, K^+, Mg^{2+}, Ca^{2+}, Cu^{2+}, Fe^{2+}, Fe^{3+} and NH_4^+) combine with negative radicals (e.g., OH^-, NO_3^-, HCO_3^-, CO_3^{2-}, SO_4^{2-}, HSO_4^- and PO_4^{3-}) to form compounds. The formula of such a compound can again be obtained by transposing the valencies (i.e., charges without sign) of the radicals and dividing the valencies of radicals by a common factor, if any.

Some examples are given below.

Radicals		Formula	Name
Na^+	OH^-	$NaOH$	Sodium hydroxide
K^+	NO_3^-	KNO_3	Potassium nitrate
Na^+	HCO_3^-	$NaHCO_3$	Sodium hydrogen-carbonate
NH_4^+	NO_3^-	NH_4NO_3	Ammonium nitrate
Na^+	CO_3^{2-}	Na_2CO_3	Sodium carbonate
NH_4^+	SO_4^{2-}	$(NH_4)_2SO_4$	Ammonium sulphate
Ca^{2+}	SO_4^{2-}	$CaSO_4$	Calcium sulphate
Fe^{2+}	SO_4^{2-}	$FeSO_4$	Iron(II) sulphate
Fe^{3+}	SO_4^{2-}	$Fe_2(SO_4)_3$	Iron(III) sulphate
Al^{3+}	SO_4^{2-}	$Al_2(SO_4)_3$	Aluminium sulphate

Radicals carry a charge over them but the compounds they form do not. The compounds are electrically neutral. Hence, the positive and negative radicals must be present in a compound in such numbers that the opposite charges cancel each other. For example, in $Al_2(SO_4)_3$, the total positive charge is $2 \times 3 = 6$ for two Al^{3+} ions and the total negative charge is $3 \times 2 = 6$ for three SO_4^{2-} ions. You can understand this by using valency cards also as shown in Figure 5.1.



(a) $Ca(OH)_2$ (b) Na_2CO_3 (c) $Al_2(SO_4)_3$

Fig. 5.1 Valency cards making up (a) $Ca(OH)_2$, (b) Na_2CO_3 and (c) $Al_2(SO_4)_3$

Chemical Equation

A chemical change, i.e., a chemical reaction, is represented by a chemical equation. You know that in a chemical reaction, the substances we start with are called reactants and those we end up with are called products. In an equation, we mention the reactants on the left-hand side and the products on the right-hand side, with an arrow in between.

Reactants ⟶ products

In the previous class, you have learnt about the word equations in which we mention the reactants and products by name. Here, we will learn writing equations using symbols and formulae instead of words.

Equations Using Symbols and Formulae

Such equations are quantitative in nature and much more informative than word equations. They are written in the following three steps.

1. Writing the skeleton

The skeleton of an equation is first written by noting the symbols and formulae of the reactants on the left side and those of the products on the right side, with an arrow in between.

For example, carbon, when burnt in a sufficient supply of air, forms carbon dioxide. The skeleton of the equation is written as follows.

$$C + O_2 \longrightarrow CO_2$$

But carbon, when burnt in an insufficient supply of air, forms carbon monoxide. And

Solution Let us now see if we can balance a chemical equation without writing the steps so elaborately.

The reactants and the product may be written as follows.

$$Mg + O_2 \longrightarrow MgO$$

Balance O: $Mg + O_2 \longrightarrow 2MgO$

Balance Mg: $2Mg + O_2 \longrightarrow 2MgO$

Therefore, the balanced chemical equation for the reaction is

$$2Mg + O_2 \longrightarrow 2MgO$$

EXAMPLE 7 *On being strongly heated, potassium chlorate* ($KClO_3$) *gives potassium chloride and oxygen. Write a balanced chemical equation for the reaction.*

Solution The reactant and the products can be written as follows.

$$KClO_3 \longrightarrow KCl + O_2$$

Balance O:

$$2KClO_3 \longrightarrow KCl + 3O_2$$

Balance K and Cl:

$$2KClO_3 \longrightarrow 2KCl + 3O_2$$

Hence, the balanced chemical equation is

$$2KClO_3 \longrightarrow 2KCl + 3O_2$$

EXAMPLE 8 *Balance the equation*

$$N_2 + H_2 \longrightarrow NH_3$$

Solution Balance N: $N_2 + H_2 \longrightarrow 2NH_3$

Balance H: $N_2 + 3H_2 \longrightarrow 2NH_3$

Thus, the balanced equation is

$$N_2 + 3H_2 \longrightarrow 2NH_3$$

EXAMPLE 9 *Is the following equation balanced? If not, balance it.*

$Na_2CO_3 + HCl \longrightarrow NaCl + H_2O + CO_2$

Solution The equation is not balanced as atom counts of Na, H and Cl on two sides do not tally.

Balance Na:

$$Na_2CO_3 + HCl \longrightarrow 2NaCl + H_2O + C$$

Balance H and Cl:

$$Na_2CO_3 + 2HCl \longrightarrow 2NaCl + H_2O + C$$

Hence, the balanced chemic equation is

$$Na_2CO_3 + 2HCl \longrightarrow 2NaCl + H_2O + CO$$

Making a Chemical Equation More Informati

A balanced chemical equation tells us how many atoms and molecules of which reactant give how many atoms of which product Had you known the masses of the atoms o different elements, you could have calculated the quantities too of these substances. Keeping such calculations aside for higher classes, le us learn here how to make a chemical equation more informative.

Mentioning the conditions and catalysts

The conditions under which a reaction takes place and the catalysts needed, if any, are mentioned at the arrow—generally the condition above and the catalyst below the arrow.

You have learnt earlier that

> a catalyst is a substance that generally speeds up a reaction without itself undergoing any change.

Sometimes, the symbol or formula is mentioned in square brackets at the arrow to indicate a catalyst.

Mentioning the states of the reactants and products

The state of each reactant and product is mentioned along with it, using the following symbols:

(s) for the solid state

(l) for the liquid state

(g) for the gaseous state, and

(aq) for an aqueous solution

When these symbols are used, a downward arrow (↓) for a precipitate and an upward arrow (↑) for a gas on the product side are not used. Instead, we use (s) for (↓) and (g) for (↑).

Mentioning the name and colour of a substance, if needed

The name and/or colour of a substance is mentioned, if needed, below the symbol or formula of the substance in the equation—the name outside and the colour within brackets.

Examples

The following examples will show how informative a chemical equation becomes when we include the points mentioned above.

1. Hydrogen reacts with chlorine in the presence of light to form hydrogen chloride gas.

$$H_2(g) + Cl_2(g) \xrightarrow{\text{light}} 2HCl(g)$$

2. When ignited, a mixture of hydrogen and oxygen (in the volume ratio 2 : 1) explodes to form water vapour.

$$2H_2(g) + O_2(g) \xrightarrow{\text{ignite}} 2H_2O(g)$$

3. Solid potassium chlorate, when heated at 200–300 °C in the presence of manganese dioxide as catalyst, gives oxygen, leaving behind a residue of potassium chloride.

$$2KClO_3(s) \xrightarrow[MnO_2]{200\text{–}300\,^\circ C} 2KCl(s) + 3O_2(g)$$

4. Carbon dioxide turns limewater milky.

$$\underset{\text{limewater}}{Ca(OH)_2(aq)} + CO_2(g) \longrightarrow \underset{\text{milky}}{CaCO_3(s)} + H_2O(l)$$

5. A burning piece of magnesium continues to burn in a jar of carbon dioxide, forming white smoky magnesium oxide with some black carbon particles.

$$2Mg(s) + CO_2(g) \xrightarrow{\text{burn}} \underset{\text{(white)}}{2MgO(s)} + \underset{\text{(black)}}{C}$$

Points to Remember

- A *symbol* is an abbreviation of the name of an element. It consists of one or two letters of the English or the Latin name of the element.
- The symbol of an element represents the element and one atom of it. More than one atom of an element is indicated by a numeral subscript.
- A *formula* represents a molecule of an element or a compound. It gives the number of atoms of the same or different elements present in a molecule.
- The combining capacity of an element with other elements is called its *valency*. It is given by the number of H atoms that an atom of the element combines with or displaces from a compound.
- The formula of a binary compound can be obtained by transposing the valencies of the elements.
- The valency of a radical is the same as the charge on it without sign. So, the formula of a compound containing radicals is obtained by transposing their valencies.

3. Discuss how you can make a balanced chemical equation convey more than the symbols and formulae of the reactants and the products. Pg 52, 53

Objective Questions

Choose the correct option.

1. Which of the following symbols is not derived from the Latin name of the element?
   (a) Fe (b) Cu (c) Cr (d) Pb
2. Which of the following symbols is derived from the Latin name of the element?
   (a) He (b) Ne (c) Mg (d) Ag
3. Which element among the ones appearing below is pentavalent?
   (a) CaO (b) NH_3 (c) $MgSO_4$ (d) PCl_5
4. What is the valency of Mg in Mg_3N_2?
   (a) 1 (b) 2 (c) 3 (d) 4
5. What is the value of x in the following equation?
   $CaCO_3(s) + xHCl(aq) \longrightarrow CaCl_2(aq) + H_2O(l) + CO_2(g)$
   (a) 1 (b) 2 (c) 3 (d) 4
6. Which of the following is not a balanced chemical equation?
   (a) $CaCO_3 \longrightarrow CaO + CO_2$
   (b) $2KClO_3 \longrightarrow KCl + 3O_2$
   (c) $SO_2 + H_2O \longrightarrow H_2SO_3$
   (d) $CO_2 + H_2O \longrightarrow H_2CO_3$

Fill in the blanks.

1. Nitrogen is ..... in AlN. (monovalent/trivalent)
2. One sulphate radical will take up ..... sodium radical(s) to form sodium sulphate. (one/two)
3. $2\,H_2O_2 \xrightarrow[\text{catalyst}]{MnO_2} 2\,H_2O + O_2$
4. $Na_2CO_3 + 2\,HCl \longrightarrow 2\,NaCl + H_2O + CO_2$
5. $2\,NaHCO_3 \xrightarrow{\text{heat}} Na_2CO_3 + H_2O + CO_2$

Write 'T' for true and 'F' for false for the following statements.

1. Ozone is a triatomic gas. → True
2. The atomicity of sulphur is 8. → False
3. One dipositive radical will require only one dinegative radical to form a compound. → True
4. A noble-gas element is monoatomic as well as zerovalent. → False
5. A substance in solution is indicated in a chemical equation by the symbol (s). (aq) → False

❑

CHAPTER - WATER

CLASS - VIII

ANSWER KEY

Short Answer Questions :

1. Water is called a universal solvent as it dissolves a large number of substances than any other.

2. (a) Solution.
   (b) Unsaturated solution.
   (c) Saturated solution.

3. A suspension is a heterogeneous mixture of one or more dispersed phases in a dispersion medium. e.g. Muddy water.

4. A colloid is a homogeneous mixture of one or more dispersed phases in a dispersion medium. e.g. Milk.

5.

Type of Mixture	Size of solute / dispersed particle
Solution	Smaller than 1 nm (10^{-9} m)
Suspension	10^{-6} m or more
Colloid	Between 10^{-9} m and 10^{-6} m

6. Water that lathers easily with soap is called soft water.
Water that does not lather easily with soap is called hard water.

7. Temporary hardness is caused by dissolved hydrogencarbonates of calcium and magnesium.

8. Permanent hardness of water is caused by the dissolved sulphates and chlorides of calcium and magnesium.

9. Washing Soda
Formula → $Na_2CO_3 \cdot 10H_2O$

10. When sodium oxide reacts with water, sodium hydroxide is formed.

$$\underset{\text{(sodium oxide)}}{Na_2O} + \underset{\text{(water)}}{H_2O} \longrightarrow \underset{\text{(sodium hydroxide)}}{2NaOH}$$

Long - Answer Questions :

1. Answer on Page 81, Table 8.1 (See Photograph)

2. Page - 83 (See Photograph)

3. **HYGROSCOPIC SUBSTANCES :** The substances that absorbs moisture from the atmosphere are called hygroscopic substances. For example - Anhydrous calcium chloride ($CaCl_2$), Anhydrous magnesium chloride ($MgCl_2$), Silica gel (Na_2SiO_3), Sodium hydroxide ($NaOH$) etc.

DELIQUESCENT SUBSTANCES : solid hygroscopic substances, which absorbs so much of the atmospheric moisture that the solid dissolves in it and forms a concentrated solution, are called deliquescent substances.

For example : $CaCl_2$, $MgCl_2$ and $NaOH$.

Both hygroscopic and deliquescent substances are generally used as drying agents in the laboratory.

4. Same as Answer 6 (short) + Page - 88 (See Photograph)

5. Page - 85, 86 (See Photograph)

OBJECTIVE QUESTIONS:

Choose the correct option

1. (b) a supersaturated solution
2. (b) $Ca(HCO_3)_2$
3. (c) $MgSO_4$
4. (c) Washing soda
5. (b) Silica gel

Fill in the blanks:

1. Unsaturated
2. Polar
3. Suspension
4. $FeSO_4$
5. Temporary.

True or False:

1. True
2. False, (Anhydrous copper (II) sulphate is non-crystalline but its pentahydrate is crystalline).
3. False, (Soft water is suitable for washing clothes).
4. True.
5. False (Magnesium burns in steam with a dazzling white flame).

and water, the dispersion medium. Similarly, chalk ($CaCO_3$) or gypsum ($CaSO_4.2H_2O$; blackboard chalk), when stirred in water, gives a suspension.

For a suspension, it is not necessary that the dispersed phase be a solid and the dispersion medium, a liquid. The suspensions of

- a liquid in a liquid, called an emulsion (e.g., an oil–water emulsion),
- a liquid in a gas, called fog (e.g., water in air), and
- a solid in a gas, called smoke (e.g., carbon in air) are also quite common.

Fig. 8.3 Muddy water is a suspension.

The size of a dispersed particle in a suspension is much larger than that of a solute in a solution. It is 10^{-6} m (i.e., a millionth of a metre) or more in diameter.

A suspension is not transparent. And the dispersed particles slowly settle down because, being large, they are heavy too. You must have seen that the soil settles down from muddy water in a glass.

Colloids

A colloid is a homogeneous mixture of one or more dispersed phases in a dispersion medium.

Milk is the most common example of a colloid—butterfat globules dispersed in water. Jam, jelly, whipped cream and gelatin are also common examples of a colloid.

Fig. 8.4 Jam is a colloid.

Colloids are not transparent. And the dispersed particles do not settle down.

The size of a dispersed particle is in between those of a solute in a solution and a dispersed particle in a suspension, i.e., between 10^{-9} m and 10^{-6} m (or greater than 1 nm and smaller than 1000 nm).

The characteristics of a solution, suspension and colloid are given in Table 8.1

LONG (1)

Table 8.1 Characteristics of a solution, suspension and colloid

Characteristic	Solution	Suspension	Colloid
1. Type of mixture	Homogeneous	Heterogeneous	Homogeneous
2. Settling of the solute/ dispersed particles	Do not settle	Settle	Do not settle
3. Behaviour towards light	Transparent	Not transparent, scatters light	Not transparent, scatters light
4. Size of the solute/ dispersed particle	Smaller than 1 nm (10^{-9} m)	10^{-6} m or more	Between 10^{-9} m and 10^{-6} m

Hydrates

It has been found that whenever copper(II) sulphate is crystallised from an aqueous solution, the crystals have the formula $CuSO_4.5H_2O$. Similarly, iron(II) sulphate crystallises from an aqueous solution as $FeSO_4.7H_2O$. These water molecules appear in the same number every time and are called the water of crystallisation of a substance. And the substances (generally salts) containing such water molecules are called hydrates.

The water molecules associated with a substance in a crystal and forming a part of the crystalline structure are together referred to as water of crystallisation.

A substance containing water of crystallisation is called a hydrate.

Some examples are mentioned in Table 8.2.

Table 8.2 Some common hydrates

Hydrate	Formula
Washing soda	$Na_2CO_3.10H_2O$
Glauber's salt	$Na_2SO_4.10H_2O$
Calcium chloride hexahydrate	$CaCl_2.6H_2O$
White vitriol	$ZnSO_4.7H_2O$
Blue vitriol	$CuSO_4.5H_2O$
Green vitriol	$FeSO_4.7H_2O$
Epsom salt	$MgSO_4.7H_2O$
Cobalt chloride dihydrate	$CoCl_2.2H_2O$

The Loss of Water of Crystallisation on Heating

A hydrate, on being heated, loses its water of crystallisation. And it has been observed that it loses its crystalline structure too. You can find this for yourself by doing the following activity.

Activity Take a few crystals of blue vitriol in a dry test tube and heat gently. You will observe that

- the salt will slowly lose its blue colour, turning white,
- the crystals will crumble down to a powdery substance, and
- some colourless liquid drops will collect in the colder part of the test tube.

(Tests, which we will describe soon, indicate that these are water drops.)

Cool the white powdery substance and moisten it with a drop of water. The solid turns blue again.

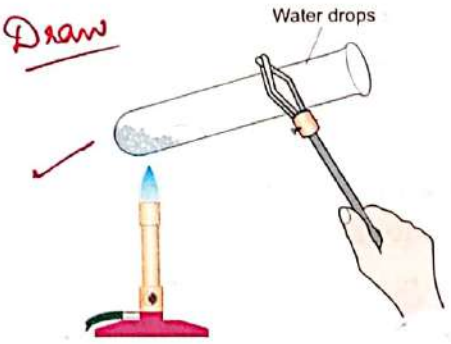
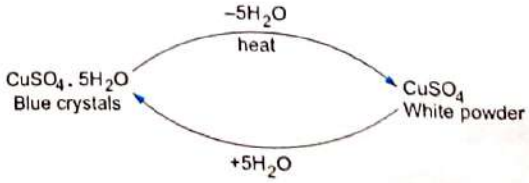


Fig. 8.6 The blue vitriol crystals turn into a white powdery anhydrous salt on being heated.

What happens during these changes can be summarised as follows.

1. The blue copper(II) sulphate pentahydrate, on being heated, loses the water molecules and changes to the white anhydrous (meaning *without water*) copper(II) sulphate. And, on treatment with water, the anhydrous salt changes back to the hydrated salt.



2. The crystalline structure of the hydrated salt is lost when it loses the water molecules. Thus, the water of

dissolved hydrogencarbonates of calcium and magnesium. Permanent hardness is caused by the dissolved sulphates and chlorides of calcium and magnesium.

Softening of Water

If the hardness of water is removed, soft water is produced and the process is called softening of water.

LONG (4)

The following methods are used to soften water.

1. **Boiling** Temporarily hard water can be softened by boiling it. When such water is heated, the hydrogencarbonates of calcium and magnesium are decomposed to the carbonates. Being insoluble, the carbonates precipitate out.

$$\underset{\text{calcium hydorgencarbonate}}{Ca(HCO_3)_2} \rightarrow \underset{\text{calcium carbonate}}{CaCO_3\downarrow} + CO_2\uparrow + H_2O$$

2. **Treating with washing soda** Permanent hardness of water is removed by treating with washing soda ($Na_2CO_3.10H_2O$). A solution of washing soda is added to the water, and the carbonates of calcium and magnesium are precipitated.

$$\underset{\text{calcium sulphate}}{CaSO_4} + \underset{\text{sodium carbonate}}{Na_2CO_3} \rightarrow \underset{\text{calcium carbonate}}{CaCO_3\downarrow} + \underset{\text{sodium sulphate (in solution)}}{Na_2SO_4}$$

LONG (4)

$$\underset{\text{calcium chloride}}{CaCl_2} + \underset{\text{sodium carbonate}}{Na_2CO_3} \rightarrow \underset{\text{calcium carbonate}}{CaCO_3\downarrow} + \underset{\text{sodium chloride (in solution)}}{2NaCl}$$

The sodium sulphate and sodium chloride formed will not make the water hard.

Why is it necessary to soften water?

LONG (4)

It is necessary to soften water because hard water is unfit for most domestic and industrial purposes.

1. Hard water is unfit for laundries as it
   (a) consumes too much soap, and
   (b) leaves dirty stains of calcium and magnesium salts of fatty acids on cloth.

LONG (4)

2. Hard water is not very suitable for bathing. The precipitates of calcium and magnesium salts of fatty acids, formed on reaction with soap, cause irritation of the skin.
3. It is not possible to properly cook hard foodstuff, like pulses, in hard water.
4. Though not injurious to health, hard water does not have an agreeable taste.
5. When used for industrial purposes (mainly in boilers), hard water produces white deposits of insoluble substances, called scales. The scales consist mainly of $CaCO_3$, $MgCO_3$ and $CaSO_4$. They deposit on the walls of the boiler and do not allow proper conduction of heat. They also block the pipes, which may cause serious accidents.

LONG (4) → 5. NOT SUITABLE FOR BOILERS IN POWER PLANTS

Points to Remember

- Water is known as a *universal solvent*. It dissolves more solutes than any other solvent does.
- Water is a *polar molecule*, having a slight positive charge on the hydrogen atoms and a slight negative charge on the oxygen atom. This property helps it act as a good solvent.
- A *solution* is a homogeneous mixture of one or more solutes in a solvent.
- A *suspension* is a heterogeneous mixture of one or more dispersed phases in a dispersion medium.
- A *colloid* is a homogeneous mixture of one or more dispersed phases in a dispersion medium.

rainy season that it gets dissolved and appears to have melted. However, refined table salt does not show this property as it does not contain $CaCl_2$ or $MgCl_2$. Similarly, solid NaOH kept open in a beaker starts looking watery within a few minutes. (Remember that after a long time, NaOH reacts with atmospheric CO_2 also.)

The Action of Metals and Metal Oxides on Water

Many metals and metal oxides react with water. To understand these reactions, we need to have an idea about the activity series. Metals along with hydrogen have been arranged according to their activity in this series. The series consisting of some common metals is given here.

The Action of Metals on Water

Activity
K
Na
Ca
Mg
Al
Zn
Fe
Sn
Pb
H
Cu
Hg
Ag
Au

Whenever a metal reacts with water, it does so with a view to displacing hydrogen from water. Obviously, only those metals can displace hydrogen from water which are more active than hydrogen, i.e., higher than hydrogen in the activity series. We can also understand that the more active the metal (i.e., the higher the metal in the activity series), the more vigorous is its reaction with water.

We will discuss here the action of potassium (K), sodium (Na), calcium (Ca), magnesium (Mg) and iron (Fe) on water. We should remember that though tin (Sn) and lead (Pb) are higher than hydrogen in the activity series, they do not act on water.

Action of potassium and sodium on water

Among the common metals, potassium and sodium are the most active ones. They are soft and get quickly affected by the moisture (and also oxygen) of the air and are, therefore, preserved in kerosene.

A small piece of the metal is cut with a knife, dried by pressing between the folds of a filter paper and dropped into a trough of water. We make the following observations about the two metals.

Sodium The metal soon changes into a silvery white globule that does not sink but darts around on the surface. A hissing sound is constantly heard. And a yellow spark flies intermittently with a 'pop'.

The resulting solution turns red litmus blue and so it is alkaline.

We infer that sodium reacts vigorously with water to form sodium hydroxide and liberate hydrogen. At the same time, the reaction is highly exothermic and so the metal melts to form a globule.

LONG (5)

$$\underset{\text{sodium}}{2Na(s)} + 2H_2O(l) \longrightarrow \underset{\substack{\text{sodium hydroxide}\\(\text{alkaline})}}{2NaOH(aq)} + \underset{\text{hydrogen}}{H_2(g)}$$

Turns red litmus blue

Burns with a 'pop'

The hydrogen burns with a 'pop'. And *yellow* sparks are produced by small particles of sodium. (Sodium imparts a yellow colour to a flame. Throw some common salt, i.e., sodium chloride, into the flame of a kitchen stove, and watch the colour imparted to the flame. It is yellow. Also, doesn't a sodium vapour lamp have a yellow light?)

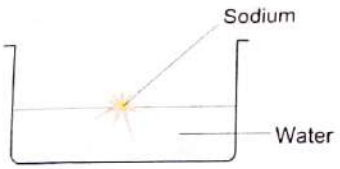


Fig. 8.8 Sodium reacts vigorously with cold water.

Potassium Potassium also reacts vigorously and exothermically with water to form potassium hydroxide and liberate hydrogen. Due to the potassium hydroxide formed, the resulting solution is alkaline and therefore turns red litmus blue. The only difference from the reaction of sodium is that the hydrogen liberated burns with a violet flame. Potassium imparts the violet colour to the flame.

$$\underset{\text{potassium}}{2K(s)} + 2HOH(l) \longrightarrow \underset{\substack{\text{potassium}\\\text{hydroxide}}}{2KOH(aq)} + H_2(g)$$

The action of calcium on water

Calcium is heavier than water and a piece of the metal sinks in it. The evolution of hydrogen starts briskly but slows down soon as the lime produced forms a coating on the metal. Calcium hydroxide (slaked lime) is much less soluble than sodium hydroxide or potassium hydroxide and makes the solution turbid. The solution is alkaline, turning red litmus blue.

$$\underset{\text{calcium}}{Ca(s)} + 2HOH(l) \longrightarrow \underset{\substack{\text{calcium hydroxide}\\\text{(alkaline)}}}{Ca(OH)_2(aq)} + H_2(g)$$

The action of magnesium on water

Magnesium, being less active than calcium, displaces hydrogen from water very slowly at room temperature. However, the reaction is fast with steam.

$$Mg + H_2O \longrightarrow MgO + H_2$$

When magnesium powder is mixed with water, the evolution of hydrogen starts slowly and stops soon because the MgO forms a coating over the metal particles. But you can verify for yourself how fast the reaction with steam is.

Activity Boil some water in a conical flask to replace the air inside with water vapour. Continue boiling and introduce a burning piece of magnesium ribbon into the mouth of the conical flask. The ribbon continues to burn in steam/water vapour though the nature of the flame changes. In air, magnesium burns with a dazzling white flame, but in steam it gives a smaller, orange flame due to the burning of the liberated hydrogen.

The particles of magnesium oxide falling into the water make it alkaline—the solution or the mixture turning red litmus blue.

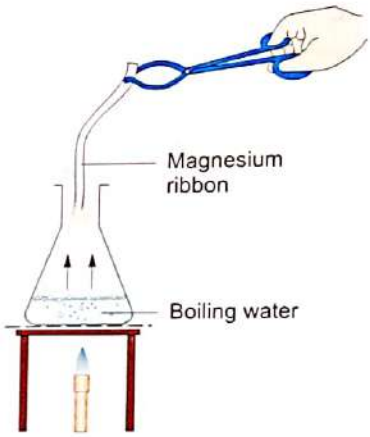


Fig. 8.9 Magnesium continues to burn in steam.

The action of iron on water

Though iron is above hydrogen in the activity series, it is much less active than magnesium. Iron displaces hydrogen from water only when steam is passed over the red-hot metal. A black oxide triiron tetroxide (Fe_3O_4), also called ferrosoferric oxide, is formed.

$$\underset{\text{iron}}{3Fe} + \underset{\text{(steam)}}{4H_2O} \longrightarrow \underset{\substack{\text{triiron tetroxide}\\\text{(black)}}}{Fe_3O_4} + \underset{\text{hydrogen}}{4H_2}$$

(Triiron tetroxide is considered a mixed oxide of iron(II) and iron(III), i.e., $FeO.Fe_2O_3$.)

Serial No. Date

Notes

Ist TERM SYLLABUS

CLASS – 8th PUNJABI

ਪਾਠ – 5 ਸਾਡਾ ਧਰਤੀ ਹੇਠਲਾ ਪਾਣੀ
ਪਾਠ – 8 ਨਵੇਂ ਸਾਲ ਦਾ ਤੋਹਫ਼ਾ
ਪਾਠ – 12 ਜ਼ਿੰਮੇਵਾਰ ਕੌਣ

ਵਿਆਕਰਨ

ਪਾਠ – 13 ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ
ਪਾਠ – 19 ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ (1 ਤੋਂ 30 ਤੱਕ)
ਪਾਠ – 26 ਮੁਹਾਵਰੇ ੲ, ਸ, ਹ

ਲੇਖ

1. ਸ਼ਹੀਦ ਭਗਤ ਸਿੰਘ
2. ਵਿਸਾਖੀ ਦਾ ਮੇਲਾ

ਚਿੱਠੀ / ਪੱਤਰ –

1. ਪਿਤਾ ਜੀ ਨੂੰ ਚਿੱਠੀ ਰਾਹੀਂ ਛੁੱਟੀਆਂ ਦੀ ਗੁਜ਼ਾਰਨੀ ਬਾਰੇ ਲਿਖਦੇ
2. ਆਚਰਨ ਸਰਟੀਫ਼ਿਕੇਟ ਲੈਣ ਲਈ ਅਰਜ਼ੀ

ਕਹਾਣੀ – ਸਿੱਖਿਆ

- ਮੂਰਖ ਬਾਰਾ ਸਿੰਗਾ

SUBJECT - PUNJABI

CLASS - 8th

Ch-4 ਸਾਂਭੋ ਧਰਤੀ ਹੇਠਲਾ ਪਾਣੀ

(1) Short Q/Ans.

(ੳ) ਧਰਤੀ ਦੇ ਅੰਦਰੋਂ ਪਾਣੀ ਕਿੱਥੇ ਆ ਗਿਆ ਹੈ?

ਉੱਤਰ - ਧਰਤੀ ਦੇ ਅੰਦਰੋਂ ਪਾਣੀ ਧੁਰ ਪਾਤਾਲ ਵਿੱਚ ਆ ਗਿਆ ਹੈ।

(ਅ) ਧਰਤੀ ਨੇ ਇਹ ਪਾਣੀ ਕਿੱਥੋਂ ਤੇ ਕਿਵੇਂ ਇਕੱਠਾ ਕੀਤਾ?

ਉੱਤਰ - ਧਰਤੀ ਨੇ ਇਹ ਪਾਣੀ ਆਪਣੇ ਅੰਦਰ ਵਿੱਚ ਬੂੰਦ-ਬੂੰਦ ਕਰ ਇਕੱਠਾ ਕੀਤਾ।

(ੲ) ਧਰਤੀ ਵਿਚਲਾ ਪਾਣੀ ਪ੍ਰਾਪਤ ਕਰਨ ਲਈ ਪੁੱਤਾਂ ਨੇ ਕੀ ਕੀਤਾ?

ਉੱਤਰ - ਧਰਤੀ ਵਿਚਲਾ ਪਾਣੀ ਪ੍ਰਾਪਤ ਕਰਨ ਲਈ ਪੁੱਤਾਂ ਨੇ ਧਰਤੀ ਦਾ ਸੀਨਾ ਛਲਿਆ।

(ਸ) ਧਰਤੀ ਮਾਂ ਨੇ ਪੁੱਤਾਂ ਦੇ ਕੰਨ ਵਿੱਚ ਕਿਹੜਾ ਤਰਲਾ ਆਖਿਆ ਸੀ?

ਉੱਤਰ - ਧਰਤੀ ਮਾਂ ਨੇ ਪੁੱਤਾਂ ਦੇ ਕੰਨ ਵਿੱਚ ਕਿਹਾ ਕਿ ਪਾਣੀ ਹੀ ਸਾਰੇ ਜੀਵਨ ਦੇ ਕਰਤੀ ਹੈ, ਇਸਨੂੰ ਫਜ਼ੂਲ ਨਾ ਗਵਾਇਓ।

(ਹ) ਆਪਾਂ ਆਉਣ ਵਾਲੀਆਂ ਨਸਲਾਂ ਨਾਲ ਕਿਵੇਂ ਧ੍ਰੋਹ ਕਮਾਵਾਂਗੇ?

ਉੱਤਰ - ਜੇਕਰ ਆਪਾਂ ਪਾਣੀ ਨੂੰ ਫਜ਼ੂਲ ਗਵਾਉਂਦੇ ਰਹੇ ਤਾਂ ਆਪਾਂ ਆਉਣ ਵਾਲੀਆਂ ਨਸਲਾਂ ਨਾਲ ਧ੍ਰੋਹ ਕਮਾਵਾਂਗੇ।

(2) Long Q/Ans.

(ੳ) ਧਰਤੀ ਨੇ ਆਪਣੇ ਸੀਨੇ ਵਿੱਚ ਪਾਣੀ ਕਿਵੇਂ ਜਮਾਂ ਕੀਤਾ ਤੇ ਧੀਰਾ ਕੀ ਕਰ ਰਿਹਾ ਹੈ?

ਉੱਤਰ – ਧਰਤੀ ਨੇ ਆਪਣੇ ਸੀਨੇ ਵਿੱਚ ਪਾਣੀ ਬੂੰਦ-ਬੂੰਦ ਕਰ ਕੇ ਜਮਾਂ ਕੀਤਾ। ਧੀਰੇ ਨੂੰ ਜਦੋਂ ਪਾਣੀ ਦੀ ਜ਼ਰੂਰਤ ਮਹਿਸੂਸ ਹੋਈ ਤਾਂ ਉਸਨੇ ਧਰਤੀ ਨੂੰ ਪੁੱਟ ਕੇ ਉਸ ਵਿੱਚੋਂ ਪਾਣੀ ਕੱਢਿਆ। ਧਰਤੀ ਮਾਂ ਨੇ ਧੀਰੇ ਦੇ ਕੰਨ ਵਿੱਚ ਇੱਕ ਨਸੀਹਤ [?] ਸੁਣਾਇਆ [?] ਕਿ ਪਾਣੀ ਦੀ ਸੋਚ ਕੇ ਵਰਤੋਂ ਕਰਨਾ, ਪਰ ਧੀਰਾ ਧਰਤੀ ਮਾਂ ਦੀ ਨਸੀਹਤ ਨੂੰ ਭੁੱਲ ਕੇ ਪਾਣੀ ਦੀ ਫਜ਼ੂਲ ਵਰਤੋਂ ਕਰਨ ਲੱਗਾ।

(ਅ) ਪਾਣੀ ਮੁੱਕਣ ਤੇ ਧੀਰੇ ਨੇ ਧਰਤੀ ਨਾਲ ਕਿਵੇਂ ਗਿਲਾ ਸ਼ਿਕਵਾ ਕੀਤਾ?

ਉੱਤਰ – ਪਾਣੀ ਮੁੱਕਣ ਤੇ ਧੀਰੇ ਨੇ ਖੂਬ ਸੋਚ ਕੀਤੀ ਅਤੇ ਧਰਤੀ ਮਾਂ ਦੀ ਨਸੀਹਤ ਨੂੰ ਭੁੱਲ ਗਿਆ। ਉਸਨੇ ਇਹ ਸ਼ਿਕਵਾ ਕਰ ਦਿੱਤਾ ਕਿ ਧਰਤੀ ਦੇ ਥੱਲੇ ਪਾਣੀ ਨਹੀਂ ਲੱਭਦਾ, ਜਿਸ ਕਰਕੇ ਉਹ ਆਪਣੀ ਫਸਲਾਂ ਨਸ਼ਟ ਹੋਣ [illegible] ਕਰ ਰਿਹਾ ਹੈ। ਜੇ ਪਾਣੀ ਦੀ ਥੋੜ ਆ ਗਈ ਤਾਂ ਆਪਣੀ ਫਸਲਾਂ ਸੜਨਾਂ। ਨੇ ਉਸਨੂੰ ਮਾਫ਼ ਨਹੀਂ ਕਰਨਾ।

(ੲ) ਧੀਰਾ ਪਾਣੀ ਦੀ ਫਜ਼ੂਲ ਵਰਤੋਂ ਕਰਕੇ ਕੀ ਕਰ ਰਿਹਾ ਹੈ?

ਉੱਤਰ – ਧੀਰਾ ਪਾਣੀ ਦੀ ਫਜ਼ੂਲ ਵਰਤੋਂ ਕਰਕੇ ਪਾਣੀ ਨੂੰ ਖਤਮ ਕਰ ਰਿਹਾ ਹੈ। ਪਾਣੀ ਨੂੰ ਫਜ਼ੂਲ ਵਹਾਉਂਦਾ, ਆਪਣੀ ਮੌਤ ਆਪ ਮਰਨਾ ਹੈ। ਇਸ ਲਈ ਧੀਰੇ ਨੂੰ ਆਪਣੀ ਨਵ-ਨਸਲੀ ਲਈ ਪਾਣੀ ਦੀ ਬੱਚਤ ਕਰਨ ਬਾਰੇ ਸੋਚਣਾ ਚਾਹੀਦਾ ਹੈ।

(3) ਵਾਕਾਂ ਵਿੱਚ ਵਰਤੋ — Do it yourself.

(4) ਕਾਵਿ ਟੋਟੇ ਨੂੰ ਪੜ੍ਹ ਕੇ ਹੇਠਾਂ ਦਿੱਤੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ ਦਿਓ।
"ਪਰ ਕਰਕੇ ਪੁੱਤ - - - - - - ਹੁਣ ਮਤ ਪਛਤਾਇਆ।"

ਉੱਤਰ (1) ਧੀਰੇ ਨੂੰ ਕਰਨਾ ਪੁੱਤ ਕਹਿ ਕੇ ਸੰਬੋਧਨ ਕੀਤਾ ਗਿਆ ਹੈ।
(2) ਧੀਰੇ ਦੇ ਪਾਣੀ ਡੁੱਲਣ ਸਮੇਂ ਸਮਝਾਇਆ ਤੇ ਬਾਣ ਪਾਣੀ ਡੁੱਲ ਕੇ ਜਾਣ ਕਰਨ ਤੋਂ ਹੈ।
(3) ਧੀਰਿਆ ਨੇ ਮਤ ਪਛਤਾਇਆ ਕਿ ਧਰਤੀ ਦੇ ਅੰਦਰਲਾ ਪਾਣੀ ਖਤਮ ਕਰ ਦਿੱਤਾ ਹੈ।

CLASS - 8th PUNJABI

BACK EXERCISES

(੨) ਪਾਠ - ਵਿਚਲੇ ਪ੍ਰਸ਼ਨ
(ੳ) ਸਰਸਾਇਆਂ (ਅ) ਭੂਸ-ਭੂਸ ਕੇ (ੲ) ਸੋਹਣ ਦੇ
(ਸ) ਪਤਝੜ ਵਿਚ (ਹ) ਆਉਣ ਵਾਲੀਆਂ ਨਸਲਾਂ ਲਈ (ਕ) ਤਿਤਲੀ

ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਨ

(1) ਪਾਠ - ਵਿਚਲੇ ਪ੍ਰਸ਼ਨ

(ੳ) ਆਕਾਸ਼ (ਅ) ਗੁੱਦਾਰ (ੲ) ਜਾਣ
(ਸ) ਸੋਨ ਰਸਮੀ (ਹ) ਰਸੂਤ

(2) ਵਾਕਾਂ ਦੀ ਢੁਕਵੀਂ ਪੂਰਤੀ ਕਰਕੇ ਲਿਖੋ —

(i) ਸਾਡਾ ਨੇ ਚੱਕਿਆ ਨੂੰ ਕਾਇਆ।
(ii) ਕਮਲੇ ਪੁੱਤ ਵਿਗੜੇ ਗਏ ਹਨ।
(iii) ਭੂਰੀਆਂ ਜੋਗ ਸਾਫ ਹੋ ਪਈਆਂ।
(iv) ਇਸ ਥਾਲਾਂ ਦੀ ਕਲਸ ਪੂਜਾਈ ਹੈ।
(v) ਮੱਛੀਆਂ ਨੇ ਗਲੀਆਂ ਵਿਚ ਖੂਬ ਖੱਪ ਪਾਈ।
(vi) ਬੀਏ ਪਾਣੀ ਔਣ ਕਿਤੇ ਦੂਰ ਲੰਘੇ ਗਏ।
(vii) ਕੁਦਰਤ ਦੇ ਨਿਯਮਾਂ ਦੀ ਪਾਲਣਾ ਕਰੋ।

(3) ਹੇਠਾਂ ਦਿੱਤੇ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਵਿਸ਼ੇਸ਼ਣ ਚੁਣੋ —
ਵਿਸ਼ੇਸ਼ਣ =
ਪੀਲ, ਸੁੰਦਰ, ਵਿਚਾਰ ਕ, ਗਰੀਬ, ਅਮੀਰ, ਤੇਜ਼, ਹਰਕਾ
ਫੈਸੀ, ਪਥਰੀ, ਥੋਥੀਆਂ

H.W — write ਮੁਹਾਵਰੇ - ਅਖਾਣ, ਵਾਕ ਬਣਾਓ, ਪ੍ਰਸ਼ਨ/ਉੱਤ

On your note - Book. Rest of work on your Book.

ਹਲਗਤਮਕ ਕਿਰਿਆਵਾਂ ਤੇ ਉਸਤਾ ਪਾਠ
Do it Yourself

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ਪਾਠ - 8 ਨਵੇਂ ਸਾਲ ਦਾ ਤੋਹਫ਼ਾ

Short Q/Ans

(ੳ) ਧੀਰਜ ਦੇ ਮੰਮੀ-ਪਾਪਾ ਕੀ ਕੰਮ ਕਰਦੇ ਸਨ?

ਉੱਤਰ - ਧੀਰਜ ਦੇ ਪਾਪਾ ਨੌਕਰੀ ਤੇ ਸੁਧਾਈ ਵਿਭਾਗ ਦਾ ਕੰਮ ਕਰਦੇ ਸਨ। ਅਤੇ ਉਸਦੇ ਮੰਮੀ ਲੋਕਾਂ ਦੇ ਕੱਪੜੇ ਪ੍ਰੈੱਸ ਕਰਦੇ ਸਨ।

(ਅ) ਧੀਰਜ ਨੇ ਆਪਣੇ ਦੋਸਤਾਂ ਨਾਲ ਕਿੱਥੇ ਜਾਣ ਦਾ ਪ੍ਰੋਗਰਾਮ ਬਣਾਇਆ ਸੀ?

ਉੱਤਰ - ਧੀਰਜ ਨੇ ਆਪਣੇ ਦੋਸਤਾਂ ਨਾਲ ਮਸੂਰੀ ਜਾਣ ਦਾ ਪ੍ਰੋਗਰਾਮ ਬਣਾਇਆ ਸੀ।

(ੲ) ਧੀਰਜ ਕਿਹੜੀ ਸੰਸਥਾ ਵੱਲੋਂ ਫ਼ਰੀ ਟੂਰ ਤੇ ਜਾ ਰਿਹਾ ਸੀ?

ਉੱਤਰ - ਧੀਰਜ ਕੌਂਸਲ ਵਾਲੀ ਸੋਸਾਇਟੀ ਵੱਲੋਂ ਫ਼ਰੀ ਟੂਰ ਤੇ ਜਾ ਰਿਹਾ ਸੀ।

(ਸ) ਧੀਰਜ ਨੂੰ ਉਸਦੇ ਪਾਪਾ ਨਾਲ ਵਾਪਰੀ ਕਿਹੜੀ ਘਟਨਾ ਦਾ ਪਤਾ ਲੱਗਾ?

ਉੱਤਰ - ਧੀਰਜ ਨੂੰ ਉਸਦੇ ਪਾਪਾ ਨਾਲ ਹੋਏ ਐਕਸੀਡੈਂਟ ਦਾ ਪਤਾ ਲੱਗਾ।

(ਹ) ਧੀਰਜ ਨੇ ਆਪਣੇ ਪਾਪਾ ਨੂੰ ਕਿਸ਼ਤਾਂ ਭਰਨ ਜਾਣ ਤੋਂ ਕਿਉਂ ਰੋਕਿਆ?

ਉੱਤਰ - ਕਿਉਂਕਿ ਹੁਣ ਉਹ ਮਸੂਰੀ ਨਹੀਂ ਜਾਣਾ ਚਾਹੁੰਦਾ ਸੀ।

(ਕ) ਧੀਰਜ ਨੇ ਆਪਣੇ ਮੰਮੀ ਪਾਪਾ ਨਾਲ ਕੀ ਵਾਅਦਾ ਕੀਤਾ?

ਉੱਤਰ - ਕਿ ਉਹ ਹੁਣ ਕਦੇ ਜ਼ਿੱਦ ਨਹੀਂ ਕਰੇਗਾ।

Long Q/Ans.

(ੳ) ਧੀਰਜ ਕਿਹੋ ਜਿਹਾ ਮੁੰਡਾ ਸੀ? ਉਹ ਆਪਣੇ ਦੋਸਤਾਂ ਨਾਲ ਕਿੱਥੇ ਕੀ ਕਰਨ ਜਾ ਰਿਹਾ ਸੀ?

ਉੱਤਰ - ਧੀਰਜ ਇੱਕ ਜ਼ਿੱਦੀ ਸੁਭਾਅ ਦਾ ਮੁੰਡਾ ਸੀ। ਉਹ ਹਰ ਗੱਲ ਵਿੱਚ ਆਪਣੀ ਜ਼ਿੱਦ ਕਰਦਾ ਸੀ। ਉਸਦੇ ਪਾਪਾ ਸੁਧਾਈ ਵਿਭਾਗ ਦਾ ਕੰਮ ਕਰਦੇ ਸਨ ਤੇ ਮੰਮੀ ਲੋਕਾਂ ਦੇ ਕੱਪੜੇ ਪ੍ਰੈੱਸ ਕਰਦੇ ਸਨ। ਇਸ ਵਾਰ ਉਹ ਕੌਂਸਲ ਵਾਲੀ ਸੋਸਾਇਟੀ ਵੱਲੋਂ ਦੀ ਜ਼ਿੱਦ ਕਰ ਰਿਹਾ ਸੀ। ਉਹ ਆਪਣੇ ਦੋਸਤਾਂ ਨਾਲ ਮਸੂਰੀ, ਨਵਾਂ ਸਾਲ ਮਨਾਉਣ ਜਾ ਰਿਹਾ ਸੀ, ਅਤੇ ਕੌਂਸਲ ਵਾਲੀ ਸੋਸਾਇਟੀ ਦੀ ਉਸਦੇ ਉੱਥੇ ਨੀ ਪਹੁੰਚਣਾ ਸੀ।

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(ਅ) ਪੰਕਜ ਦੇ ਪਾਪਾ ਨੇ ਪੰਕਜ ਨੂੰ ਸਮਝਾਉਂਦਿਆਂ ਕੀ ਕਿਹਾ?

ਉੱਤਰ– ਪੰਕਜ ਦੇ ਪਾਪਾ ਨੇ ਪੰਕਜ ਨੂੰ ਸਮਝਾਉਂਦਿਆਂ ਕਿਹਾ ਕਿ ਤੈਨੂੰ ਆਪਣੇ ਪਿਓ ਦੀ ਹਾਲਤ ਦਾ ਪਤਾ ਨਹੀਂ। ਵੀਹ ਹਜ਼ਾਰ ਰੁਪਏ ਦੀ ਰਕਮ ਥੋੜ੍ਹੀ ਹੁੰਦੀ ਹੈ? ਇਸ ਭਰ ਗਰਮੀ ਚ ਕੇ ਛਾਤੀਆਂ ਵਿੱਚ ਪਸੀਨਾ ਰਹਿੰਦਾ ਹਾਂ। ਕੱਪੜੇ ਧੋਂਦਿਆਂ ਤੇਰੀ ਮਾਂ ਦੀ ਪਿੱਠ ਦੁੱਖਣ ਲੱਗ ਜਾਂਦੀ ਹੈ ਤਾਂ ਕਿਤੇ ਜਾ ਕੇ ਚਾਰ ਪੈਸੇ ਬਚਦੇ ਨੇ ਜਿਸ ਨਾਲ ਘਰਦਾ ਰੋਟੀ ਟੁੱਕ ਚੱਲਦੈ। ਹੁਣ ਤੂੰ ਤਿੰਨੇ ਭਰਾਵਾਂ ਦੀ ਫੀਸ ਈ ਦੇਖ ਲੈ। ਦੋ ਹਜ਼ਾਰ ਰੁਪਏ ਹਰ ਮਹੀਨੇ ਫੀਸ ਦਾ ਹੀ ਦੇਣਾ ਪੈਂਦੈ। ਪਤਾ ਨਹੀਂ ਬਣਦਾ ਕਿ ਕਦੋਂ ਮਹੀਨਾ ਖਤਮ ਹੋ ਗਿਆ ਤੇ ਕਦੋਂ ਆ ਗਿਆ। ਇਸ ਲਈ ਪੁੱਤ ਸਿਆਣਾ ਬਣ।

(ੲ) ਸੁਰਜੀਤ ਅੰਕਲ ਨੇ ਪੰਕਜ ਨੂੰ ਕੀ ਦੱਸਿਆ? ਪੰਕਜ ਨੇ ਕੀ ਸੋਚ ਕੇ ਮਸੂਰੀ ਜਾਣ ਦਾ ਵਿਚਾਰ ਤਿਆਗ ਦਿੱਤਾ?

ਉੱਤਰ– ਸੁਰਜੀਤ ਅੰਕਲ ਨੇ ਪੰਕਜ ਨੂੰ ਘਰ ਅੰਦਰ ਵੜ ਕੇ ਉਸਦੇ ਪਾਪਾ ਦੇ ਹੋਏ ਐਕਸੀਡੈਂਟ ਬਾਰੇ ਦੱਸਿਆ। ਉਹ ਕਿਸ਼ਤਾ ਭਰਨੀ ਜਾ ਰਹੇ ਸਨ। ਪੰਕਜ ਨੇ ਸੋਚਿਆ ਮੇਰੀ ਜ਼ਿਦ ਕਰਕੇ ਅੱਜ ਉਨ੍ਹਾਂ ਤਕਲੀਫ਼ ਸਹਿਣੀ ਸੀ। ਮੰਮੀ ਠੀਕ ਕਹਿੰਦੇ ਹਨ ਕਿ ਨਵੇਂ ਸਾਲ ਦੀਆਂ ਖੁਸ਼ੀਆਂ ਪਹਾੜੀ ਇਲਾਕਿਆਂ ਵਿੱਚ ਜਾਣ ਦੀ ਥਾਂ ਘਰ ਵਿੱਚ ਹੀ ਮਨਾਈਆਂ ਜਾ ਸਕਦੀਆਂ ਹਨ। ਮੈਂ ਨਵਾਂ ਸਾਲ ਮਸੂਰੀ ਨਹੀਂ, ਸਗੋਂ ਆਪਣੇ ਘਰ ਆਪਣੇ ਦੋਸਤਾਂ-ਮਿੱਤਰਾਂ ਨਾਲ ਹੱਸ-ਖੇਡ ਕੇ ਮਨਾਵਾਂਗਾ। ਮੈਨੂੰ ਨਵੇਂ ਮੋਬਾਈਲ ਦੀ ਲੋੜ ਨਹੀਂ ਹੈ, ਮੈਨੂੰ ਮਾਫ਼ ਕਰ ਦਿਓ ਪਾਪਾ।

ਪ੍ਰਸ਼ਨ (ਸ) ਪੰਕਜ ਪਾਪਾ ਦੇ ਐਕਸੀਡੈਂਟ ਦਾ ਦੋਸ਼ੀ ਆਪਣੇ ਆਪ ਨੂੰ ਮੰਨ ਰਿਹਾ ਸੀ। ਕਿਉਂ?

ਉੱਤਰ– ਪਾਪਾ ਦਾ ਐਕਸੀਡੈਂਟ ਮੇਰੇ ਕਰਕੇ ਹੀ ਹੋਇਆ ਹੈ। ਜੇ ਮੈਂ ਮਹਿੰਗਾ ਮੋਬਾਈਲ ਲੈਣ ਲਈ ਜ਼ਿੱਦ ਨਾ ਕਰਦਾ ਤਾਂ ਉਹ ਆਪਣੇ ਦੋਸਤ ਕੋਲ ਪੈਸੇ ਲੈਣ ਲਈ ਕਿਸ਼ਤਾ ਭਰਨੀ ਨਾ ਜਾਂਦੇ ਤੇ ਐਕਸੀਡੈਂਟ ਨਾ ਹੁੰਦਾ। ਇਸ ਲਈ ਮੈਂ ਕਸੂਰਵਾਰ ਹਾਂ।

8th Punjabi

ਪਾਠ – 8 ਨਵੇਂ ਸਾਲ ਦਾ ਵਾਅਦਾ

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Back Exercises

(2) ਵਸਤੂਨਿਸ਼ਠ ਪ੍ਰਸ਼ਨ — (ੳ) ਜਿੰਦੀ (ਅ) ਨਵੇਂ ਸਾਲ ਦਾ ਦਿਨ
(ੲ) ਸੁਖਜੀਤ ਦੀ (ਸ) ਆਪਣੀ ਗੱਲ ਤੋਂ ਰਹਾ ਨਾ ਨਿਭਾ
(ਹ) ਅਖਬਾਰ (ਕ) ਕਾਠ ਨਾਲ

(3) ਵਾਕਾਂ ਵਿੱਚ ਵਰਤੋ – Do it yourself on note Book.

(4) ਖਾਲੀ ਥਾਵਾਂ ਭਰੋ —
(ੳ) ਪ੍ਰੇਮ (ਅ) ਪੰਜ ਹਜ਼ਾਰ (ੲ) ਕਾਰਨ
(ਸ) ਟੱਸ ਤੋਂ ਮੱਸ (ਹ) ਕਸੂਰਵਾਰ

(5) ਠੀਕ / ਗਲਤ
(i) × (ii) × (iii) ✓ (iv) × (v) ✓

ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਨ

(1) (ੳ) ਖਾਸ ਨਾਂਵ (ਅ) ਮੁਹਾਵਰਾ (ੲ) ਮਿਹਨਤ
(ਸ) ਮਿੱਤਰ (ਹ) ਐਕਸੀਡੈਂਟ

(2) ਮੁਹਾਵਰਿਆਂ ਦੇ ਅਰਥ ਲਿਖੋ
(i) ਨੁਕਸਾਨ ਕਰਾਉਣਾ
(ii) ਅਨੁਸ਼ਾਸਨ ਅਨੁਸਾਰ ਧਾਰਨ ਕਰਨਾ
(iii) ਦੋਸ਼ ਲਾਉਣਾ
(iv) ਪੱਕਾ ਵਾਅਦਾ ਕਰਨਾ
(v) ਆਪਣੀ ਗੱਲ ਤੇ ਅੜੇ ਰਹਿਣਾ
(vi) ਛਿਆ-ਛਕਾਰੇ ਗੱਲਾਂ ਸੋਚਣਾ
(vii) ਤਬਾਹ ਕਰ ਦੇਣਾ
(viii) ਰਖ-ਰਖਾ ਕਾਇਮ ਕਰਨਾ
(ix) ਬੁਰਾ ਲੱਗਣਾ
(x) ਬਹੁਤ ਗਰਮੀ ਪੈਣੀ

(3) ਹੇਠ ਲਿਖੇ ਸ਼ਬਦਾਂ ਨੂੰ ਸ਼ੁੱਧ ਕਰਕੇ ਲਿਖੋ —

ਸਹੁਰਾ	ਕਾਰਜ
ਜਾਤਰਾ	ਤੀਵੀਂ
ਬੇਟਾ	ਵਿਹੜਾ
ਔਖਾ	ਗੁਸੀ
ਦੁਪਹਿਰ	ਮਿੱਤਰ
ਔਖੇ	ਵਹੁਟੀ
ਕਿਰਤਾ	ਇਸਤਰੀ
ਖੁਸ਼ੀ	

ਰਚਨਾਤਮਕ ਕਿਰਿਆਵਾਂ ਅਤੇ ਯੋਗਤਾ ਪਰਖ

Do it yourself.

CLASS - 8th

SUBJECT - PUNJABI

ਪਾਠ - 12 ਜ਼ਿੰਮੇਵਾਰ ਕੌਣ

Short Q/Ans.

(ੳ) ਪੰਜਾਬ ਕਿਸ ਦੀ ਧਰਤੀ ਅਖਵਾਉਂਦੀ ਹੈ?

ਉੱਤਰ - ਗੁਰੂਆਂ - ਪੀਰਾਂ, ਦੇਵੀ - ਦੇਵਤਿਆਂ, ਦੇਸ਼ ਭਗਤਾਂ ਦੀ।

(ਅ) ਕਈ ਪੰਜਾਬ ਦੇ ਲੋਕ ਕਿਹੋ ਜਿਹੀ ਹਰਕਤ ਕਰਦੇ ਸਨ?

ਉੱਤਰ - ਕਈ ਲੋਕ ਮਾਰਦੇ, ਮੁਸਾਫ਼ਰ ਕੁੱਟਦੇ, ਬੱਸਾਂ ਰੋਕਦੇ ਸਨ।

(ੲ) ਨਸ਼ਿਆਂ ਦੀ ਲੋੜ ਪੱਛਮ ਦੀ ਲੋੜ ਹੈ, ਕਿਵੇਂ?

ਉੱਤਰ - ਕਿਉਂਕਿ ਅਸੀਂ ਪੱਛਮੀ ਸੱਭਿਆਚਾਰ ਨੂੰ ਅਪਣਾ ਰਹੇ ਹਾਂ।

(ਸ) ਦਵਿੰਦਰ ਕਿਹੋ ਜਿਹੇ ਸਰੀਰ ਵਾਲਾ ਮੁੰਡਾ ਸੀ?

ਉੱਤਰ - ਦਵਿੰਦਰ ਗੱਭਰੂ-ਜਵਾਨ, ਛੇ-ਫੁੱਟਾ ਕੱਦ, ਰੰਗ ਨਿਛੋਹ, ਸਰੀਰ ਗੁੰਦਿਆ ਹੋਇਆ ਸੀ।

(ਹ) ਦਵਿੰਦਰ ਦੀ ਮਾਂ ਨੇ ਉਸਨੂੰ ਕਿਵੇਂ ਪੜ੍ਹਾਇਆ ਸੀ?

ਉੱਤਰ - ਦਵਿੰਦਰ ਦੀ ਮਾਂ ਨੇ ਉਸਨੂੰ ਰਾਤਾਂ ਜਾਗ - ਜਾਗ ਕੇ, ਲੋਕਾਂ ਦੇ ਕੱਪੜੇ ਸੀਅ ਕੇ ਪੜ੍ਹਾਇਆ ਸੀ।

(ਕ) ਬਾਜ਼ਾਰਾਂ ਵਿੱਚ ਸ਼ੌਕੀਨ ਮੁੰਡੇ ਸ਼ੁਕੀਨ ਕੁੜੀਆਂ ਨਾਲ ਕੀ-ਕੀ ਕਰਦੇ ਹਨ?

ਉੱਤਰ - ਸ਼ੌਕੀਨ ਮੁੰਡੇ ਸ਼ੁਕੀਨ ਕੁੜੀਆਂ ਨਾਲ [illegible] ਕਰਦੇ ਸਨ ਤੇ ਉਨ੍ਹਾਂ ਨੂੰ ਜ਼ਬਰਦਸਤੀ ਬੱਸ ਤੇ ਚੜਾਉਂਦੇ ਸਨ।

(ਖ) ਸਾਨੂੰ ਪੰਜਾਬ ਨੂੰ ਨਸ਼ਾ ਮੁਕਤ ਕਰਨ ਲਈ ਕੀ ਕਰਨਾ ਪਵੇਗਾ?

ਉੱਤਰ - ਸਾਨੂੰ ਘਰ - ਘਰ ਜਾ ਕੇ ਇਹ ਸੰਦੇਸ਼ ਪਹੁੰਚਾਉਣਾ ਪਵੇਗਾ ਕਿ ਨਸ਼ੇ ਖ਼ਰਾਬ ਹੁੰਦੇ ਹਨ, ਇਨ੍ਹਾਂ ਤੋਂ ਬਚੋ।

Long Q/Ans

ਪ੍ਰਸ਼ਨ (ੳ) ਅਖ਼ਬਾਰ ਵਿੱਚ ਕੀ ਪੜ੍ਹਕੇ ਲੇਖਕ ਸੋਚੀਂ ਪੈ ਗਿਆ। ਲੇਖਕ ਅਨੁਸਾਰ ਨਸ਼ੇ ਕਿਸਦੀ ਦੇਣ ਹਨ ਤੇ ਕਿਵੇਂ?

ਉੱਤਰ - ਪੰਜਾਬ ਦੇ ਨੌਜਵਾਨ ਨਸ਼ਿਆਂ ਵਿੱਚ ਗਲਤਾਨ ਹੋ ਰਹੇ ਹਨ ਤੇ ਪੰਜਾਬ ਦਾ ਹਰ ਸੱਤਵਾਂ ਨੌਜਵਾਨ ਨਸ਼ੇ ਕਰ ਰਿਹਾ ਹੈ ਤਾਂ ਲੇਖਕ ਸੋਚੀਂ ਪੈ ਗਿਆ ਕਿ ਪੰਜਾਬ ਦੀ ਜਵਾਨੀ ਕਿਧਰ ਨੂੰ ਜਾ ਰਹੀ ਹੈ। ਗੁਰੂਆਂ-ਪੀਰਾਂ, ਦੇਵੀ - ਦੇਵਤਿਆਂ, ਦੇਸ਼ ਭਗਤਾਂ ਦੀ ਧਰਤੀ ਦਾ ਕੀ ਬਣੇਗਾ। ਨਸ਼ੇ ਪੱਛਮ ਦੀ ਦੇਣ ਹਨ, ਪੱਛਮੀ ਲੋਕ ਆਪ ਤਾਂ ਨਸ਼ਿਆਂ ਤੋਂ ਦੂਰ ਹੁੰਦੇ ਜਾ ਰਹੇ ਹਨ ਤੇ ਇਸ ਮਕਸਦ ਨੂੰ ਇਸ

ਬਿਮਾਰੀ ਦੀ ਜਕੜਨ ਵਿੱਚ ਫਸੇ ਰਹਿੰਦੇ ਹਨ। ਪਰ ਅਸੀਂ ਆਪ ਹੀ ਇਸਦੇ ਕਸੂਰਵਾਰ ਹਾਂ ਕਿਉਂਕਿ ਅਸੀਂ ਪੱਛਮੀ ਰਹਿਣੀ-ਬਹਿਣੀ ਖਾਣ-ਪੀਣ ਤੇ ਨਸ਼ੇ ਅਪਣਾ ਰਹੇ ਹਾਂ ਅਤੇ ਆਪਣੇ ਪੰਜਾਬੀ ਸੱਭਿਆਚਾਰ ਨੂੰ ਭੁੱਲਦੇ ਜਾ ਰਹੇ ਹਾਂ।

(ਅ) ਦਵਿੰਦਰ ਤੇ ਉਸਦੇ ਪਰਿਵਾਰ ਬਾਰੇ ਲਿਖੋ।

ਉੱਤਰ – ਦਵਿੰਦਰ ਵਿਧਵਾ ਔਰਤ ਹਰਜੀਤ ਦਾ ਇਕਲੌਤਾ ਪੁੱਤਰ ਸੀ। ਦਵਿੰਦਰ ਰੱਤੜੂ-ਜਗਾਣ, ਡੋ-ਡੱਪ ਕੇਕ, ਹੋਰ ਕਿਰਤਾਂ, ਸਗੋਂ ਗੱਡੀਆਂ ਰੋਹਿਆਂ, ਵਿੱਚ ਦੀ ਕੀਮਤ, ਹੋਰ ਉਸਦੀ ਜ਼ਰੂਰਤ ਤੇ ਬਾਰੇ ਜਾਂਦੇ ਸਨ। ਉਸਦੀ ਮਾਂ ਨੇ ਉਸਨੂੰ ਲੋਕਾਂ ਦੇ ਕੱਪੜੇ ਸੀ-ਸੀ ਕੇ ਪੜ੍ਹਾਇਆ ਸੀ।

(ੲ) ਦਵਿੰਦਰ ਨੇ ਬਾਹਰ ਜਾਣ ਲੱਗਿਆਂ ਆਪਣੀ ਮਾਤਾ ਨੂੰ ਕੀ ਕਿਹਾ ਸੀ ਤੇ ਕਿਉਂ ਕਿਹਾ ਸੀ?

ਉੱਤਰ – ਦਵਿੰਦਰ ਨੇ ਬਾਹਰ ਜਾਣ ਲੱਗਿਆਂ ਕਿਹਾ ਕਿ "ਮਾਂ, ਤੂੰ ਕਿਸੇ ਕਿਸਮ ਦੀ ਚਿੰਤਾ ਨਾ ਕਰੀਂ, ਮੈਂ ਤੇਰਾ ਇੱਕ ਜ਼ਿੰਮੇਵਾਰ ਪੁੱਤਰ ਹਾਂ। ਮੈਨੂੰ ਪਤਾ ਹੈ ਕਿ ਤੂੰ ਰਾਤਾਂ ਜਾਗ-ਜਾਗ ਕੇ, ਲੋਕਾਂ ਦੇ ਕੱਪੜੇ ਸੀ ਕੇ ਮੈਨੂੰ ਕਿਵੇਂ ਪੜ੍ਹਾਇਆ ਹੈ। ਮੈਂ ਡਟਕੇ ਮਿਹਨਤ ਕਰਾਂਗਾ ਤੇ ਕੰਪਿਊਟਰ ਇੰਜੀਨੀਅਰ ਬਣਕੇ ਖੂਬ ਪੈਸਾ ਕਮਾਵਾਂਗਾ। ਮੈਂ ਤੈਨੂੰ ਨਵਾਂ ਘਰ ਬਣਾਵਾਂਗਾ। ਮੈਂ ਤੈਨੂੰ ਹਰ ਸੁੱਖ ਦੇਵਾਂਗਾ ਜਿਸਦੀ ਤੂੰ ਹੱਕਦਾਰ ਹੈਂ।"

(ਸ) ਸੀਨੀਅਰ ਅਫ਼ਰੀਕਿਆਂ ਤੇ ਦਵਿੰਦਰ ਵਿੱਚ ਹੋਈ ਤਕਰਾਰ ਬਾਰੇ ਲਿਖੋ।

ਉੱਤਰ – ਪਹਿਲੇ ਦਿਨ ਹੀ ਸੀਨੀਅਰ ਅਫ਼ਰੀਕਿਆਂ ਨੇ ਉਸਨੂੰ ਤੰਗ ਕਰਨਾ ਸ਼ੁਰੂ ਕਰ ਦਿੱਤਾ ਤੇ ਕਿਹਾ ਕਿ ਤੈਨੂੰ ਪਤਾ ਨਹੀਂ ਸੀਨੀਅਰ ਮੁੰਡਿਆਂ ਨਾਲ ਕਿਵੇਂ ਪੇਸ਼ ਆਈਦਾ ਹੈ, ਦਵਿੰਦਰ ਨੇ ਕਿਹਾ ਕਿ ਮੈਨੂੰ ਮਾਫ਼ ਕਰ ਦਿਓ ਅਸੀਂ ਹੌਲੀ-ਹੌਲੀ ਸਿੱਖ ਜਾਵਾਂਗੇ। ਦਵਿੰਦਰ ਨੂੰ ਏਨਾ ਤਾਂ ਪਤਾ ਸੀ ਕਿ ਸੀਨੀਅਰ ਮੁੰਡੇ ਨਵੇਂ ਮੁੰਡਿਆਂ ਦੀ ਰੈਗਿੰਗ ਕਰਦੇ ਹਨ ਪਰ ਏਨਾ ਨਹੀਂ ਸੀ ਪਤਾ ਕਿ ਉਹ ਕਿਸੇ ਦੀ ਜ਼ਿੰਦਗੀ ਦੀ ਤਬਾਹ ਕਰ ਸਕਦੇ ਹਨ। ਉਨ੍ਹਾਂ ਨੇ ਜ਼ਬਰਦਸਤੀ ਉਸਨੂੰ ਪੁੜੀ ਨਸ਼ਾ ਕੇ ਖਾਣ ਲਈ ਕਿਹਾ। ਉਸਨੇ ਪੁੱਛਿਆ ਇਸ ਵਿਚ ਕੀ ਹੈ, ਤਾਂ ਉਨ੍ਹਾਂ ਨੇ ਨਸ਼ੇ ਜ਼ਬਰਦਸਤੀ ਪੁੜੀ ਉਸਦੇ ਅੰਦਰ ਸੁੱਟ ਦਿੱਤੀ। ਦਵਿੰਦਰ ਦੇ ਨਾਲ ਦੇ ਸਾਥੀ ਉਸਨੂੰ ਤੱਕਦੇ ਰਹਿ ਗਏ।

(ਹ) ਦਵਿੰਦਰ ਵਰਗੇ ਨੌਜਵਾਨਾਂ ਦੀ ਮਾੜੀ ਹਾਲਤ ਦੇਖ ਕੇ ਲੇਖਕ ਨੇ ਕੀ ਸੰਦੇਸ਼ ਦਿੱਤਾ ਹੈ।

ਉੱਤਰ – ਲੇਖਕ ਇਹ ਸੰਦੇਸ਼ ਦੇ ਰਿਹਾ ਹੈ ਕਿ ਇਸ ਪੱਤਝੜ ਰੂਪੀ-ਬਿਮਾਰੀ, ਖਾਣ-ਪੀਣ, ਤੇ ਆਦਿ ਦਾ ਉਦਾਸੀਆਂ ਕਰਕੇ ਸਾਡੀ ਜ਼ਿੰਦਗੀ ਵਿਚ ਨੂੰ ਅਪਣਾਉਣਾ ਪੈਂਦਾ ਹੈ। ਜੇ ਸੁੱਖੀ ਰਹਿਣਾ ਚਾਹੁੰਦੇ ਹੋ ਤਾਂ ਜ਼ਿੰਦਗੀ ਨੂੰ ਤਣਾ ਮੁਕਤ ਰਖ ਕਰੀ ਆਪ ਇੱਕ ਸਹਿਜ ਬਣਾਈਏ, ਘਰ-ਘਰ ਜਾ ਕੇ ਇਹ ਸੰਦੇਸ਼ ਪਹੁੰਚਾਈਏ ਕਿ ਤੇ ਬਚਾਅ ਹੋਵੇ ਸਕ, ਇਸਾਂ ਤੋਂ ਬਚੋ।

ਕਹਾਣੀ ਦੀ ਸਿੱਖਿਆ –

ਮੁੱਖ ਧਾਰਾ ਸਿੰਘ:- ਇਸ ਕਹਾਣੀ ਤੋਂ ਸਾਨੂੰ ਇਹ ਸਿੱਖਿਆ ਮਿਲਦੀ ਹੈ ਕਿ ਜ਼ਰੂਰੀ ਨਹੀਂ ਕਿ ਹਰ ਵਧੀਆਂ ਦਿੱਖ ਵਾਲੀ ਚੀਜ਼ ਤੋਂ ਸਾਨੂੰ ਲਾਭ ਹੀ ਹੋਵੇ। ਕਈ ਵਾਰ ਸਾਨੂੰ ਇਸਤੇ ਬਹੁਤ ਵੱਡਾ ਨੁਕਸਾਨ ਉਠਾਉਣਾ ਪੈਂਦਾ ਹੈ। ਇਸ ਲਈ ਹਰ ਚਮਕਦੀ ਚੀਜ਼ ਸੋਨਾ ਨਹੀਂ ਹੁੰਦੀ।

ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ:- Write and Learn

ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ 26 to 52

CLASS - 8th

SUBJECT - PUNJABI

ਪਾਠ - 12 ਗਿਆਨਵਾਨ ਕੌਣ

Date / /
Page No.

Back Exercises

(2) ਬਹੁ-ਵਿਕਲਪੀ ਪ੍ਰਸ਼ਨ

(ੳ) ਪੰਡਿਤ ਦੀ (ਅ) ਸੁਨਹਿਰੇ ਸਰੀਰ ਵਾਲਾ (ੲ) ਏ. ਆਈ. ਡਿਵਾਈਸ ਦੇ (ਸ) ਮੈਨ. ਆਈ. ਦੀ ਕਾਰਗੁਜ਼ਾਰੀ (ਹ) ਨਵੇਂ ਦੀ ਖ਼ੁਸ਼ੀ (ਕ) ਜਿਉਂਦੀ ਲਾਸ਼ ਵਰਗਾ।

(3) ਵਾਕਾਂ ਵਿੱਚ ਵਰਤੋ - Do it Yourself on note-Book.

(4) ਖ਼ਾਲੀ ਥਾਂਵਾਂ ਭਰੋ —

(ੳ) ਗਾਹਕਦੇ (ਅ) ਖੁੱਲ੍ਹਾ-ਡੁੱਲ੍ਹਾ (ੲ) ਚੈਟਬੋਟ
(ਸ) ਡੁੱਲ੍ਹਾਂ (ਹ) ਹੈਗਿੰਗ (ਕ) ਸੱਤਾਂ - ਅੱਠਾਂ

(5) ਹਾਂ ਜਾਂ ਨਾਂਹ ਵਿੱਚ ਉੱਤਰ ਦਿਓ

(ੳ) ਨਹੀਂ (ਅ) ਨਹੀਂ (ੲ) ਹਾਂ
(ਸ) ਨਹੀਂ (ਹ) ਹਾਂ

ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਨ

(ੳ) ਅਪਰਾਧ (ਅ) ਸੁਚਿਆਰ (ੲ) ਬਹੁਤ ਕਮਜ਼ੋਰ ਹੋ ਜਾਣਾ
(ਸ) ਪ੍ਰਬੀਨਤਾ (ਹ) ਪ੍ਰਬੰਧ

(2) ਸ਼ਬਦਾਂ ਦੇ ਸਾਹਮਣੇ ਉਹਨਾਂ ਦੀ ਕਿਸਮ ਲਿਖੋ -

(ੳ) ਵਿਅਕਤੀਵਾਚਕ ਨਾਂਵ (ਅ) ਆਮ ਨਾਂਵ
(ੲ) ਭਾਵਵਾਚਕ ਨਾਂਵ (ਸ) ਵਸਤੂਵਾਚਕ ਨਾਂਵ
(ਹ) ਖ਼ਾਸ ਨਾਂਵ

(3) ਖ਼ਾਲੀ ਥਾਂਵਾਂ ਭਰੋ

(i) ਛੇ (ii) ਸਭਾਂ ਸਮਾਜ (iii) ਕਰਮ
(iv) ਅਰਥ (v) ਅੱਠ (vi) ਅੱਠ

ਰਚਨਾਤਮਕ ਗਤੀਵਿਧੀਆਂ ਤੇ ਯੋਗਤਾ ਪਰਖ Do it Yourself

CLASS - 8th Punjabi

Ch - 19 ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ

Back Exercises

1. ਠੀਕ ਉੱਤਰ ਅੱਗੇ (✓) ਦਾ ਨਿਸ਼ਾਨ ਲਗਾਓ।

(ੳ) ਉਦਮੀ (ਅ) ਗੁਰਮੁਖ (ੲ) ਮਰੀਅਲ (ਸ) ਸਹੇਲੀਆਂ
(ਹ) ਉਪਯੋਗੀ (ਕ) ਸ਼ਾਕਾਹਾਰੀ (ਖ) ਅਕਹਿ

2. (i) ਠੀਕ (ii) ਗਲਤ (iii) ਗਲਤ (iv) ਠੀਕ
(v) ਠੀਕ (vi) ਠੀਕ

3. ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ ਵਰਤ ਕੇ ਵਾਕ ਦੁਬਾਰਾ ਲਿਖੋ

(ੳ) ਹਰਜੀਤ ਨਾਸਤਕ ਹੈ।
(ਅ) ਹਰੀਸ਼ ਦੀ ਮਾਤਾ ਕਵਿੱਤਰੀ ਹੈ।
(ੲ) ਜਸਮੀਤ ਬਹੁਤ ਜ਼ਿਆਦਾ ਗਾਲੜੀ ਹੈ।
(ਸ) ਸਤਵੀਤ ਲਿਖਣ ਤਾਰਕਸ਼ ਹੈ।
(ਹ) ਸੋਨੂੰ ਵਿਚਾਰਾ ਹੀਣਾ ਹੈ।
(ਕ) ਸ਼ੀਲਾਂ ਦੀ ਨੂੰਹ ਕੈਸ਼ੀਅਰ ਹੈ।

4. ਹੇਠ ਲਿਖਿਆਂ ਵਿੱਚੋਂ ਇੱਕ-2 ਸ਼ਬਦ ਚੁਣ ਕੇ ਸਾਹਮਣੇ ਲਿਖੋ।

(ੳ) ਸਨਅਤੀਆਂ
(ਅ) ਪਰਉਪਕਾਰੀ
(ੲ) ਅਣਥੱਕ
(ਸ) ਟਕਸਾਲ
(ਹ) ਸੁਰਜੀਤ
(ਕ) ਗਧਲ
(ਖ) ਤਰਖਾਣ
(ਗ) ਧੀਅਣੂ

First Term Syllabus.

Experiment

Date :

Std: 8th Hindi

पाठ: 2 तीसरी लड़की
पाठ: 5 मित्र हो तो ऐसा
पाठ: 7 हमारे पड़ोसी

परिभाषा = काल की परिभाषा, भेदों सहित उदाहरण दे।

व्याकरण

पाठ-2 विलोम शब्द पेज़-17
पाठ-5 प्रत्यय पेज़-41, 42
पाठ-9 लिंग बदलो पेज़ - 86, 87
पाठ-10 वचन बदलो पेज़ - 97, 98
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अनेक शब्दों के लिए एक शब्द (1-25) पेज़ 21, 22

निबंध :- (1) समाचार पत्र के लाभ हानियाँ
(2) विज्ञान के बढ़ते कदम (पेज़ 255, 256)

पत्र = संपादक से संबंधित

अहित गंधाश

Hindi I Term

पाठ 2 तीसरी लड़की

SHORT ANS.

प्र1 निशा ने माँ से क्यों कहा कि उसके स्कूल जाने से कोई खर्च नहीं होता?
उत्तर- क्योंकि वह सरकारी स्कूल में पढ़ती थी और किताबें भी पुरानी माँग कर लाती है।

प्र2 निशा की बड़ी बहनों का स्कूल क्यों बंद करवा दिया गया था?
उत्तर- क्योंकि बबलू को अंग्रेजी स्कूल में पढ़ाने और उसकी ट्यूशन के लिए पैसे चाहिए थे।

प्र3 एन. सी. सी. कैंप का जीवन कैसा था?
उत्तर- सुबह मैदान में परेड, दोपहर में ट्रेनिंग, शाम को मुकाबले और रात को मनोरंजन के कार्यक्रम होते थे।

प्र4 निम्मो और निशा दरवाजा खोलने पर क्या देखकर सन्न रह गई?
उत्तर- बाबूजी को बरांडे मे बेहोश पड़े देखकर वह दोनों सन्न रह गई।

प्र5 डॉ. चौधरी ने श्री चोपड़ा को निशा के बारे में क्या बताया?
उत्तर- इस बच्ची की होशियारी की वजह से आज शर्माजी की जान बची है।

किसने, किससे कहा? Pg: 18

उत्तर- 1) निशा ने माँ से कहा।
2) निशा ने माँ से कहा।
3) डॉक्टर ने निशा से कहा।
4) डॉक्टर चौधरी ने श्री चोपड़ा से कहा।
5) श्री चोपड़ा ने निशा से कहा।

LONG ANS. दीर्घ उत्तरीय

प्र1 'वह बेटा है कुल-दीपक है।' माँ के इस कथन से उसकी किस मानसिकता का पता चलता है?
उत्तर- इस युग में भी उसकी माँ के विचार पुराने है वह बेटे को ही महत्व देती है। उसके लिए बेटा ही खानदान का चिराग होता है, बेटी नही।

प्र1 किस बात से पता चलता है कि निशा की माँ लड़कियों की शिक्षा को महत्व नहीं देती थी?

उत्तर अरी, पढ़ना - पढ़ना क्या लगा रखा है? कौन सी अफसर बनना है तुझे? चूल्हा-चौका और घर सँवारना यही काम है लड़कियों का, इस बात से ही पता चलता है कि माँ लड़कियों की शिक्षा को महत्त्व नहीं देती।

प्र2 निशा स्कूल में अपनी मैडम के सामने क्यों रो पड़ी?

उत्तर माँ की डाँट खाकर भूखी स्कूल चली गई। निशा मैडम से अपनी प्रशंसा सुनकर और उनकी सहानुभूति पाकर उनके सामने रो पड़ी।

प्र3 घर के सामने लगी भीड़ को हटाकर निशा ने क्या किया?

उत्तर घर के सामने लगी भीड़ को हटाकर निशा ने पास के डॉक्टर को बुलवाया। पिता को अस्पताल ले जाने का प्रबन्ध किया और पिता जी की छाती की मालिश करने लगी।

प्र4 ऐसा क्यों कहा गया है कि निशा के पैर में तो मानो चक्की लग गई हो?

उत्तर अस्पताल से घर, घर से अस्पताल। दुकान से दवाईयाँ खरीदना, समय पर दवाईयाँ देना, जरूरत पड़ने पर नर्स और डॉक्टरों की जिम्मेदारी निशा ने अपने ऊपर ले ली और बखूबी सँभाली।

प्र5 यह कहानी समाज की किस बुराई की ओर संकेत करती है?

उत्तर आज भी हमारे समाज में लड़कियों की अपेक्षा लड़कों को अधिक महत्व दिया जाता है। हर क्षेत्र में लड़कों की बराबरी कर रही लड़कियाँ आगे बढ़ने का रास्ता स्वयं खोज लेती हैं।

भाषा ज्ञान

1) क) और ख) तो ग) क्योंकि घ) पर ङ) तब च) जो

2) क) पर ङ) की
ख) से च) से, का
ग) ने छ) को
घ) के लिए ज) में

3 हिंदी पर्याय

अनुमति	आवश्यकता
मस्तिष्क	व्यय
हस्तांतर	उत्तरदायित्व

4) रिक्त स्थानों में मुहावरे लिखकर वाक्य पूरे कीजिए।
क) पैरों में चक्की लग गई है।
ख) रफू चक्कर हो गए।
ग) खिल उठा
घ) कोल्हू के बैल
ङ) सन्न रह गया।

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5 डॉक्टर हॉल फ्रॉक कॉलोनी
कॉलेज ट्रॉली चॉकलेट ऑफिस

पाठ 5 मित्र हो तो ऐसा SHORT ANS.

प्र। दुर्योधन की सभा से लौटते समय कृपण निराश क्यों थे?
उत्तर कृपण जी की निराशा का कारण दुर्योधन का शांति संदेश ना मानना था।

प्र। कृपण ने अनर्थ और अधर्म किसे कहा है?
उत्तर पार्थ (अर्जुन) और कर्ण का एक दूसरे के खून का प्यासा होना अनर्थ और अधर्म कहा है।

प्र 3 कर्ण की रहस्यमयी जन्म कथा क्या थी?

उत्तर कुंती ने लोक भय से अपने हृदय के टुकड़े को जल तरंगों को सौंप दिया। उसे एक सूत ने पाल पोस कर बड़ा किया। यही बालक कर्ण था।

प्र 4 कर्ण को ग्लानि और लांछना क्यों झेलनी पड़ी?

उत्तर सूत द्वारा पाल पोस कर बड़ा करने के कारण कर्ण को क्षत्रिय राजकुमारों का सम्मान नहीं मिला।

दीर्घ उत्तरीय LONG ANS.

प्र 1 कृपाण कर्ण को पांडवों के पक्ष में क्यों मिलाना चाहते थे?

उत्तर कृपाण कर्ण की वीरता को जानते थे। पांडवों की जीत निश्चित करने के लिए कृपाण कर्ण को पांडवों की ओर मिलाना चाहते थे।

प्र 2 कृपाण ने कर्ण के किन गुणों की प्रशंसा की है?

उत्तर कृपाण ने कर्ण के बल, बुद्धि और पराक्रम के साथ ही उनके दानी और गरीबों का रक्षक होने के गुणों की प्रशंसा की है।

प्र 3 कर्ण ने कृपाण को दुर्योधन का साथ न छोड़ने का क्या कारण बताया?

उत्तर जब उसे चारों ओर से अपमान, लांछना मिल रहा था, उस समय दुर्योधन ने हाथ बढ़ाकर सम्मान बढ़ाया। इसी कारण उसने अपने परम बंधु का साथ नहीं छोड़ा।

प्र 4 कृपाण ने ऐसा क्यों कहा— "क्या ऐसा चरित्र संभव है? ओह! मित्र हो तो ऐसा।

उत्तर जो व्यक्ति अपनी माता कुंती को अपनी माता और पांडवों को अपना भाई मानने से ही उसको आदर-सम्मान मिल सकता था पर उसने सबका त्याग कर दिया। कर्ण के इस व्यवहार को देखकर कृपाण हैरान था।

पाठ 5 "मित्र हो तो ऐसा" भाषा ज्ञान

1 विराम चिन्ह लगाइए।

क) कृष्ण ने फिर कहा, "इस युद्ध को रोक दो कर्ण। रोक दो इस भीषण नर संहार को।"

ख) कृष्ण ने भावपूर्ण स्वर में कहा, "कर्ण! क्या यह विनाशकारी युद्ध होकर ही रहेगा? मैंने कितना प्रयत्न किया पर दुर्योधन ने मेरे किसी अंतिम अनुरोध को नहीं माना।"

2क) निम्नलिखित उपसर्गों से दो-दो शब्द बनाइए।

1) अ = असत्य, अनाथ, असफल
2) कु = कुमार्ग, कुपुत्र, कुकर्म
3) दुर = दुर्लभ, दुर्जन, दुर्गम
4) अप = अपमान, अपराध, अपवाद
5) सम् = सम्मान संबंध, संहार

ख) 'इत' प्रत्यय के बने शब्द पाठ से छाँटकर लिखें।

पंक्ति ⟹ कलंकित, पुलकित, इंगित

3 एक शब्द लिखिए।

महात्मा
धनुर्धर
सहोदर
अंगरक्षक
सुखदायी
कृतघ्न

4 समस्त पदों का विग्रह कीजिए। पृ. 44

शांति का दूत	राजा का पुत्र
लोक का भय	पांडवों का पक्ष
जय का गान	
जन्म की कथा	

पाठ: 7

हमारे पड़ोसी SHORT ANS.

लघु उत्तर

प्र1 प्रदीप ने अपने मित्रों के दुख में शामिल होते हुए किस बात की शेखी बघारी?
उत्तर प्रदीप ने कहा कि जब भी तुम कोई गड़बड़ करोगे शंकर साहब तुम्हारे घर वालों से शिकायत कर सकते हैं।

प्र2 शंकर साहब ने बस-स्टॉप पर बच्चों को क्यों डाँटा?
उत्तर बच्चे समय से बस-स्टॉप पर नहीं आते थे इसलिए शंकर साहब ने बच्चों को डाँटा।

प्र3 रवि की बहन ने शंकर साहब को प्रभावित करने के लिए क्या किया?
उत्तर उसने शंकर साहब पर प्रभाव डालने के लिए बाहर सीढ़ियों पर बैठकर पढ़ने लगी।

प्र4 रवि को किस बात की चिंता खाए जा रही थी?
उत्तर टेस्ट में आए कठिन सवालों को देखकर रवि को यह चिंता खाए जा रही थी कि कहीं वह फेल न हो जाए।

5 एक वाक्य में उत्तर लिखिए:-
क) पापा ने क्रोधित होकर बच्चों से क्या कहा?
कि पड़ोसी तुम्हारी पसंद से नहीं आएँगे।

ख) रवि के साथ आए कुत्ते को इन दोनों ने कहाँ देखा था?
रवि के साथ आए कुत्ते को इन दोनों ने गलियों और बगीचे में घूमते देखा।

ग) बच्चों को टेस्ट की कॉपी मिलना अग्नि परीक्षा जैसा क्यों था?
उनको टेस्ट की कॉपी मिलना अग्नि परीक्षा इसलिए लग रहा था क्योंकि बच्चे टेस्ट में फेल हो गए थे।

घ) शंकर साहब क्या देखकर हड़बड़ा गए?
शंकर साहब बाड़ के पास खड़े रवि और उसकी बहन को देखकर हड़बड़ा गए।

प्र1 बच्चों के सामने कौन सी विकट स्थिति उत्पन्न हो गई थी?
उत्तर (1) शंकर सर बच्चों के पड़ोस में रहने के लिए आ गए थे।
(2) बच्चे उनसे बहुत डरते थे।
(3) उनके पड़ोस में रहना बच्चों के लिए विकट समस्या थी।

प्र2 बच्चे बस-स्टॉप पर जाने में देर क्यों कर रहे थे?
उत्तर सर बच्चों से उनके अंकों के बारे में पूछते थे। कम अंक आने पर उन्हें डाँटते थे इसलिए बच्चे डर के मारे देर से पहुँचते थे।

प्र3 रवि ने ऐसा क्या देखा कि उसे कहना पड़ा—'भगवान, बचाओ'? उसने ऐसा क्यों कहा?
उत्तर शंकर साहब गेट खोलकर बच्चों के घर के अंदर दाखिल हो रहे थे। यह देखकर रवि चिल्या 'भगवान बचाओ'।

प्र4 माधुरी ने कक्षा से बाहर निकलकर रवि और उसकी बहन से ऐसा क्यों कहा कि तुम दोनों ने उन्हें नाराज़ कर दिया होगा?
उत्तर टेस्ट में आए कठिन प्रश्नों को देखकर माधुरी ने रवि और उसकी बहन ने कहा कि तुम दोनों ने शंकर साहब को नाराज़ कर दिया होगा तभी उन्होंने कठिन प्रश्न दिए।

प्र5 ऐसा क्या था जिसे देखकर रवि की बहन को लगा कि वह स्वप्न देख रही है?
उत्तर शंकर साहब को कुत्ते के साथ खेलता और हँसता देखकर रवि की बहन को लगा कि वह स्वप्न देख रही है।

भाषा ज्ञान

'र' का प्रयोग

1)

बाहर	रवि	रात	रखना
बर्बाद	कर्म	गर्व	पर्व
क्रोध	क्रम	प्रदीप	प्रश्न
ट्रक	ड्रम	ट्रेन	ट्रक

क) ड़ – सड़क पकड़ जड़ मुड़ना
ढ़ – सीढ़ी पढ़ना बढ़ना चढ़ना

ख) द्वित्व व्यंजनों से बने तीन-तीन शब्द लिखिए।
त्त – कुत्ता गत्ता पत्ता उत्तर
ट्ट – पट्टा छुट्टी सट्टा पट्टी
ज्ज – सज्जन सज्जन लज्जा घ ज्जा

3. देसज शब्दों की सूची बनाइए।
नुक्कड़, खाना होना, अति पीड़ादायक, जाँच-पड़ताल

4. वाक्यों में 'कि' अथवा 'की' का उचित प्रयोग करें।
क की ङ) की
ख कि च) कि
ग कि छ) की
घ की ज) कि

पाठ 2 "तीसरी लड़की"

शब्द		अर्थ
सँवारना	=	सजाकर रखना
दस्तखत	=	हस्ताक्षर (Signature)
इजाजत	=	आज्ञा लेना
तपाक से	=	जल्दी से
बढ़ावा देना	=	आगे बढ़ने में मदद करना
सुबकियाँ	=	रोते समय हिचकी लेना
हताश	=	निराश होना
प्रशिक्षण	=	ट्रेनिंग
स्पर्धा	=	मुकाबला
आनंद विभोर	=	बहुत खुश होना
बखूबी	=	अच्छी तरह
सतर्कता	=	सावधानी से
होनहार	=	अच्छे गुणों वाला

पाठ : 5

शब्द	अर्थ
विक्षुब्ध	= दुख और क्रोध के कारण अशांत
आदान-प्रदान	= लेना-देना
नाटकीय	= नाटक जैसा
नाशकारी	= नष्ट कर देने वाला
आग्रह अनुरोध	= विनय और प्रार्थना
कदाचित	= शायद
सालना	= पीड़ा देना
पार्थ	= अर्जुन
अनुज	= छोटा भाई
सहोदर	= एक ही माँ की संतान
लीला	= खेल
ज्येष्ठ	= बड़े
विधाता	= भगवान
अद्वितीय	= जिसके समान दूसरा न हो
पुरुषार्थ	= पौरुष
परम	= सबसे श्रेष्ठ
निस्सहाय	= बेसहारा
वंचित	= धोखा खाए हुए
उद्भट	= असाधारण
क्रूर	= कठोर
मंडित	= सुशोभित
नर-रत्न	= मनुष्यों में श्रेष्ठ
अवश	= बेबस
लोकभय	= संसार का डर
तरंग	= लहर
अभिषेक	= स्नान
अभय	= निडर
आतंक	= डर
विलीन होना	= खो जाना
कृतज्ञ	= धन्य
अभिभूत	= विचलित
नरपुंगव	= मनुष्यों में श्रेष्ठ

अग्रज	= बड़ा भाई
वंचित	= अपमानित
अदेय	= जो दिया न जा सके
भौतिक संपदा	= धन
आँकना	= अनुमान लगाना

पाठ : 1 'हमारे पड़ोसी'

शब्द		अर्थ
धुँधले	—	जिनमें से कुछ साफ़ न दिखाई दे
स्तब्ध	—	गतिहीन
अविश्वासपूर्वक	—	जिस पर विश्वास न किया जा सके
निर्देश	—	आज्ञा
जड़वत	—	पत्थर की तरह
आतंक	—	डर
कड़ी निगाह	—	घूर कर देखना
विकटता	=	भयानकता
डपटकर	=	डाँटकर
नुक्कड़	=	कोना
रवाना होना	=	चलना
पीड़ादायक	=	दुखभरे
अप्रिय	=	बुरे
जाँच पड़ताल करना	=	पता लगाना
अनकहे	=	जो कहे नहीं गए हैं
भावने	=	अर्थ
समीकरण	=	गणित की क्रिया
अग्निपरीक्षा	=	कठिन कार्य
विशेषज्ञ	=	विशेष रूप से जानने वाला
जिज्ञासावश	=	उत्सुकता के कारण
हल करना	=	सवाल का उत्तर निकालना

काल (Tense)

प्र:- काल की परिभाषा, भेदों के नाम वर्णन तथा उदाहरण दीजिए।

उत्तर- क्रिया के जिस रूप से काम के करने या होने के समय का पता चले उसे क्रिया कहते हैं।

जैसे :- जाता है, गया था, जाएगा आदि।

काल के तीन भेद होते हैं।

1. वर्तमान काल (Present tense)
2. भूतकाल (Past tense)
3. भविष्यत् काल (Future tense)

1 वर्तमान काल :- जिस रूप से काम के चल रहे समय का पता चले उसे वर्तमान काल कहते हैं।
जैसे :- 1) रत्न खेल रहा है।
2) रजनी खाना खा रही है।

2 भूत काल :- जिस रूप से काम के बीते हुए समय का बोध हो उसे भूत काल कहते हैं।
जैसे :- 1) मैंने खाना खाया था।
2) मैं कॉलेज गया था।

3 भविष्यत् काल :- जिस रूप से आने वाले समय का बोध हो उसे भविष्यत् काल कहते हैं।
जैसे :- 1) मैं आज स्कूल जाऊँगी।
2) नीरू कल शिमला जाएगी।

व्याकरण

पाठ : 2 विलोम शब्द पेज = 17
पाठ : 5 प्रत्यय पेज़ = 41, 42
पाठ : 9 लिंग बदलो पेज़ = 86, 87
पाठ : 10 वचन बदलो पेज़ = 97, 98
पाठ : 28 मुहावरे (21 से 46)
अनेक शब्दों के लिए एक शब्द (1-25) पेज़ 21, 22

निबंध :- (1) समाचार पत्र के लाभ हानियाँ
(2) विज्ञान के बढ़ते कदम (पेज़ 255, 256)

पत्र :- संपादक से संबंधित

अपठित गंद्यांश

Ch-4 8th History

India in the Eighteenth Century

Time To Learn

I. Fill in the blanks:

1. **Murshid Quli Khan** became the independent ruler of Bengal and shifted his capital to Murshidabad.
2. **Chin Qilich Khan** founded the Asaf Jahi dynasty in **AD 1724.**
3. Haider Ali was the ruler of **Mysore.**
4. **Banda Bahadur** was the leader of the Sikhs after the death of Guru Govind Singh.
5. **Balaji Vishwanath** was the first Peshwa.

III. State whether the following statements are True or False:

1. The office of the Peshwas was always hereditary.
   False.
2. In the Third Battle of Panipat, the Marathas fought with the Rajputs and the Jats.
   False.
3. The later Mughal kings were able rulers.
   False.
4. Safdar Jung was the first Nizam of Hyderabad.
   False.
5. Jai Singh built an observatory (Jantar Mantar) and Pink City (Jaipur).
   True.

VI GIVE REASONS

Answer: I.
The Marathas had established a Maratha Kingdom during the reign of Aurangzeb. They were very powerful and with time and with the decline of the Mughals would have proved worthy , opponents to the emerging British empire but the third Battle of Panipat (1761) sealed their fate. Ahmad Shah Abdali, an Afghan . invader gave a crushing defeat to the forces of Peshwa Balaji Baji Rao. It put an end to the Maratha power and their dream of ruling India. Thus, the way was proved for the British East India Company to gain power and become supreme.

Question 2.
Independent states were formed in the 18th century.

Answer:
The later Mughal rulers were so weak that they could not hold the provinces of the empire together. These provinces were under Governors who were always engaged in wars. Gradually, they took advantage of the situation of misrule and misgovemance by the central authority and declared independence.Thus, Bengal, Hyderabad, Awadh Rohikhand became independent one after the other.

Question 1.
Identify him.

Answer:
Maharaja Ranjit Singh.

Question 2.
How did the unite the Sikhs in Punjab?

Answer:
Maharaja Ranjit Singh brought the whole area west of River Sutlej under his control and established the Sikh kingdom in Punjab. He signed the Treaty of Amritsar (1809) with the British which confirmed his conquests and established his sovereignty over the terrioty west of Satluj. It was only after his death in 1839 that the British gained control over the Punjab.

I. State whether the following statements are True or False:

1. The office of the Peshwas was always hereditary.
   False.
2. In the Third Battle of Panipat, the Marathas fought with the Rajputs and the Jats.
   False.
3. The later Mughal kings were able rulers.
   False.
4. Safdar Jung was the first Nizam of Hyderabad.
   False.
5. Jai Singh built an observatory (Jantar Mantar) and Pink City (Jaipur).
   True.

MATCHING:-

1. Nizam-ul-Mulk	(b) founded the state of Hyderabad.
2. Shivaji	(c) founder of the Maratha power.
3. Tipu Sultan	(a) Tiger of Mysore.
4. Gaekwad	(f) Baroda
5. Holkar	(g) Indore
6. Scindia	(h) Gwalior
7. Bhonsle	(e) Nagpur
8. Peshwa	(i) Poona
9. Ranjit Singh	(d) united the Sikhs on the west of river Sutlej.

IV. Answer the following questions:

Question 1.
Write in brief the causes that led to the downfall of the Mughal empire.

Answer:
Causes that led to the downfall of Mughal Empire were

(a) Weak successors: After Aurangzeb's death the Mugh empire started declining. His successors were weak are were toys in the hands of nobles and Governors. The lacked the administrative skills of their predecessors.

(b) Internal Rivalry: The nobles and Governors belonged different groups and were always engaged in const? struggle for power. This hampered the growth of the emp

(c) Crisis in Jagirdari and Mansabdari system: The Mugh introduced the Jagirdari and the mansabdari systems , smooth running of their administration but they only prov to be the cause of the decline of their empire.

Question 2.
When and between whom was the Third Battle of Panipa fought? What were its results?

Answer:
The third battle of Panipat was fought in 1761 between Ahmad Shah Abdali, an Afghan invader an Peshwa Balaji Baji Rao. The Peshwa suffered a crushing defeat and this put an end to the Maratha power.

Question 3.
Name the first independent Nawab of Bengal. What were his achievements?

Answer:
Murshid Quli Khan became the first independent Nawab of Bengal. He established an efficient administration and effectively organised the revenue system. He also started the new system of land revenue collection, on the basis of contracts, known as Ijara system. He reorganised the zamindari for which he is will remembered in the history of Bengal.

Question 4.
When was the Battle of Plassey fought? What effect did it have on the position of the English East India Company?

Answer:
The Battle of Plassey was fought in 1757 between the British and Siraj-ud-daulah in which the English defeated the army of Siraj-ud-daulah. From then onwards the English East India Company functioned as king makers in Bengal politics. Finally,the English established their full sway in 1765 when Robert Clive set up the Dual Government in Bengal.

Question 5.
Who was Haider All? Discuss his achievements.

Answer:
Hyder All was the ruler of Mysore. He started his career as an ordinary soldier in the Mysore army. He won many battles against the Marathas, the Nizam of Hyderabad and routed his enemies in two consecutive Anglo-Mysore Wars.

Question 6.
Which ruler was known as the Tiger of Mysore?

Answer:
Tipu Sultan, the son and heir of Haider Ah and ruler of Mysore is known as 'Tiger of Mysore.

Page No.

Date

8th History

Ch - 4

India in the Eighteenth Century

I Tick (✓) the correct answer

1. Chin Qilich Khan
2. Afghans
3. Bahadur Shah I
4. 1739
5. Sambhaji

All the keywords will remain same as given in the book.

Page No.

Date

8th History

Ch-5

Traders to Rulers

I Tick (✓) the correct answer

1. Portuguese
2. 1757
3. Awadh
4. Robert Clive
5. Wellesley

II Fill in the blanks:

1. England
2. Pondicherry
3. Captain Hawkins
4. Bombay
5. Carnatic wars
6. four, Anglo mysore wars
7. 43 years, Anglo-Maratha
8. Awadh

III Matching :-

1. — e
2. — d
3. — a
4. — f
5. — b
6. — c
7. — i
8. — j
9. — h
10. — g

IV True or False

1. True
2. False
3. True
4. True
5. True
6. False
7. False
8. True
9. False

Question 1.
When and how was the English East India Company formed?

Answer:
It was formed by a group of English merchants. The company received a charter from queen Elizabeth I of England on December 31, 1600. Sir Thomas Roe got a farman from Jahangir in 1615 to establish a factory at Surat. The English traders from the very beginning tried to combine trade with diplomacy. The English set up factories at Surat, Agra Ahmedabad, Broach, Hooghly, Mqsulipatnam and Madras.

Question 2.
What were the main reasons for Anglo-French rivalry in India?

Answer:
The French cherished the ambition of French Empire in India. But this ambition was challenged by the English. This led to Anglo-French rivalry and the three Carnatic Wars.The French were defeated and the English became Supreme in the South. From this base the English conquered the rest of India.

Question 3.
What were the causes of Conflict between Siraj-ud-daulah and the English?

Answer:
The English built factories at Kassimbazar, Patna and in Bengal. In 1756 Siraj-ud-daulah came to power. The company had started to fortify their settlements in Bengal. Siraj did not like it. Siraj attacked and occupied the Fort William in Calcutta in 1756. The British defended under Clive and Nawab was forced to come to terms. Nawab had to vacate Calcutta and also pay indemnity to the British. Clive hatched a Conspiracy against the Nawab. The forces of the Nawab and the British East India Company fought on the field of Plassey in 1757. The Nawab was defeated, captured and killed.

Question 4.
Describe the circumstances that led to the Battle of Buxar.

Answer:
Mir Qasim objected to the misuse cf trade regulations. The abuse of duty free inland trade adversely affected the revenue which was the only income of the Nawab. Mir Qasim took other measures for consolidation of his administration, (a) training his army on European lines (b) transfer of treasury from Murshidabad to Munghyr. The British did not like these administrative steps. Under these circumstances, Nawab Mir Qasim challenged the company and a war broke out between them. The Nawab was defeated and fled to Awadh. He formed an alliance with Shuja-ud-daulah, the Nawab of Awadh and Shah Alam, the Mughal Emperor. The three forces met the British at Buxar on October 22, 1764. This battle is known as Battle of Buxar. The British emerged victorious. They made Mir Jaffar the Nawab of Bengal, the second time. The defeat in the battle of Buxar finally sealed the fate of Indian rulers and made the English the supreme power in India.

Question 5.
What were the causes of the Fourth Anglo-Mysore War? What were its results?

Answer:
The Treaty of Seringapattam was short lived. Lord Wellesley, the Governor General wanted the ruler of Mysore, Tipu to accept the Subsidiary Alliance but Tipu refused to do so. Tipu sought French help. The British feared that the French might land in support of Tipu. So in 1799, the British went to war against Tipu. The Nizam joined the British but the Marathas remained neutral and the French support never came. Tipu was killed in the battle on 4th May 1799.

Page No.

Date

Question 6
Who was the Governor-General of India during the Second Anglo-Maratha War? What was the significance of this battle?

Answer:
The Second Anglo-Maratha War was fought when Lord Wellesley was the Governor General of India. In 1803 Baji Rao II signed with the English East India Company a Subsidiary Alliance known as Treaty of Bassein. As a result the English installed Baji Rao II at Pune and helped to drive out the Holkars. The Maratha chiefs Scindia and Bhonsle refused to accept the system of Subsidiary Alliance and declared war against the British. But the British defeated the combined forces of Scindia and Bhonsle. They were forced to enter into the Subsidiary Alliance with the English. They ceded the territories of Ahmednagar, Broach, Cuttack and Balasore. This war gave a blow to the power and prestige of the Marathas.

Question 7.
Why was the Third Anglo-Maratha War fought? What were its results?

Answer:
The Third Anglo Maratha War was fought in (AD 1817-1818) because the Maratha chiefs were feeling humiliated after signing the Subsidiary Alliance with the British. Peshwa Baji Rao II began to make plans to unite the Marathas against the British. This war was fought during the Governor Generalship of Marquess Hastings. When Lord Hastings became aware of Baji Rao's plans he forced him to sign the Treaty of Pune in 1817. According to it, Konkan was ceded and Baji Rao II renounced Maratha leadership. Scindia was forced to sign the Treaty of Gwalior and provide help to the British against the Pindaris.

The Third Anglo – Maratha War led to the abolition of Peshwa's hereditary office.

Question 8.
Explain the doctrine of Lapse. Name the other methods used by Lord Dalhousie to expand the British power in India.

Answer:
According to Doctrine of Lapse if the ruler of a dependent state died without leaving a natural l 4
the state would automatically pass over to the British. The Doctrine of Lapse did not recognise adopted children as rightful heirs. Satara, Jaitpur, Baghat, Udaipur, Sambhalpur, Jhansi and Nagpur were annexed under the Doctrine of Lapse. Punjab was annexed through war. Awadh was annexed by Dalhousie on the basis of misgovemance.

8th CIVICS - CH-2

The Union Executive

Time To Learn

I. Fill in the blanks:

1. A person to be appointed a **minister** must be a member of either House of Parliament.
2. The Prime Minister **decides** the business to be carried on by the Cabinet.
3. The Vice President is elected for a period of **five years.**
4. The Prime Minister distributes portfolios among the ministers.
5. The public servants constitute the **permanent executives**.

II. Tick mark (✓) the correct statements and cross mark (X) the wrong ones :

1. The Prime Minister is the vital link between the President and the Cabinet.
   ✓
2. The Prime Minister acts on the advice of the President.
   X
3. A money bill cannot be introduced without the President's authority.
   ✓
4. The President can appoint anyone as the Prime Minister.
   X
5. Most of the Civil Servants at the Centre are selected by the Union Public Service Commission.
   ✓

III. MATCHING

Answer:

1. The Prime Minister	(e) heads the Coucil of Ministers.
2. The President	(d) appoints the Prime Minister
3. The Cabinet	(a) takes all important decisions.
4. The Council of Ministers	(b) consisted of all the Ministers.
5. A Department	(c) under the control of a Minister is called portfolio.

.Answer the following:

Question 1.

Who is the Chief Executive of the Indian Union? Who votes for him?

Answer:

The Chief Executive of the Indian Union is the President. The elected members of both the Houses of Parliament and the elected members of the Legislative Assemblies elect the President.

Question 2.

State two executive and two judicial powers of the President.Under what circumstances can the President proclaim a state of emergency?

Answer:

Two Executive powers of the President are:

1. He appoints the Prime Minister and Union Minister.
2. He appoints state Governors, the Judges of the Supreme Court and High Court, the Comptroller and Auditor-General, the Attorney General and members of the Union Public service Commission.

Two Judicial powers of the President are:

1. He can pardon, remit or suspend a sentence of punishment given by a court martial or death sentence passed by the court.
2. He is not answerable to any law court for the exercise of his powers, except in case of impeachment in Parliament.

The President can declare emergency if:

1. Security of India is threatened.
2. There is a break down of the constitutional machinery in a state.
3. The financial stability of the country is threatened.

Do you think the President of India should be directly elected by the people? Why/why not?

Answer:

We have a system of government in which the Prime Minister is the most important person in the government of the country, the President is only a nominal Head. If the President was to be elected then he too would be equally important was powerful. Then there would be a clash of powers. So, in my opinion it is preferable that the President should not be directly elected by the people.

Question 3.

What are the two main functions of the Cabinet?

Answer:

The two main functions of the Cabinet are:

1. All important decisions are taken by the cabinet ministers.
2. Cabinet formulates the policies and programmes of the government.

Question 4.

Name the three categories of the union ministers.

Answer:

The three categories of Ministers are:

1. Cabinet Ministers
2. Minister of State
3. Deputy Ministers

Question 5.

What is the position of the Prime Minister? Mention his powers.

Answer:

Leader of the political party or parties securing absolute majority in the Lok Sabha.

1. Leader of the Lok Sabha.
2. Manages the affairs of the country both internal as well as extrenal.
3. He is the chief spokesperson of the Government.
4. Selects other ministers.
5. Distributes portfolios.
6. Can demand the resignation of any minister.
7. Advises the President on various appointments to important posts.
8. Presides over cabinet meetings.

Question 6.

Do you think the President of India should be directly elected by the people? Why/why not?

Answer:

We have a system of government in which the Prime Minister is the most important person in t government of the country, the President is only a nominal Head. If the President was to be elected then he too would be equally important was powerful. Then there would be a clash of powers. So, in my opinion it is preferable that the President should not be directly elected by th people.

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Civics - Ch - 2 The Union Executive

Q → Mention the role of civil servants in executing policies.

Ans 8 Civil servants implements the th policies or laws formulated by the Cabinet. They are the administrative or permanent executives. They are selected by the Union Public Service Commission.

I Tick (✓) the correct answer

1. Dr. Rajendra Prasad
2. President
3. Vice - President
4. 12
5. President

Q All the ministers, including the Prime Minister swim -----

Ans 7 → The Prime Minister and the Council of Ministers are directly responsible to the Lok Sabha. If a vote of no confidence is passed against one minister, the whole Council of ministers including the Prime Minister has to resign.

CHAPTER : 3 MIGRATION

Arsh
Always Ahead
Date
Page

EXERCISE.

ANS. (1) Fill in the blanks:

(a) Internal.
(b) Push.
(c) Emigration.
(d) Rural to urban.
(e) Highest.

ANS.

(2) MATCH THE FOLLOWING!

COLUMN A	COLUMN B
(a) Better job opportunities is a	(vi) Pull Factor.
(b) Lack of job opportunities is a	(v) Push Factor.
(c) Immigration	(i) movement of people into a country.
(d) Emigration	(ii) movement of people out of a country.
(e) Causes of forced migration include	(iv) Political instability
(f) The movement of nomadic families	(iii) is not migration.

ANS.

(3) write 'T' for true and 'F' for false.

(a) — FALSE.

(b) — TRUE.

(c) — TRUE.

(d) — TRUE.

Arsh
Always Ahead
Date
Page

ANS.4] ANSWER THE FOLLOWING QUESTIONS BRIEFLY.

(a) - P.35.
(b) - NO.
(c) - P.36.
(d) - Page 40.
(e) - Page 36.
(f) - Page 37.
(g) - P. 37.
(h) - P. 36.

(i) IDENTIFY THE PUSH AND PULL FACTORS.

(i) Pull.
(ii) Push.
(iii) Push.
(iv) Pull.
(v) Pull.
(vi) Pull.
(vii) Pull.
(viii) Pull.
(ix) Push.

ANS.5] Answer the following questions in detail.

(a) Page. 35 ; Page. 36.
(b) Page 34.
(c) P. 41.
(d) P. 41.
(e) Differentiate between the following.
(i) Page. 34.
(ii) P 43.
(iii) written.

(f) Page. 41 ; Page. 42.

(g) Page. 42.

Arsh
Always Ahead
Date
Page

ANS.6] LEARNING IS FUN.

ACROSS:

(5) PULL.
(6) JHUGGI.
(9) EMIGRATION.
(10) IMMIGRATION.
(11) EMIGRANT.

DOWN:

(1) DEPOPULATION.
(2) PUSH.
(3) BRAIN DRAIN.
(4) MIGRATION.
(7) IMMIGRANT.
(8) REFUGEE.

ANS.5] (iii) Differentiate between HOST COUNTRY AND COUNTRY OF ORIGIN.

HOST COUNTRY: (i) Houst Country is that Country, where a person, who comes to live permanently in a foreign Country.
(ii) For example, NRI, Settled in abroad

COUNTRY OF ORIGIN:
(i) A person, who live permanently and settled in their 'birth Country'.

(ii) For example, Indian born in India & settled within the Country.

CHAPTER : 06

ASIA – THE LARGEST CONTINENT.

Arsh
Always Ahead
Date
Page

Ques. **ACTIVITY-1.**

Find out two other wildlife species that are native to the continent of Asia. Mention their unique characteristics and their type of habitat one would find them.

ANS (1) Asian Elephant.
(2) Giant Panda.

(1) **Asian Elephant :**

(i) Largest land animal on earth.
(ii) They have characteristics long nose or trunks, large floppy ears and wide thick legs.
(iii) Asian Elephant habitat, Inhabit grasslands, tropical evergreen forest and decidous forest.

(2) **Giant Panda :**

(i) one of the cutest animals in the world.
(ii) They have a distinctive black and white appearance.
(iii) They are good climbers.
(iv) Giant panda habitat found in Bamboo forest in western china and in Sichuan province, which is the home of Giant Panda.

CHAPTER: 06

EXERCISES: ASIA THE

(1) Fill in the blanks.

(a) Asia.

(b) Russia.

(c) Pacific Ocean, Arctic Ocean.

(d) Sinai Peninsula.

(e) Siberian and Turan.

(f) Pamir Knot.

(g) River basin.

(h) Malay.

(i) Latitude.

(j) Taiga.

(2) MATCH THE FOLLOWING:

COLUMN A	COLUMN B
(a) Ural Mountains	unofficial borders b/w Europe and Asia.
(b) Egyptian Civilization	did not flourish in Ujung Kulon National Park.
(c) Armenia and Azerbaijan	Part of former USSR that are now part of Asia.
(d) Amu Darya and Syr Darya River	flow into ARAL SEA.
(e) Roof of the world	Tibetan plateau.
(f) Archipelago	A large group of Islands.
(g) Temperate Grasslands	No trees, insufficient rainfall.
(h) Tundra	Moss and Lichen.
(i) Javan Rhino	Asia.
(j) Living in trees is known as	Arboreal.

Arsh
Date
Page

(3) WRITE 'T' for true and 'F' for false.

(a) TRUE.
(b) FALSE.
(c) TRUE.
(d) TRUE.
(e) FALSE.
(f) FALSE.
(g) TRUE.
(h) FALSE.
(i) TRUE.
(j) FALSE.

Ques 4] Answer the following questions briefly.

(a) 48 Countries.

(b) Page. 96.
(c) P. 95.

(d) TIBETAN PLATEAU.

(e) P. 108.

(f) BERING STRAIT.
(g) P. 103.

(h) P. 96.
(i) P. 106.
(j) P. 105.
(k) P. 106.
(l) P. 105.
(m) P. 100.
(n) P. 102.

(o) P. 102.

(p) Malay Archipelago, consists of Indonesia, Malasia, Singapore, Timor, New Guinea, Sulawesi, Borneo Island.

(q) P. 103.

Ques.5] Answer the following questions in detail:

(a) Page 104, Page 105, Page 106.

(b) P. 106.

(c) P. 107, P. 108.

(d) P. 106.

(e) P. 110.

(f) Differentiate between the following:

(i) P. 108.

(ii) Page 105.

(iii) Page 106.

(g) Page 121.

(h) P. 100.

(i) P. 102.

(j) P. 102.

(k) P. 109.

Ques. 6] LEARNING IS FUN.

ACROSS:

(2) KUROSHIO.
(3) TAIGA.
(5) KURILE.
(9) TRANSCONTINENTAL.

(11) PACIFIC.

(12) EURASIA.

(14) LATITUDE.

(16) RUSSIA.

DOWN:

(1) ARCHIPELAGO.
(4) YUNAN.
(6) SHAN.
(7) HINDUKUSH.
(8) STEPPES.
(10) ASIA.
(13) URAL.
(15) TURIN.

Date
Page

PROJECT/ACTIVITY:

(1) Page 96.

(2) Page 98.

(3) Page 121.

(4) On an outline map of Asia, mark the following:

(a) Page. 101.

(b) Page. 101.

(c) Page. 101.

(d) Page 98.

(e) Page 98.

(f) Page 98.

(g) Page 101.

(h) Page 98.

(i) Page 98.

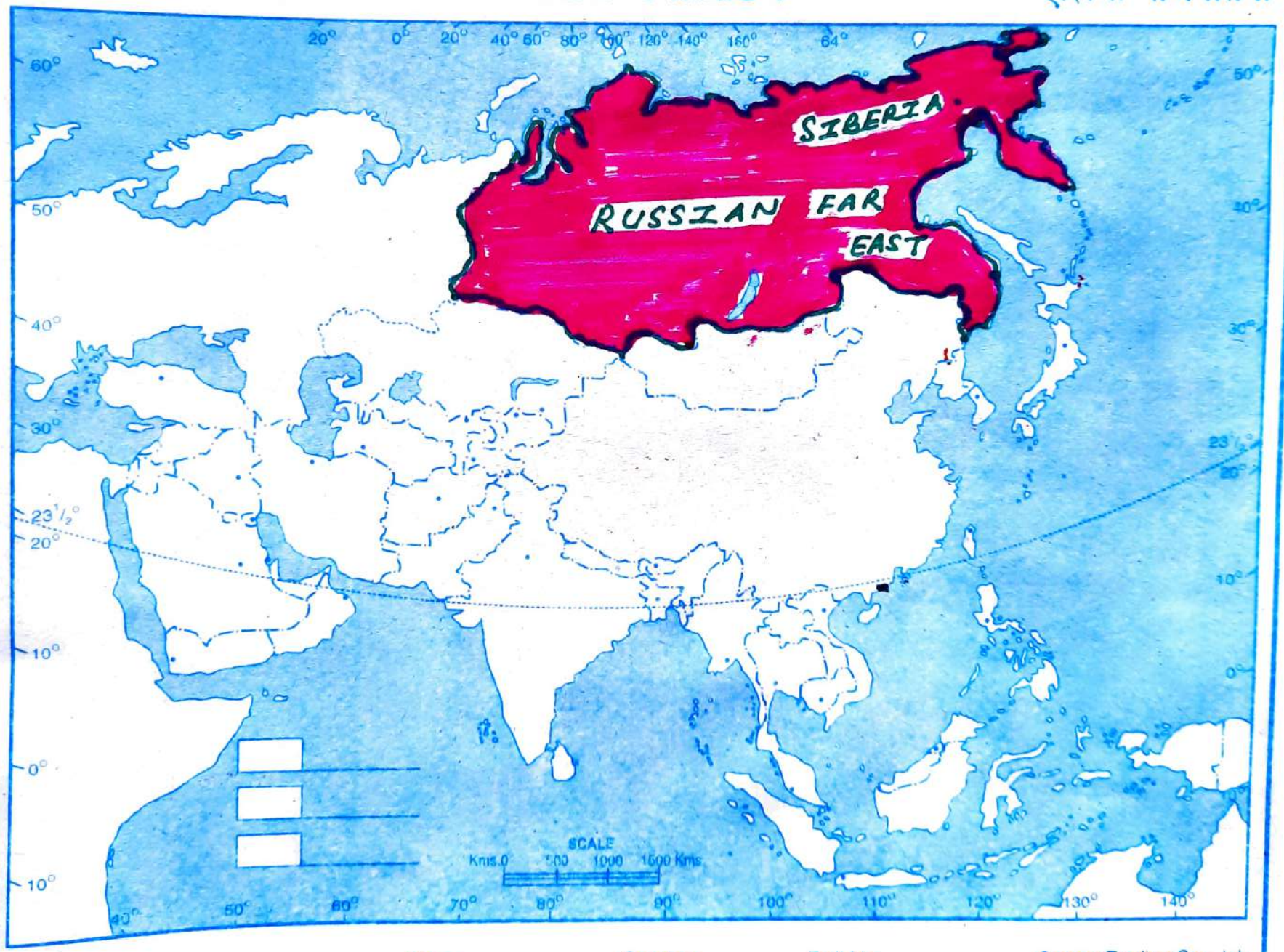
(j) Page 101.

THE COUNTRIES OF NORTH ASIA.

ASIA–POLITICAL

ऐशीआ-राजनीतिक

ਏਸ਼ੀਆ-ਰਾਜਨੀਤਿਕ



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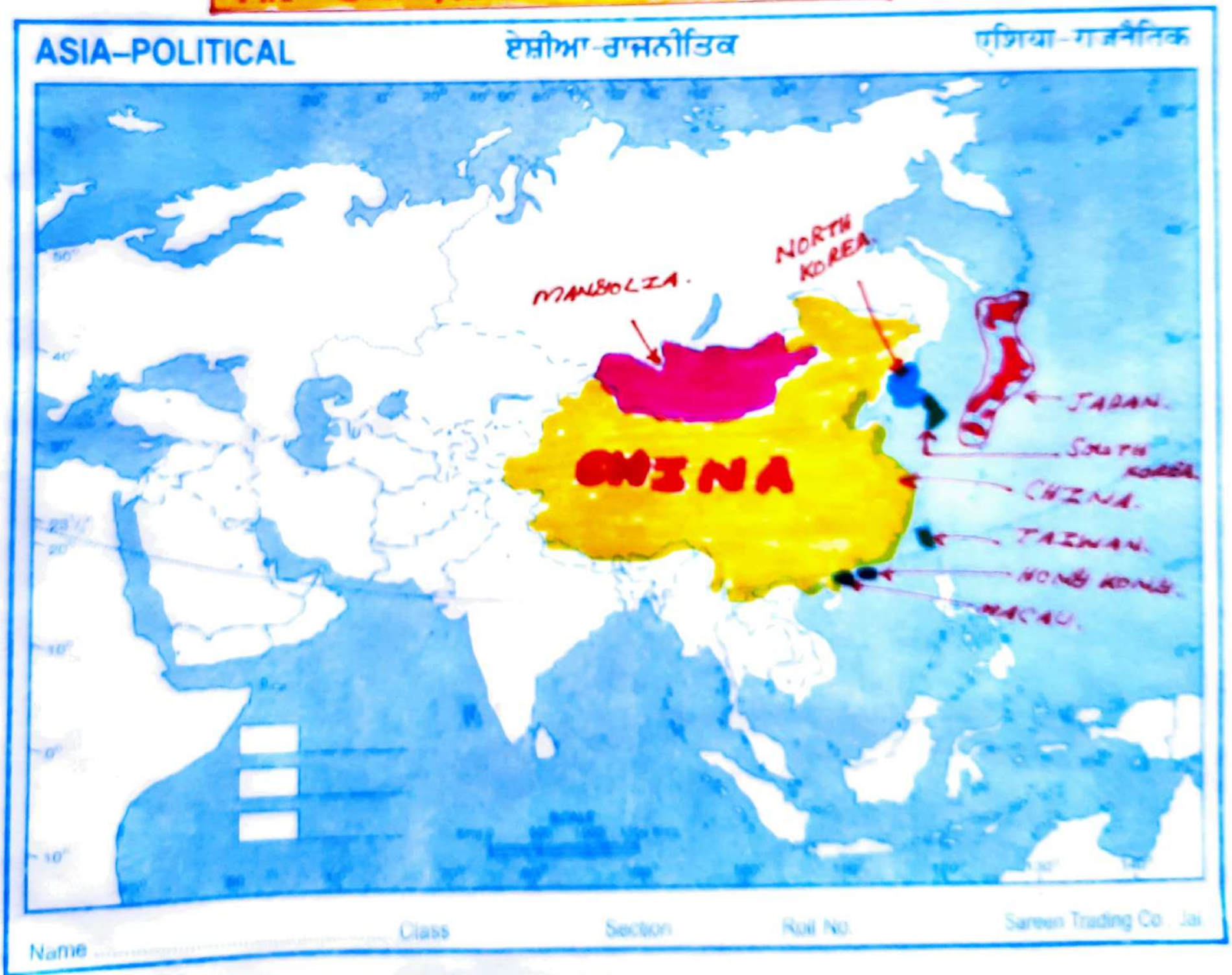
THE COUNTRIES OF EAST ASIA.



SOUTH ASIA

ASIA–POLITICAL

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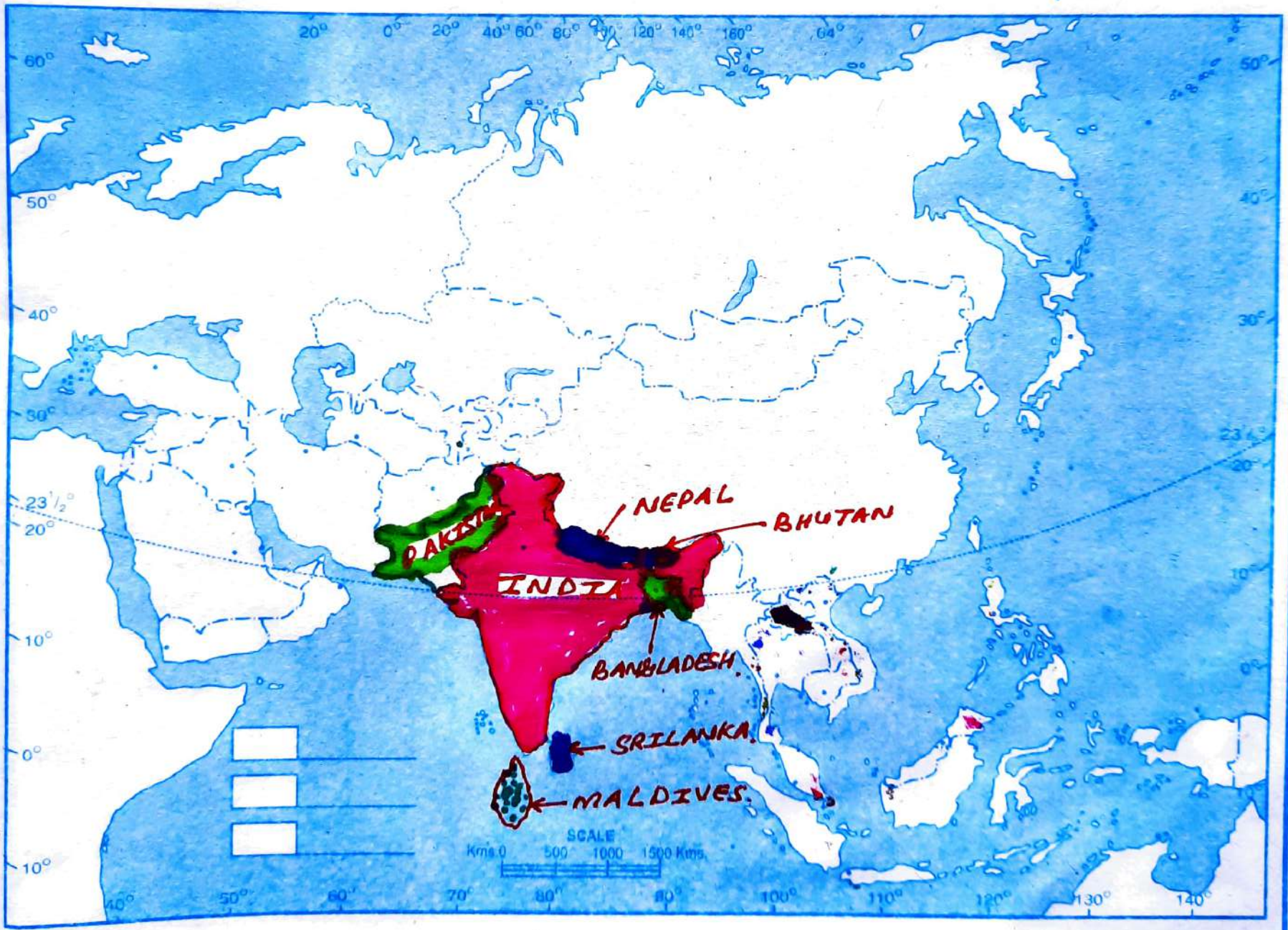
एशिया-राजनैतिक



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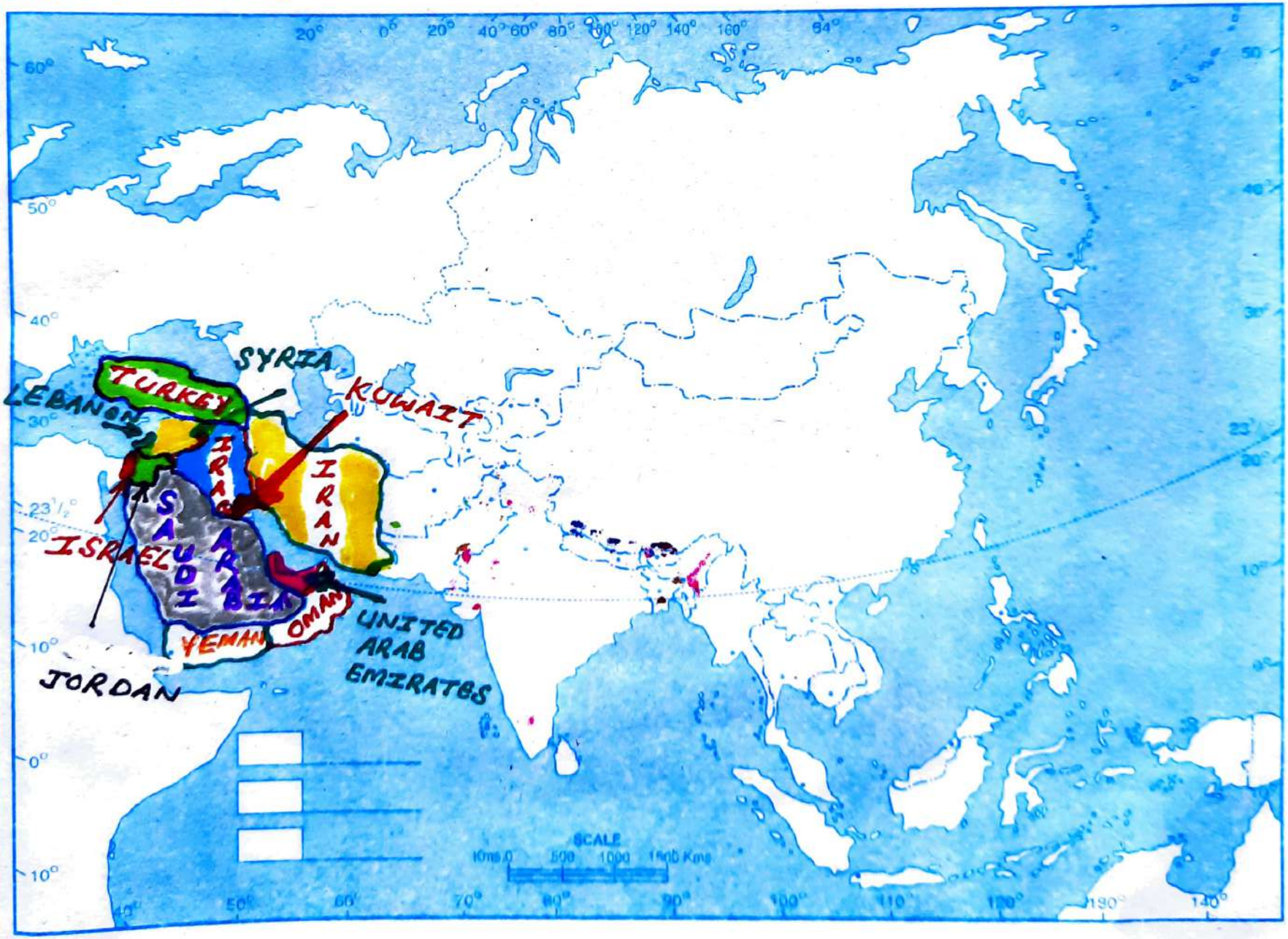
WEST ASIA

ASIA–POLITICAL

ਏਸ਼ੀਆ-ਰਾਜਨੀਤਿਕ

एशिया-राजनैतिक



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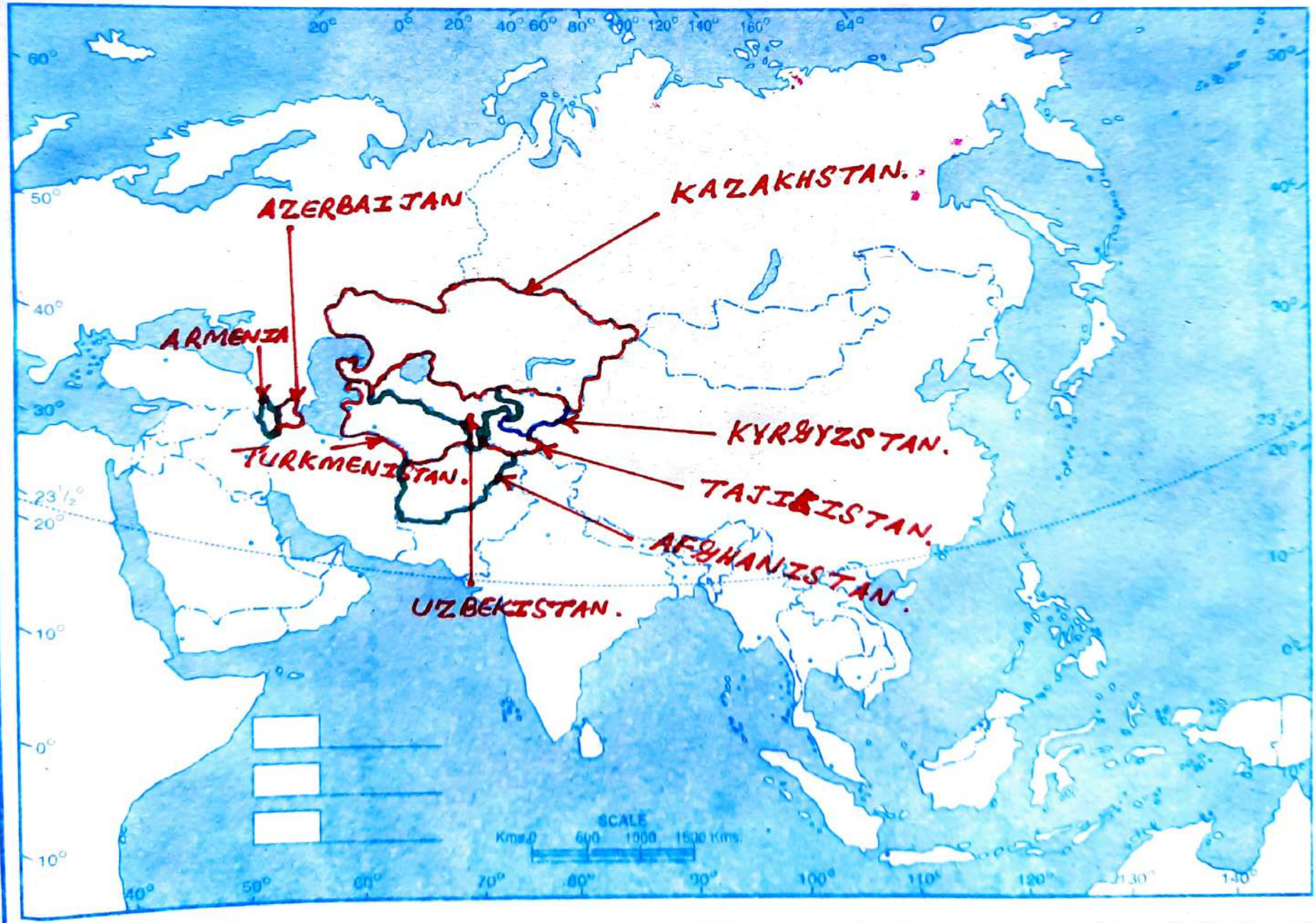
CENTRAL ASIA.

ASIA–POLITICAL ऐशिया-राजनीतिक एशिया-राजनैतिक



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SOUTH EAST ASIA

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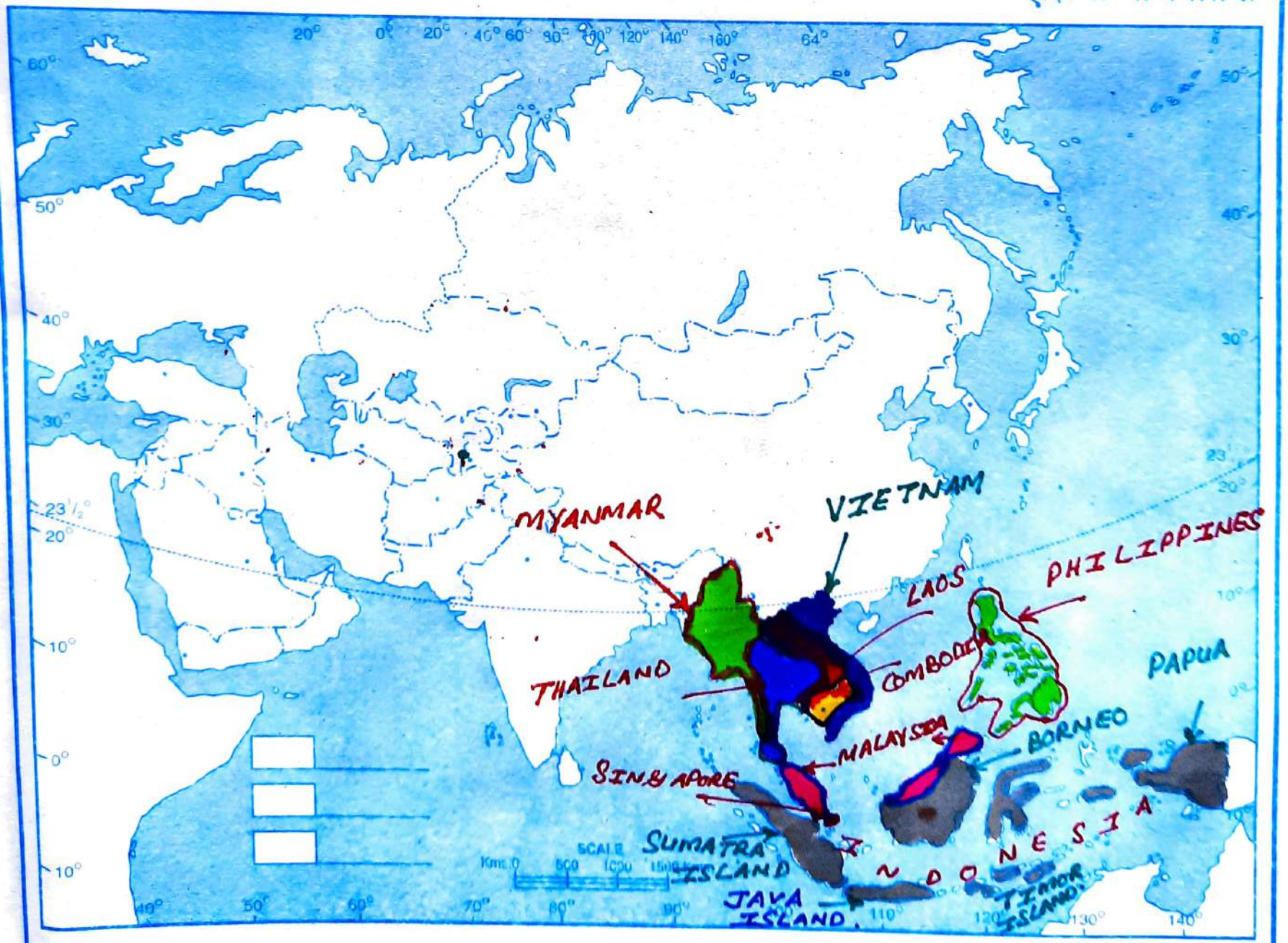

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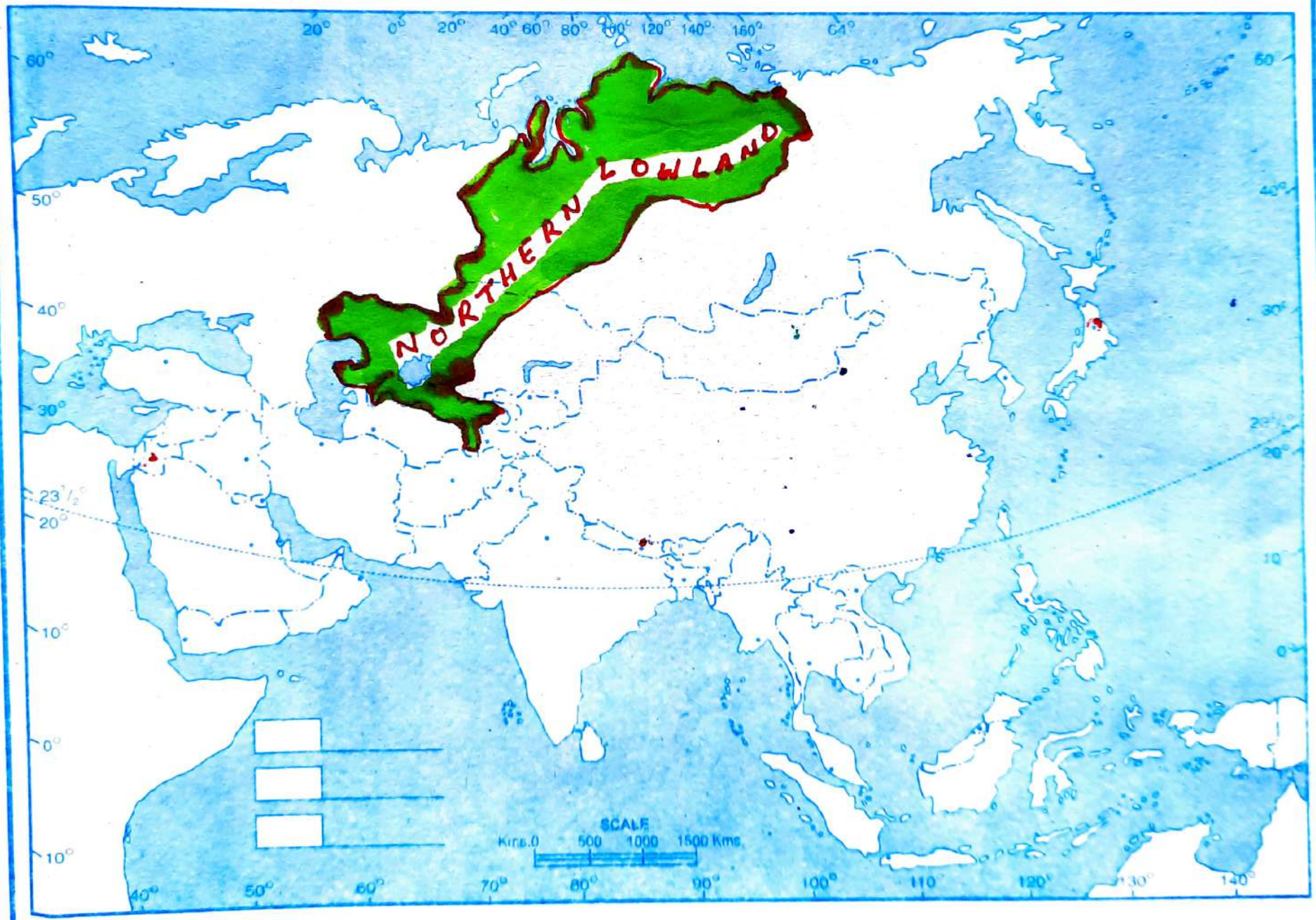
NORTHERN LOWLANDS OF ASIA

ASIA–POLITICAL

ਏਸ਼ੀਆ-ਰਾਜਨੀਤਿਕ

एशिया-राजनैतिक



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Sareen Trading Co., Jal.

CENTRAL HIGHLAND OF ASIA

ASIA–POLITICAL

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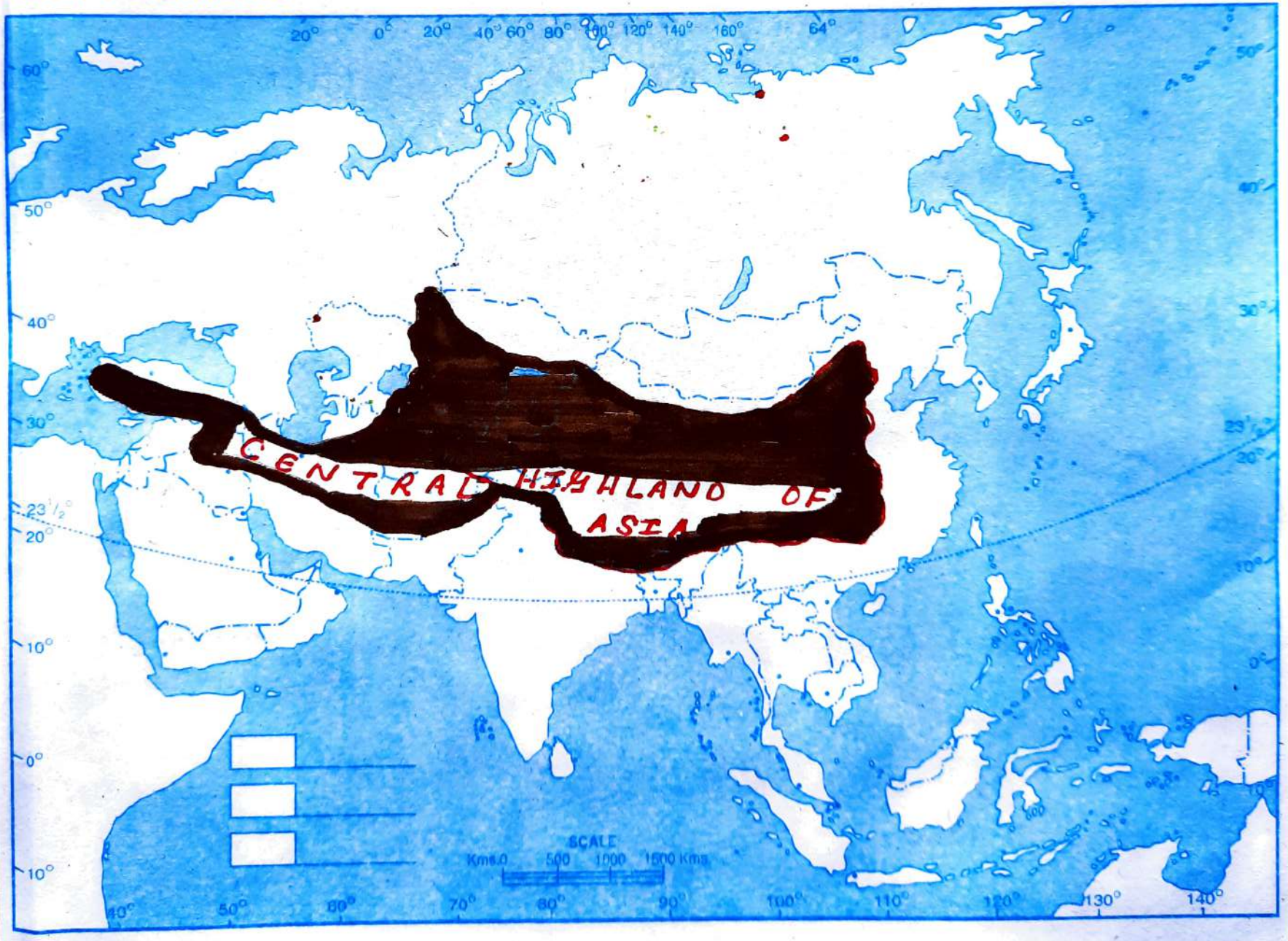

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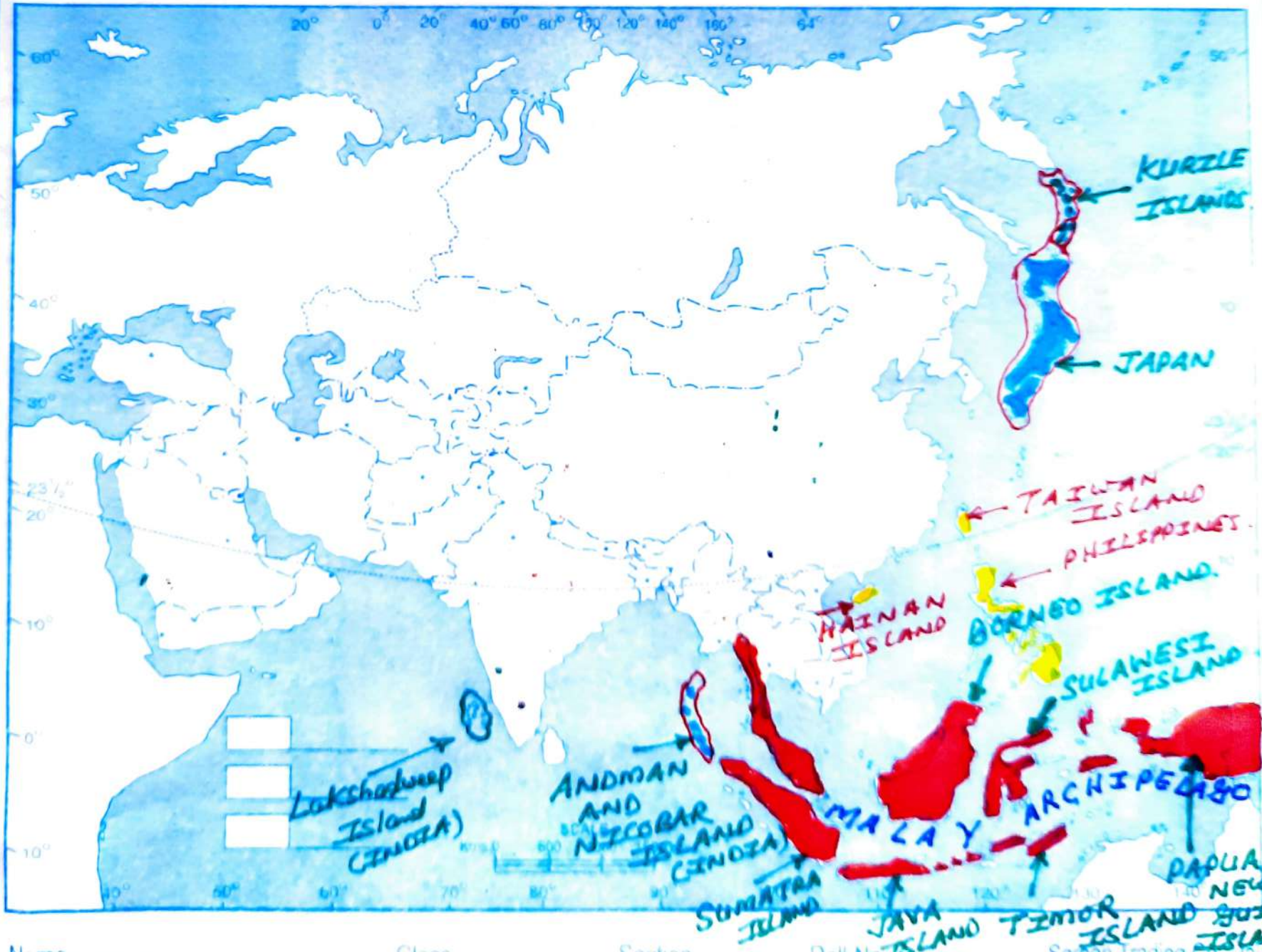
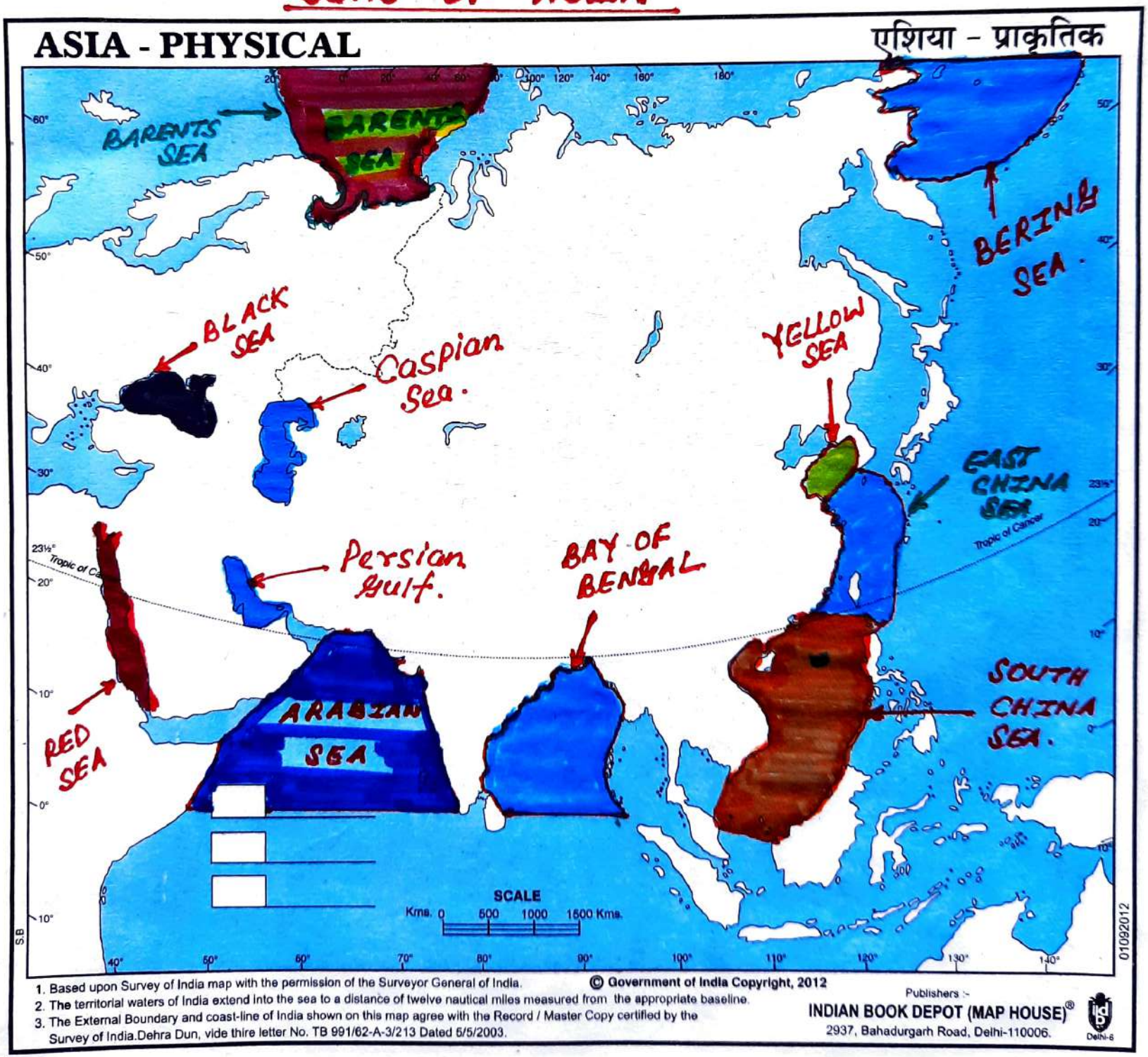
ISLANDS OF ASIA



SEAS OF ASIA



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BAY OF BENGAL

ASIA - PHYSICAL

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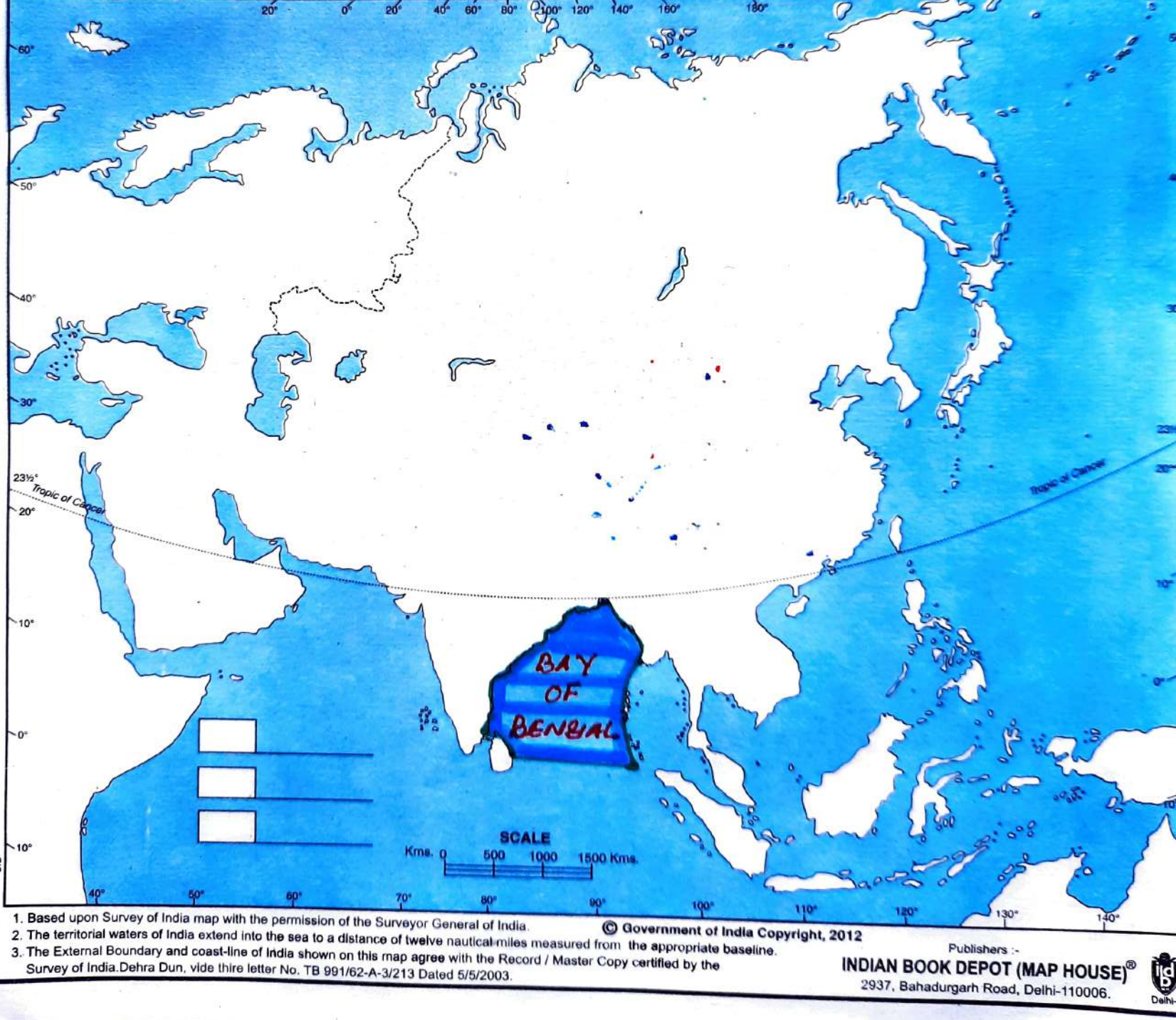

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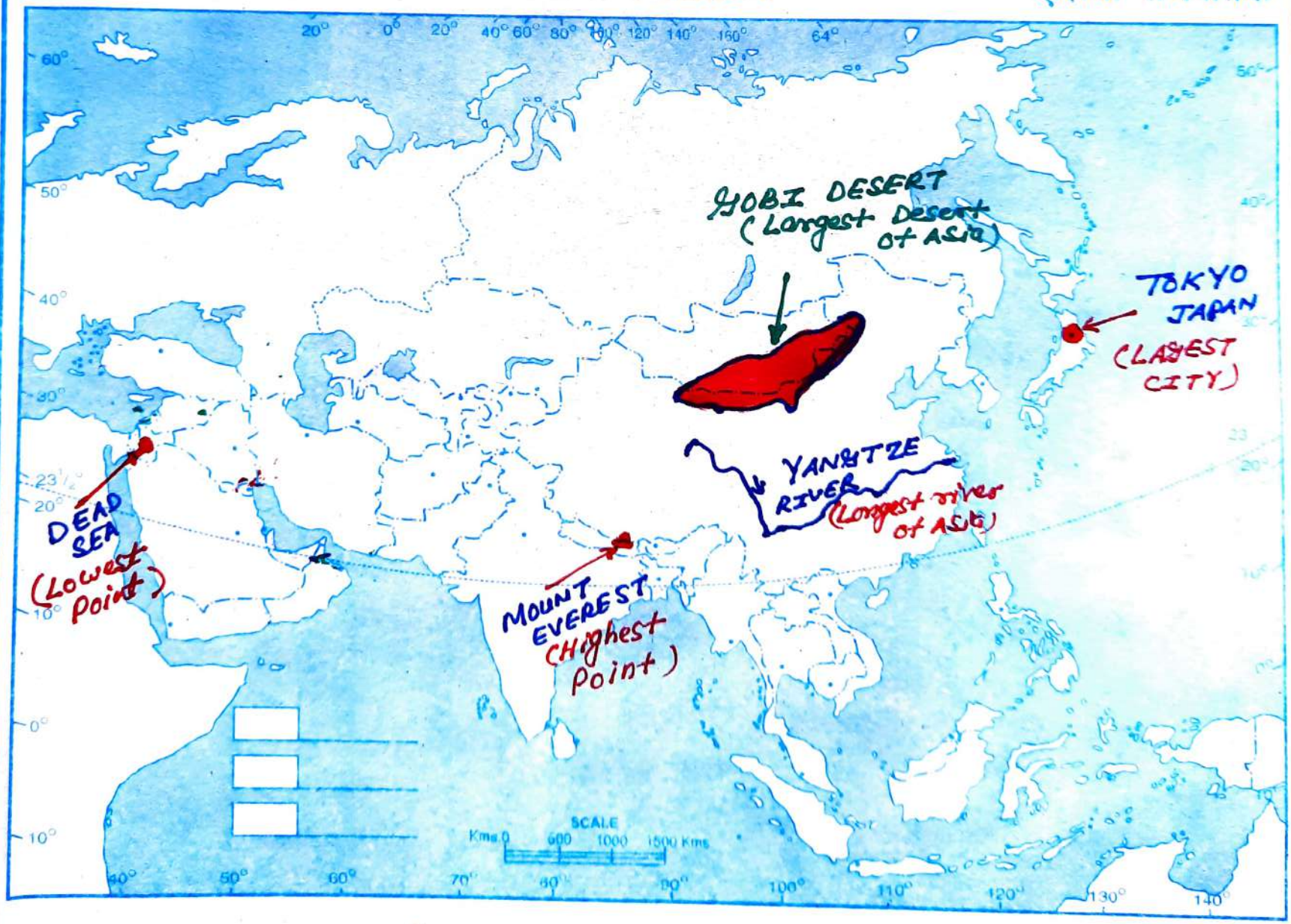
ASIA–POLITICAL ਏਸ਼ੀਆ-ਰਾਜਨੀਤਿਕ एशिया-राजनैतिक



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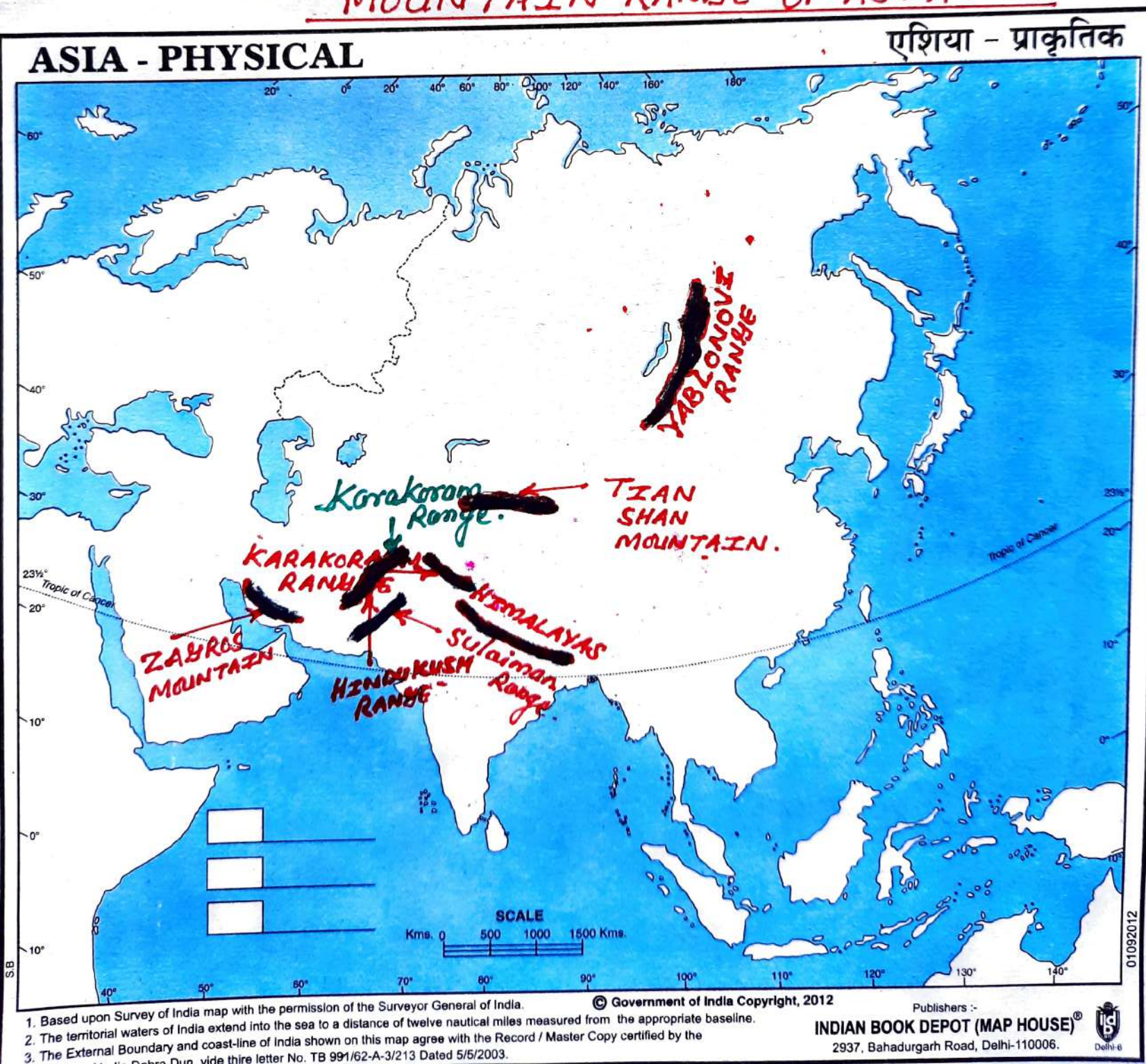
MOUNTAIN RANGE OF ASIA.



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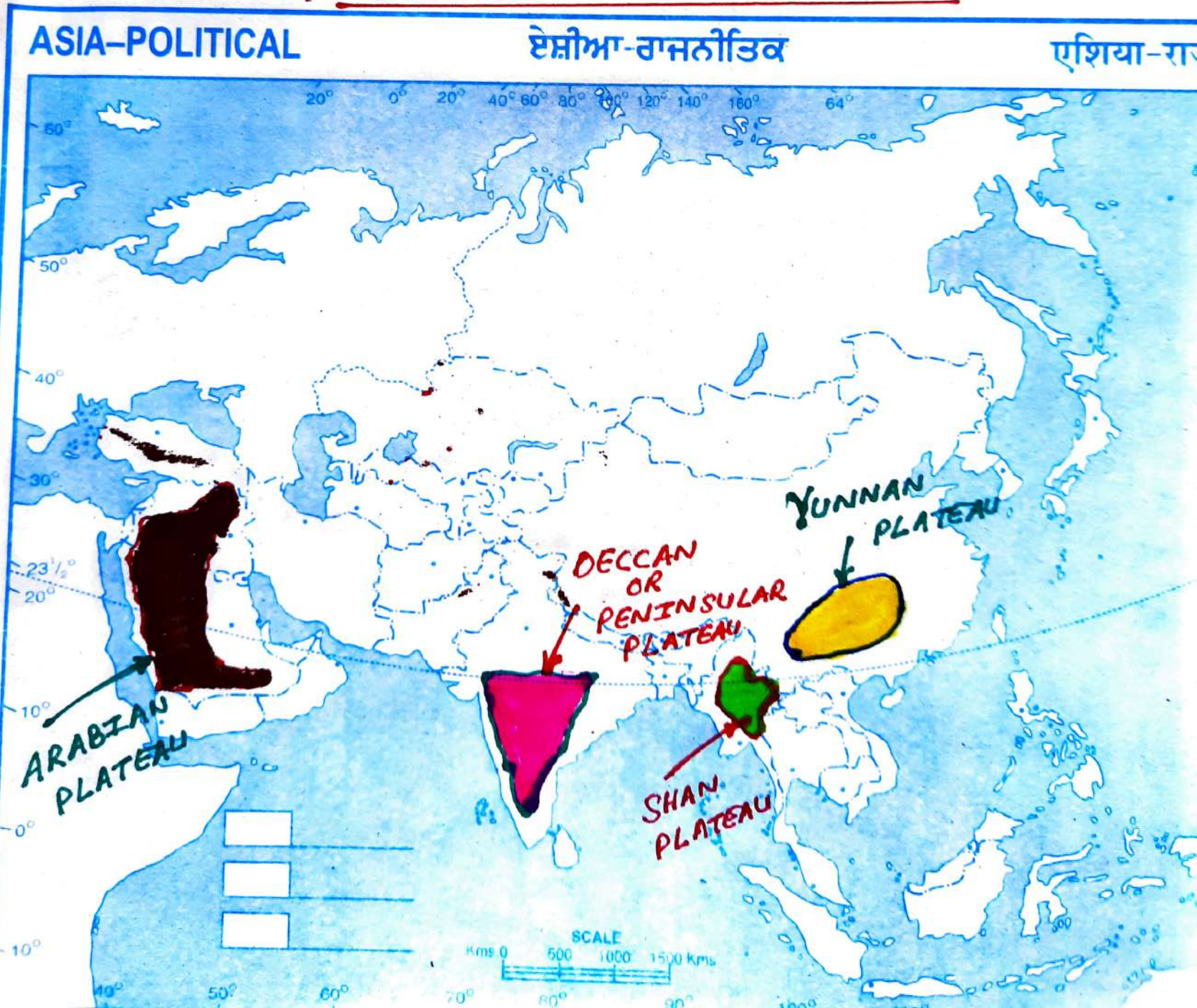
PLATEAU OF ASIA

PLATEAUS OF ASIA

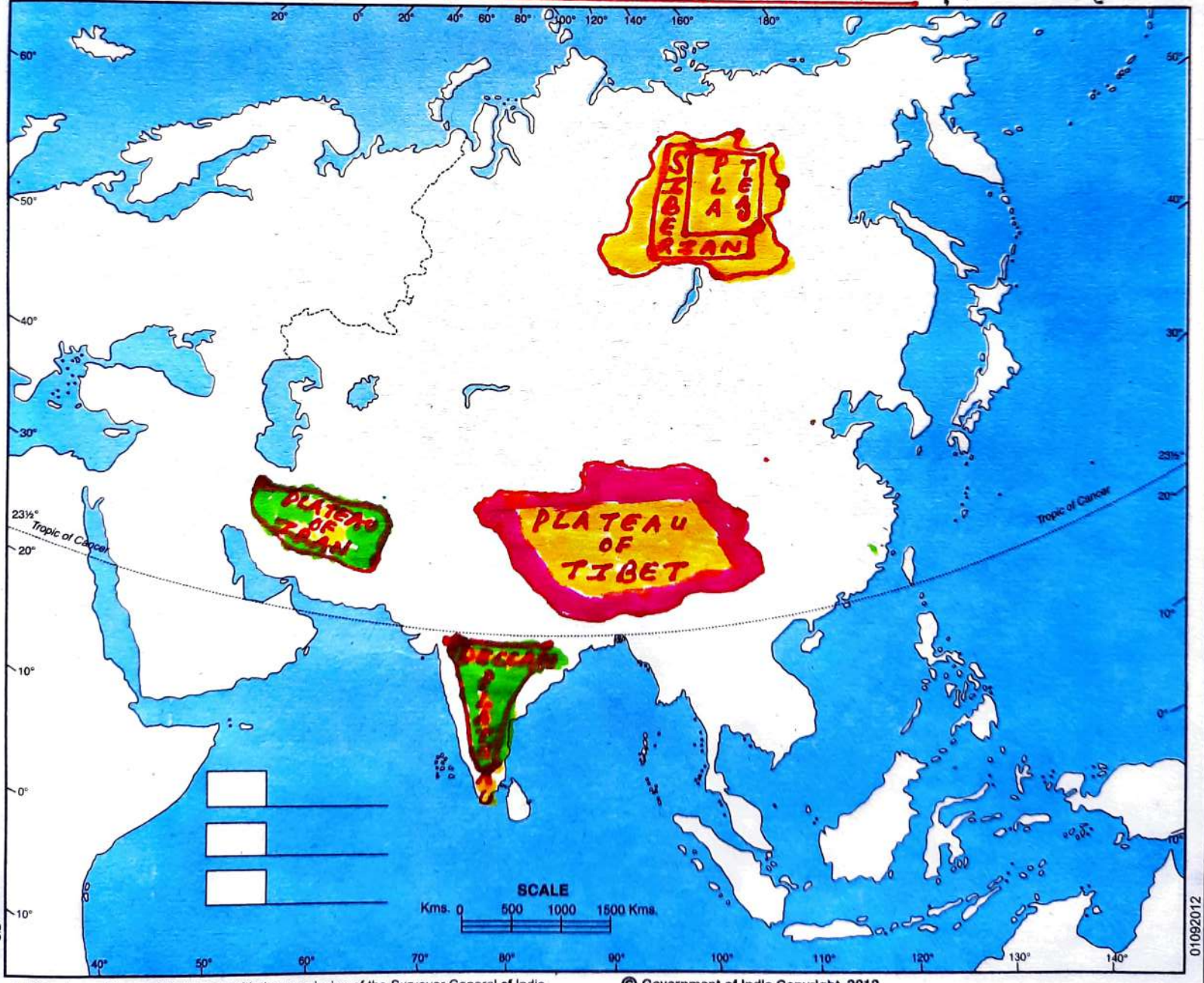


PLATEAU OF ASIA

ASIA - PHYSICAL

PLATEAU OF ASIA.

एशिया - प्राकृतिक



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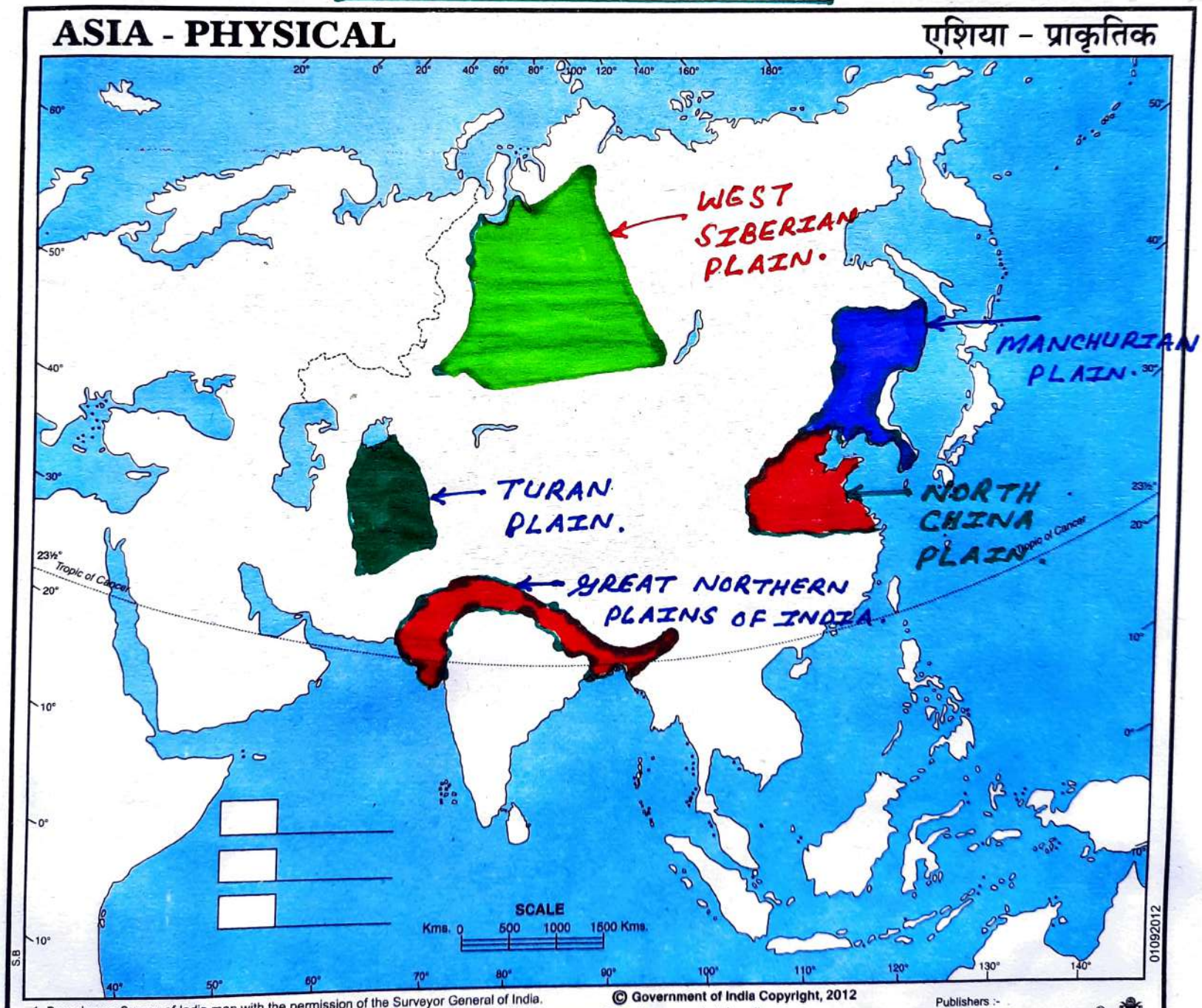

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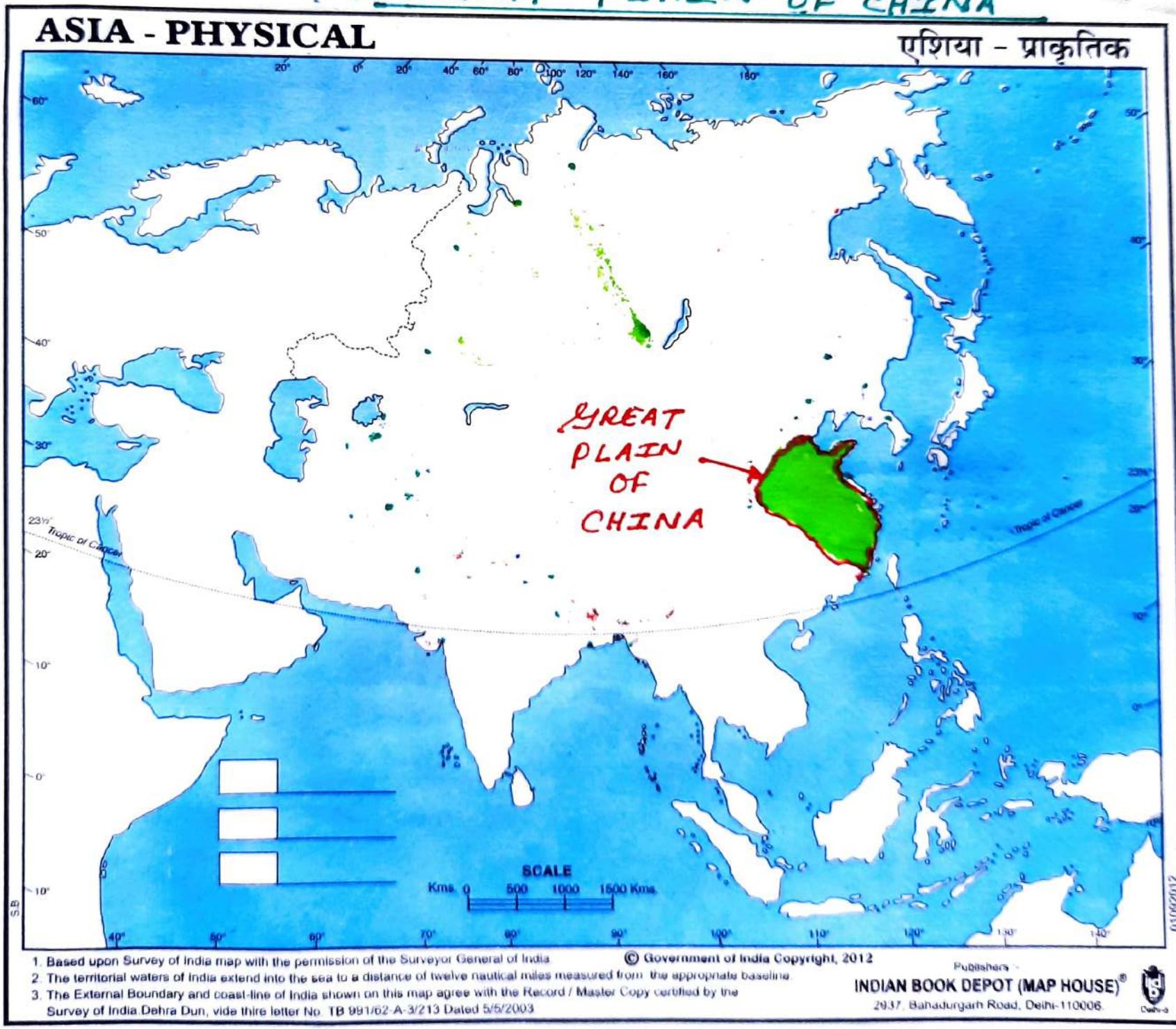
GREAT PLAIN OF CHINA



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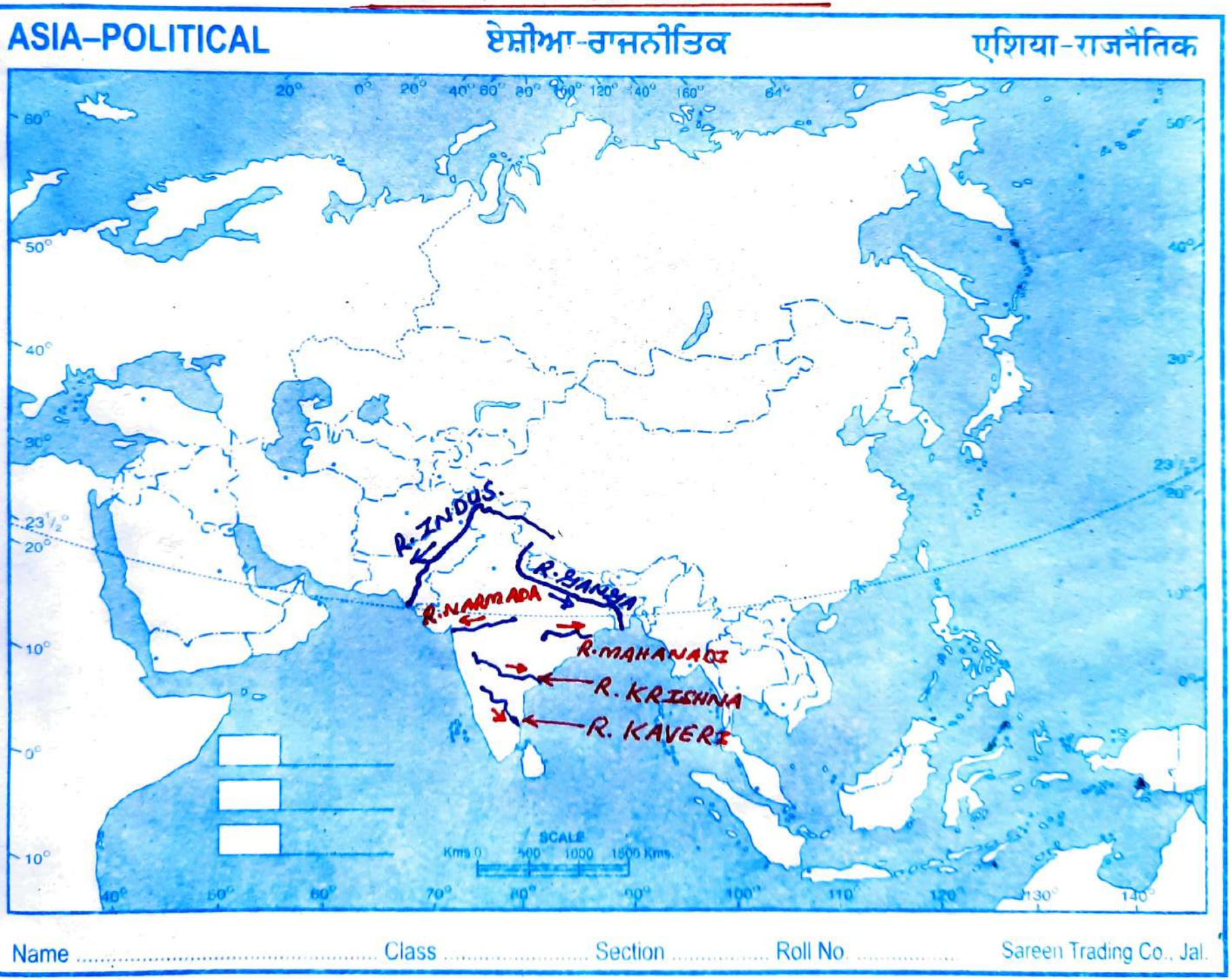

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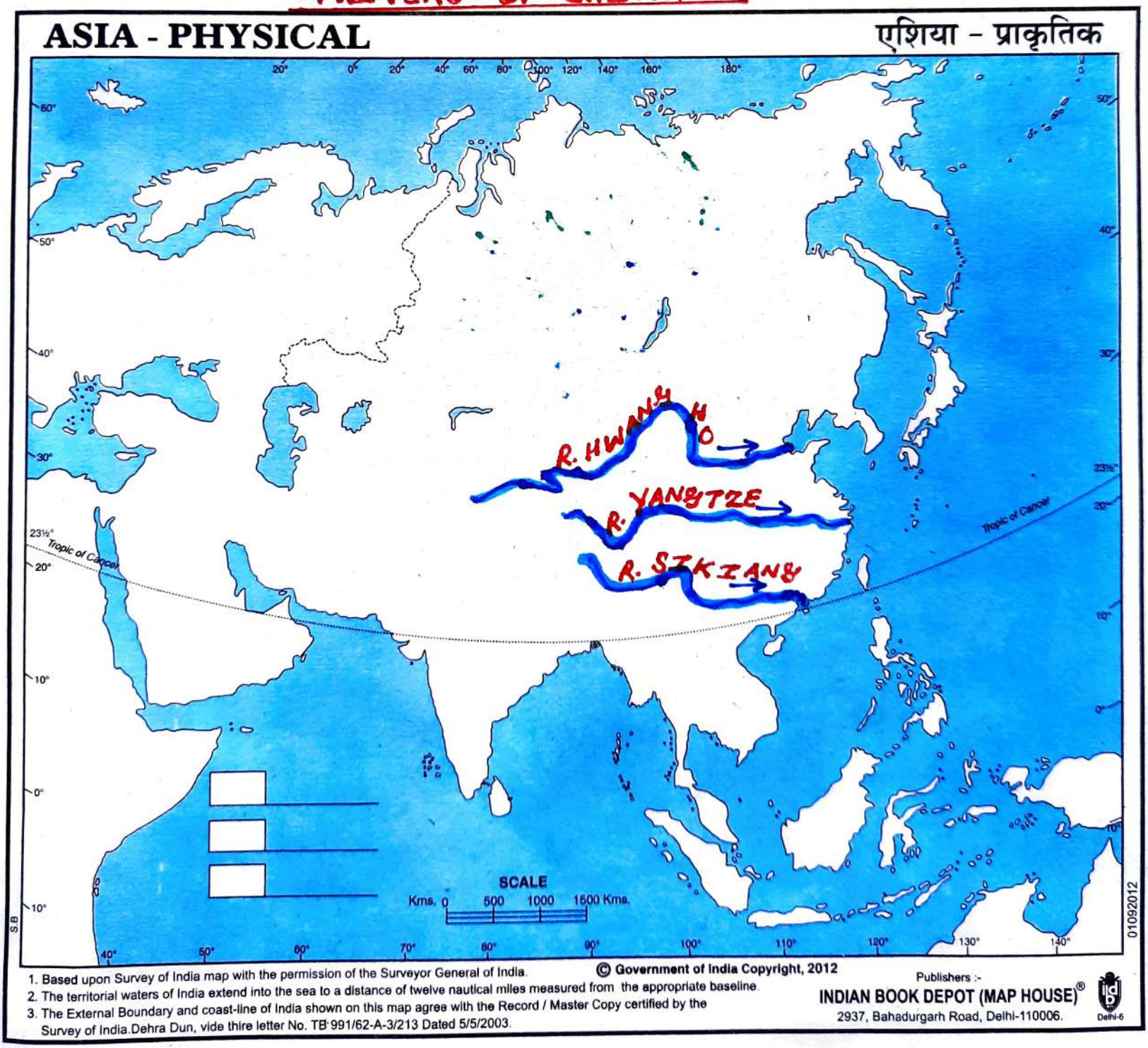
RIVERS OF CHINA



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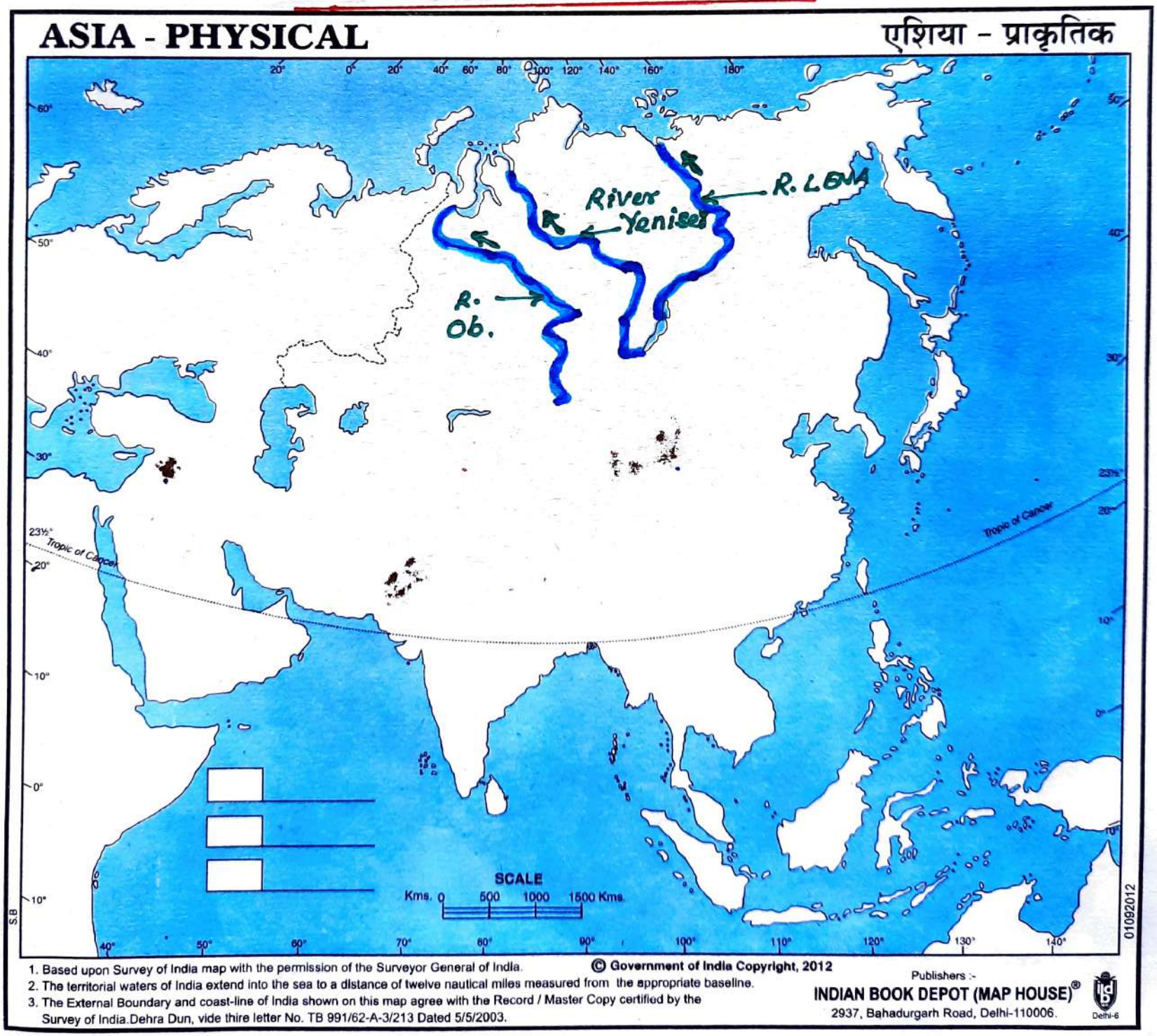
: RIVERS OF RUSSIA.



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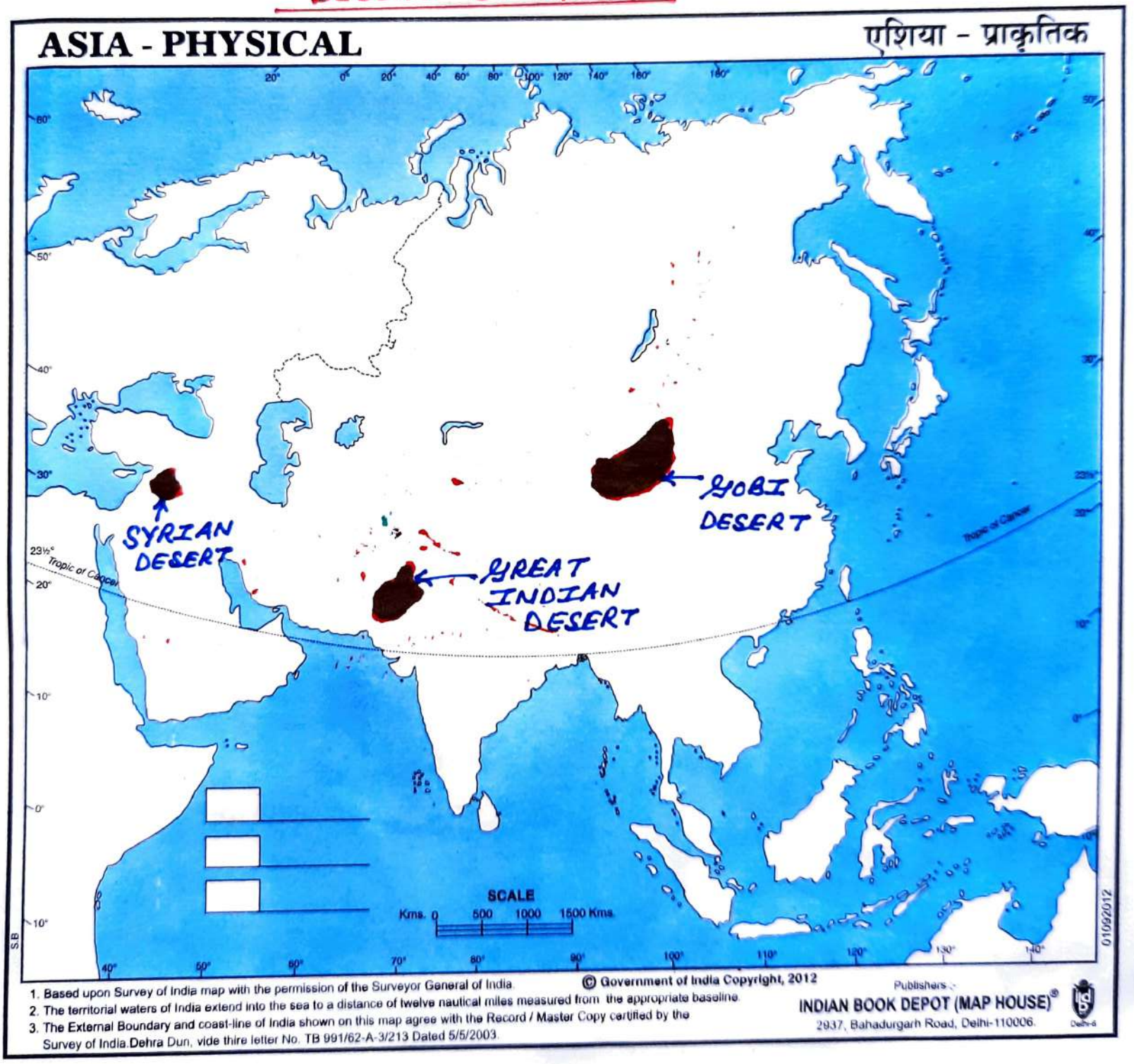
DESERT OF ASIA



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First term answer key 8th standard English language

Ch-11 comparison of adjectives

1. Pretty prettier prettiest
2. Sad sadder saddest
3. Happy happier happiest
4. Near nearer nearest
5. Late latter latest
6. Old older oldest
7. True truer truest
8. Bad worse worst
9. Emphatic more emphatic most emphatic
10. Cold colder coldest
11. High higher highest
12. Wonderful more wonderful most wonderful
13. Magnificent more magnificent most magnificent
14. Yellow yellower yellowest
15. Pleasant pleasanter pleasantest

Ex.2

1. Taller- degree of comparison

Strongest superlative degree

2. More useful superlative degree
3. Long positive degree
4. 23 positive degree
5. Largest superlative degree
6. No positive degree
1. B) noisy Street
2. Delicious Apple
3. Clevermind
4. Religious nature
5. Honest dealing
6. Straight forward opinion
7. Pitiable condition
8. Intelligent fellow
9. Frank nature

1. C) old ,Worried
2. 5,3
3. Superior

4. No
5. Many, March
6. All
7. Brighter
8. Strongest
9. Little
10. Little
11. A little
12. Few

Ex- 3

1. Take the shorter of the two routes.
2. Many a man has ruined his career for want of a good guide.
3. No fewer than ten men were engaged.
4. This cloth is finer than that.
5. She is my elder sister.
6. He got passing mark in English.
7. Have a ten rupee note.
8. Both of his sons are doctors.
9. I prefer death to dishonor.
10. The climate of India is colder than that of Africa.

ACTIVE/ PASSIVE VOICE

EX-1

1. He was kept waiting by me.
2. The lamb was frightened by the noise.
3. The orphans are being helped by the kind hearted woman.
4. A book has been chosen by Ram.
5. A job was offered to him by the officer.
6. Let the door be opened.
7. By whom are you taught English?
8. My *proposal* was objected to strongly by him
9. The snake was not killed by him.
10. May this map be seen by me? Your servant must be rewarded for his courage by you.
11. Let the horse be saddled by you.
12. He was elected minister by them.
13. A debate is being held in the school hall by the boys
14. The application was forwarded to the headmaster by the teacher
15. A race was run by Atlanta.
16. Exile is not feared by her.
17. I am vexed by his behaviour.

18. We are being watched by him.

19. Was the noon train caught by him?

Ex-2

1. His own friends are receiving him.
2. The people welcomed Prince Hamlet.
3. The sub committee has approved of the plant
4. Much anxiety has been caused to me.
5. The teacher granted permission to the student.
6. Have you carried out my orders?
7. They listened eagerly to the story.
8. The police carried home the wounded persons.
9. The washerman has not yet washed my clothes.
10. The storm uprooted the tree.
11. The singing of the birds greatly delighted us.
12. My father give me a new watch.
13. Columbus discovered America.
14. We heard not a drum.
15. Who wrote this piece of composition?
16. They have cut the electric wires.
17. In expectation are spent our lives.
18. Let danger not daunt you.
19. Has not gambling ruined many?

20. Into your confidence why should I not be taken?

Ch- 21 The Gerund

Ex-1

1. Telling gerund subject of the verb will not help
2. Coming gerund object of the preposition
3. Reading, writing gerund .object of the verb learn
4. Coming gerund subject of the verb cast
5. Burnt participle qualifying the noun child
6. gone participle qualifying the noun people
7. leaving gerund object of the verb will mind
8. running participle qualifying the noun tap.
9. Standing gerund subject of the verb knows
10. Amassing gerund object of the preposition in

11. crying and complement of verb.

Ex-2

1. Laughing is better than frowning.
2. To write a story is not easy.
3. He likes collecting books and does not like to give them away.
4. To fly kites is a favourite sport but betting on them is bad.
5. He loved reading and writing.
6. She likes to dance and sing.
7. To reach school in time is always his problem
8. Painting is good but to paint is not in his vein
9. To earn money is good but to spend always is undesirable.
10. To apologize for your misconduct is the only way of escaping punishment.

Ch- The conjunctions

Ex-1

1. And coordinating conjunction
2. Before time subordinating conjunction
3. And cumulative coordinating conjunction therefore illative coordinating conjunctio
4. Unless condition subordinate conjunction
5. Neither nor alternative coordinating conjunction
1. II- he touched neither food nor water.
2. He lost not only his bag but also his walking stick.
3. No sooner had he come then he was off again.
4. Scarcely had he gone when a postman knocked at his door.
5. Do like I do.
6. You must act as I tell you.
7. I cannot go to him unless he invites me.
8. Though his clothes were old and worn yet looked clean and of good quality.
9. He worked hard as until it grew dark.
10. Unless you tell me the truth I shall punish you.

Ex-2

Fill in the blanks with suitable conjunction

1. As
2. Until
3. Because
4. Though
5. But
6. As
7. Lest
8. So that
9. All the
10. Until

II combine the sentences

1. Take care of yourself or you will be ill.
2. He Deserted his brother because he was very proud.
3. You must do as you are told or you will be punished.
4. Although he tried to get up he could not.
5. The policeman ran after the thief but could not catch him.
6. Although you may not be successfully yet you out to attempt the questions.
7. Though all men were against doctor Johnson preserved.
8. Not only he but also you are honest.
9. Send me a Message and I will come at once

10.Lead me anywhere and I shall go.

III SUITABLE CONJUNCTIONS OR RELATIVE PRONOUNS

1. Unless
2. And
3. Since
4. But
5. And
6. Lest
7. And
8. But
9. Till
10. Or
11. When
12. Than

Ch- transformation of sentences

Ex-2

Change the degree of comparison

1. An as is not as intelligent as a horse (positive).
2. A foolish friend is not as good as a wise enemy .(Positive)
3. No other seaport in India is better than Mumbai. (comparative)
4. Very few other statemenof England were as great as disraeli (positive)
5. Hoshiyarpur is more fertile than most other districts (comparative)
6. Very few other poets are as great as Kalidas. No other poet is greater than Kalidas.
7. Dickens David Copperfield is the most popular book. Dickens David Copperfield is most popular than most other books.
8. Gold is more precious than most metals. Few other metals are as precious as gold.
9. To act is not as easy as to speak. To speak is the easiest.
10. A horse cart is not as fast as a train. A train is the fastest.
11. I do not know you as well as he. He knows you best.
12. He knows you best. I do not know you as well as him.
13. He is meaner than all men. No man is as mean as him.

Ex-4 change into passive form

1. I have been promised help by my friend.
2. We are taught history by Mr munshiram
3. Nothing could be done by the teacher
4. 40 desks are contained in our classroom.
5. Is this gentleman known to you?
6. The humble should not be teased.
7. His brother is not cared for by him.
8. The boat is to be lowered by you.
9. The audience was very much impressed by Edmund Burke charming voice.
10. Let a sheet of paper be brought from the office for me by you.
11. It cannot be allowed by me.
12. To build a bridge over the canal has been proposed by the government.
13. He was chosen captain by them.
14. Good news is expected by everyone.
15. The police was ordered to open fire on the crowd by the magistrate.
16. The accused should be handcuffed where the orders given immediately by the judge.
17. Why is he laughed at by you?
18. Where were you led by the man?
19. Flattery from man is liked by women.
20. Let the names now be called.
21. How was this conclusion arrived at by you?
22. Was the battle of Hastings won by the normans?
23. Marry ‘s hand was claimed by William.
24. The owner of driving the first ball was claimed by the captain.
25. Many years ago cowboy going to the market was killed by a highwayman.
26. Let the work be stopped now.

Ex- b change into active form

1. Spread a carpet on the floor.
2. We must obey our parents.
3. I am lucky they tell me.
   4.Murder and dacoity were the charges they were guilty of.
4. You like which of these pictures?
5. It is said Columbus discovered America.
6. Who Tested your reading and recitation?
7. The company he keeps makes known a man.
8. On this matter the government has moved.
9. The association compelled me to withdraw.
10. Liberty was granted to John Buryan.
11. The teacher found fault with his conduct.
12. Floods have interrupted the bus service.
13. They removed the injured to the hospital.
14. Safety of my brother has been confirmed by telegram.

15. Someone has broken my watch
16. Those who live in glass houses should not throw stones.
17. One must endure what one cannot cure.
18. Declare the innings closed now.
19. He was killed where?
20. Is suspicion of the murder on him?
21. The normans killed King Harold of England.
22. Imitate not the most he is.
23. Separation from each other is not possible in the case of the two sisters.
24. Lights off colour illuminated beautiful the college building.

26.Enemy action wrecked the ship.

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L-10 My Dearest Lizzy

Part A

1) a 2) c 3) c 4) c 5) a

B

Ans1) Elizabeth felt that way because she was very much worried about Jane's health. She wanted to see her sister and take care of her.

Ans2) Mrs Hurst and Miss Bingley were surprised to see her because she had walked a long distance to see her sister. Elizabeth's stockings were dirty and her feet were weary.

Ans3) As soon as Elizabeth entered Jane's room. She was delighted to see her. She showed her gratitude towards Elizabeth while she was taking care of her. Elizabeth did not leave her alone for a moment.

Ans4) The apothecary's told that she had caught a violent cold. He advised Jane to take rest and prescribed some medicinal drinks to be taken at regular intervals.

Ans5) Miss Bingley invited Elizabeth to remain in Netherfield because she had understood that Jane did not want to part with her sister in her illness. She was feeling better in her presence.

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C Think and Answer –

Ans 1) Jane and Elizabeth share a loving relationship. As we can see that Jane wrote to Elizabeth about her illness and Elizabeth's reaction also proves the nature of their relationship.

Ans 2) Mr. Bennet was very much concerned about Jane's health. He scolded his wife for sending Jane out in a bad weather.

Ans 3) Jane was not feeling well and her condition at that time was not as good to give her reaction by saying something. She gave expression of gratitude for the kindness shown by Elizabeth.

D Elizabeth - determined, considerate

Mrs Bennet - ambitious, indifferent

Jane - dependent, thoughtful

Mr. Bingley - Kind, polite

E 1) intermission
2) scarce
3) assembled
4) glowing
5) dispatched

G) Do it yourself

H) 1) will , will be waiting

will pick

2) will be staying
will call
will be travelling
will be fine. will be on leave

will be joining office

will speak to the manager.

I 1) b 2) b 3) a 4) a

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Ch-3 The Trial

Comprehension –

1) John Barsbad 2) The Attorney General
3) Lucie Manette 4) Sydney Carton
5) Jarvis Lorry 6) Charles Darnay

A

Ans 1) It was the time when people were getting fatal penalties for tiny crimes. So when people heard about anybody's trial at the court, they became so curious to know about the death sentence of that person.

2) Carton's conversation with Charles was based upon his own feelings for Lucie and Lucie's feelings for Charles. He was trying to know how Charles like Lucie.

3) I would like to make a friend who is selfless, helpful, faithful and loyal and he should be a motivation to us. He should help us when we are in trouble and should respect his elders and teachers.

B 1) This extract shows the first impression of Lucie's words on weak Dr. Manette.

2) These words by Sydney Carton show his careless nature. He is telling Charles that he has no one in his life, who take care of him.

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3) Mr. Stryver tries to make Carton feel bad of his profession but Carton does not change his opinion. He does not admit that he has lagged behind in his profession.

Language Practice -

1) Charged with 2) found him guilty
3) Condemned the prisoner to death
4) earns his living as
5) weak with hunger

L-4 Monsieur le Marquis

A

Ans1) Marquis was a cold-hearted ruler, who did not care about the people of his kingdom He was concerned only about his own well being. He did not show any regret at the death of a child instead he was worried about his chariot. I feel it was right to murder him because he deserved death like this.

Ans2) No, it is not right for someone to take law into their hands but in this story, the person who has the responsibility to maintain law and order in the country is breaking it himself. So, some patriot

thought it better to kill him instead of bearing the injustice done by him.

B

Ans 1) Lucie is talking about the sound of the footsteps of people outside, who are running here and there to find a shelter to escape from the rain. She considers these sounds as sound of those people who are related to her in some way.

2) Defarge said this to father of the dead child to console him. He said that it was better to be dead instantly instead of living in such badly run kingdom.

3) Charles said these words to his uncle Marquis. He is showing disapproval towards Marquis' behaviour for people of his kingdom. He wanted to make him realize that it is going to prove fatal for him.

~~Ch- 5 Marriage Proposals~~

Language Practice – L-4

Underline the correct word.

1) pedestrian 2) accent 3) disgrace
4) stir 5) mistress

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Ch- 5 Marriage Proposals

Comprehension -

a 2
b 5
c 4
d 1
e 6
f 3

A

Ans 1) I think Charles Darnay would be the best husband for Lucie. As we see, he is a gentleman by heart as well as by his appearance. He likes Lucie and is able to give her a comfortable life. Above all he is liked by Lucie.

2) In the past, parents of boys and girls decided whom their son or daughter should marry. They took the decisions and their decisions were followed by their children. Nowadays, things have changed. Parents give their children liberty to choose their life partner when they become educated and financially independent.

3) Acc. to me, dowry system is the most unusual custom in my country. In accordance to this system when a girl gets married and comes to her husband's home, she brings so many gifts like money, furniture, clothes and ornaments from her father's

side. It is very strange that a father has to give so much along with his daughter.

B

Ans1) These lines of Dr. Manette show his fatherly concern for his daughter. When Charles tells his feelings for Lucie. Dr Manette wants to avoid the truth that his daughter will marry someone and go away from him. So, he requests Charles not to remind him of that truth.

2) Mr. Lorry said these to Mr. Stryver because he does not want him to be hurt. As Mr Stryver is planning to go to Manette's house to ask Lucie's hand for marriage, Mr Lorry knows that he'll get a negative response. So he advises not to go there.

3) Sydney Carton said these words to Lucie when he confessed his love for her. He was trying to get sympathy from Lucie by telling about his pityful conditions. He says that he is useless but he has done one thing worthy in his life.

Language Practise

1) to 2) of 3) out 4) of 5) in, of 6) at 7) with 8) of / for 9) away 10) in

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CH-5 (Peace blossoms in human heart)

1. Peace Cannot be made in the Round table Conference. If we want a peaceful world, we should make our Country peaceful. This, there should be peace within the hearts of every human being
2. No doubt, we have made so many advancements and goods, but these are only useful if we are aware of the peaceful Co-existance.

(My thoughts)

1. They should be made educated about their self-protection
2. Training should be given to them in Karatte, Boxing etc
3. Government should be very strict to the Convicts
4. our life style, clothing, moremants should not be loud, vulgar or showy.

(Brain stroming Session)

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes
6. yes

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Ex - 13.1

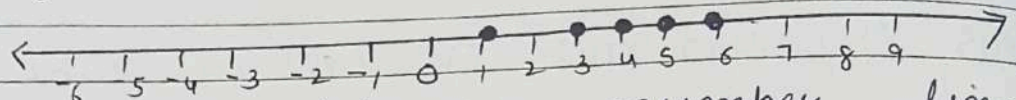
1 $RS = \{1, 3, 4, 5, 6, 7, 8, 9\}$

here inequation is $x \leq 6$

$\therefore SS = \{1, 3, 4, 5, 6\}$

Now we will show there numbers 1, 3, 4, 5, 6 on number line:

firstly with scale, draw a number line



mark dark dots on number line to represent the numbers 1, 3, 4, 5, 6

2 Inequation is $x < 8$, $x \in W$

$RS = \{0, 1, 2, 3, 4, 5, 6, 7\}$

$\therefore SS = \{0, 1, 2, 3, 4, 5, 6, 7\}$

3) (i) Inequation is, $x < 5$

$RS = \{1, 2, 3, 4, 5, 6, 7, 8\}$

$\therefore SS = \{1, 2, 3, 4\}$

(ii) Inequation is $x < 5$

$RS = \{-2, -1, 0, 1, 2, 3, 4, 5\}$

$SS = \{-2, -1, 0, 1, 2, 3, 4\}$

4(i) Inequation is $-1 \leq x \leq 4$, $x \in I$

(here I - integers)

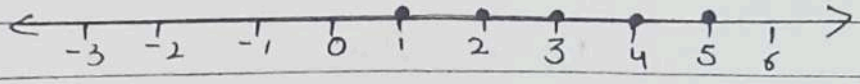
$\therefore SS = \{-1, 0, 1, 2, 3, 4\}$

(ii) inequation is $-2, < < 2$, $x \in I$

$\therefore SS = \{-1, 0, 1\}$

(iii) inequation is $x < 6$, $x \in N$

$SS = \{1, 2, 3, 4, 5\}$



(iv) same as ii)

(v) same as i)

Ex - 13.2

1. $RS = \{0, 1, 2, 3, 4, 5\}$

i) inequation is , $x + 5 \leq 10$

$x \leq 10 - 5$

$x \leq 5$

$\therefore SS = \{0, 1, 2, 3, 4, 5\}$

(ii) $2x - 1 > 6$

$2x > 6 + 1$

$2x > 7$

$x > 7/2 \Rightarrow x > 3.5$

2. $2(x - 3) \leq 5x$

$2x - 6 \leq 5x$

$-6 \leq 5x - 2x$

$-6 \leq 3x$

$\frac{-6}{3} \leq x$

$-2 \leq x$

$x \geq -2$

$x = \{-2, -1\}$

[$\because$ given in statement that x is a -ve integer] $\rightarrow RS$

Q3 RS = {3, 4, 5, 6, 7}

inequation is, $7 - \frac{x}{2} > \frac{5x}{3} - 6$

$$7 + 6 > \frac{5x}{3} + \frac{x}{2}$$

$$13 > \frac{10x + 3x}{6} \quad \text{(take LCM)}$$

$$13 > \frac{13x}{6}$$

$$13 \times \frac{6}{13} > x$$

$$6 > x$$

$$SS = \{3, 4, 5\}$$

4. inequation is $2(x-8) > 5 + x$

$$2x - 16 > 5 + x$$

$$2x - x > 5 + 16$$

$$x > 21$$

$$x = \{22, 23 \ldots\}$$

[Choose x +ve as in statement replacement set is a set of positive integer]

5) $\frac{2}{3}(9x - 15) + 4 \leq 6 + \frac{3}{4}(4 - 12x)$

$$\frac{2}{3} \times 9x - \frac{2}{3} \times 15 + 4 \leq 6 + \frac{3}{4} \times 4 + \frac{3}{4} \times 12x$$

$$6x - 10 + 4 \leq 6 + 3 - 9x$$

$$6x - 6 \leq 9 - 9x$$

$$6x + 9x \leq 9 + 6$$

$$15x \leq 15$$

$$x \leq \frac{15}{15} \Rightarrow$$

$x \leq 1$

$x = 1$

(In statement $x \in N$ natural no.)

6) $5(x-1) < 2x+1$, $x \in W$

$5x - 5 < 2x + 1$

$5x - 2x < 1 + 5$

$3x < 6$

$x < \frac{6}{3}$

$x < 2$

$x = \{0, 1\}$

(∵ in statement $x \in W$ → whole no.

To show it graphically, take number line

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EX - 10.1

(1)(i) $P = ₹\,3500$, $R = 8\%$, $T = 2$ years 8 months

$T = 2\text{yrs} + \frac{3}{12}\text{ yrs}$

$\left(2 + \frac{\frac{2}{3}}{12}\right)\text{yrs} = \left(\frac{8+1}{4}\right)\text{yrs} = \frac{9}{4}\text{ yrs}$

4

$S.I = \frac{P \times R \times T}{100}$

$= \frac{3500 \times 8 \times 9}{100 \times 4} = ₹\,630$

$Amt = P + S.I$

$3500 + 630 = ₹\,4130$

(ii) and (iii) same as (i)

(iv) same as eg-2 on Pg-123)

$P = ₹\,4000$ $R = 8\%$

$T =$ no. of days of months sep, oct, nov

$= 27 + 31 + 15 = 73$ days

$= \frac{73}{365}\text{ yrs} = \frac{1}{5}\text{ yrs}$

$S.I = \frac{P \times R \times T}{100}$ ↓ (solve it)

(v) $P = ₹\,2000$, $T = 2\frac{1}{3}$ yrs, $R = 3$ paise per rupees per month

$R = \frac{3}{10} \times 12\,\%$

$S.I = \frac{2000 \times 7 \times 3 \times 12}{3 \times 100}$

solve and also find Amt

Q2 $R = 4\%$ $S.I = ₹ 3250$ $T = 3$ yrs 3 months

$\left(3 + \frac{3}{12}\right)$ yrs

$P = ?$

$= \frac{13}{4}$ yrs

$P = \frac{S.I \times 100}{R \times T}$

$\frac{3250 \times 100}{4 \times \frac{13}{4}} \Rightarrow \frac{3250 \times 100}{13}$

$= ₹ 25000$

(3) $A = ₹ 5031$, $T = 4$ yrs, $R = 7.25\%$, $P = ?$

$A = P + S.I$

$P + \frac{P \times R \times T}{100} = P\left(1 + \frac{RT}{100}\right)$

$5031 = P\left(1 + \frac{7.25 \times 4}{100}\right)$

$= P\left(1 + \frac{29}{100}\right) = P\left(\frac{100 + 29}{100}\right)$

$5031 = P\left(\frac{129}{100}\right)$

$P = \frac{5031 \times 100}{129}$

$P = ₹ 3900$

(4) $S.I = ₹ 112.50$, $T = 2\frac{1}{2}$ yrs $= \frac{5}{2}$ yrs

$P = ₹ 750$

$R = \frac{S.I \times 100}{P \times T}$

$R = \frac{112.50 \times 100 \times 2}{750 \times 5} = 6\%$

(5) $P = ₹3500$, $A = ₹3647$, $R = ?$

T = no. of days in months

= (sep + oct + nov + dec + Jan + feb + March + Apr + May)

= (3 + 31 + 30 + 31 + 28 + 31 + 30 + 4) = 219 days

$$T = \frac{219}{365} \text{ yrs}$$

$$A = P\left(1 + \frac{RT}{100}\right)$$

$$3647 = 3500\left(1 + \frac{R \times 219}{100 \times 365}\right)$$

$$3647 = 3500\left(1 + \frac{3R}{500}\right)$$

$$3647 = 3500\left(\frac{500 + 3R}{500}\right)$$

$$\frac{3647}{7} = 500 + 3R$$

$$521 - 500 = 3R$$

$$21 = 3R$$

$$\frac{21}{3} = R$$

$$7\% = R$$

(6) Let Principal = P

$A = 2P$

$$T = \left(6 + \frac{8}{12}\right) \text{yrs} = \left(\frac{18+2}{3}\right) \text{yrs} = \frac{20}{3} \text{ yrs}$$

$$A = P\left(1 + \frac{RT}{100}\right) \Rightarrow 2P = P\left(1 + \frac{20R}{3 \times 100}\right)$$

$$\frac{2P}{P} = 1 + \frac{R}{15}$$

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$$2-1 = \frac{R}{15}$$

$$1 = \frac{R}{15} \Rightarrow R = 15\ \%.$$

(7) Let Principal $= P$, $S.I = \frac{4}{5}P$, $T = 8$ yrs

$$S.I = \frac{P \times R \times T}{100}$$

$$\frac{4P}{5} = \frac{P \times R \times 8}{100}$$

$$\frac{4P \times 100}{5 \times P \times 8} = R$$

$$R = 10\ \%$$

(8) $T = ?$, $P = ₹\ 1150$, $S.I = 230$, $R = 5\%$
(Do yourself)

(9) Let Principal $= P$, $A = 3.5P$, $R = 16\frac{2}{3}\% = \frac{50}{3}\%$
$T = ?$

$$A = P\left(1 + \frac{RT}{100}\right) \Rightarrow 3.5P = P\left(1 + \frac{50T}{3 \times 100}\right)$$

$$\frac{35}{10}P = 1 + \frac{T}{6} \Rightarrow \frac{7}{2} - 1 = \frac{T}{6}$$

$$\frac{7-2}{2} = \frac{T}{6} \Rightarrow \frac{T}{6} = \frac{5}{2}$$

$$T = \frac{5}{2} \times 6 \Rightarrow T = 15\ \text{yrs}$$

(10) Let the money borrowed be P
$A = ₹\ 12544$ $R = 6\%$
T = no. of days in April + May + June
$= (23 + 31 + 30 + 24)$ days $= 108$ days
$= \frac{108}{365}$ yrs

$$A = P\left(1 + \frac{RT}{100}\right)$$

$$12544 = P\left(1 + \frac{6 \times 108}{100 \times 365}\right)$$

$$12544 = P\left(1 + \frac{162}{9125}\right) \Rightarrow P\left(\frac{9125 + 162}{9125}\right)$$

$$12544 = P\left(\frac{9287}{9125}\right)$$

$$P = \frac{12544 \times 9125}{9287} = \frac{11,44,64,000}{9287}$$

$$P = ₹\ 12325.19$$

(11) Let sum of money be P

$R = 6\%$, $T = 3$ yrs

$$S.I = \frac{P \times R \times T}{100} = \frac{P \times 6 \times 3}{100}$$

$$S.I = \frac{18P}{100} \quad \text{---(1)}$$

Again $P = 9990$, $R = 8\%$, $T = 5$ yrs

$$S.I = \frac{P \times R \times T}{100}$$

$$= \frac{9990 \times 8 \times 5}{100} \quad \text{---(2)}$$

In both cases, S.I is same

$$\Rightarrow \frac{18P}{100} = \frac{9990 \times 8 \times 5}{100}$$

$$P = \frac{9990 \times 8 \times 5 \times 100}{100 \times 18}$$

$$P = ₹\ 22200$$

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(12) Case I - $A = ₹\ 7200$, $T = 5$ yrs

$$A = P\left(1 + \frac{RT}{100}\right)$$

$$7200 = P\left(1 + \frac{5R}{100}\right)$$

$$7200 = P + \frac{5PR}{100} \quad \text{—— (1)}$$

Case II $A = ₹\ 8064$, $T = 8$ yrs

$$A = P\left(1 + \frac{RT}{100}\right) \Rightarrow 8064 = P\left(1 + \frac{8R}{100}\right)$$

$$8064 = P + \frac{8PR}{100} \quad \text{—— (2)}$$

(2) - (1)

$$P + \frac{8PR}{100} - \left(P + \frac{5PR}{100}\right) = 8064 - 7200$$

$$P + \frac{8PR}{100} - P - \frac{5PR}{100} = 864$$

$$\frac{PR}{100}(8-5) = 864$$

$$\frac{3PR}{100} = 864$$

$$PR = \frac{864 \times 100}{3} = 28800$$

$$R = \frac{28800}{P} \quad \text{—— (3)}$$

Put $R = \frac{28800}{P}$ in (1)

$$7200 = P + \frac{5P \times 28800}{100 \times P}$$

$$7200 = P + 1440$$

$$P = 7200 - 1440 = ₹\ 5760$$

Put $P = 5760$ in (3)

$$R = \frac{28800}{5760} = 5\%$$

(13) Firstly $P_1 = 4200$, $R = 5\frac{1}{2}\% = \frac{11}{2}\%$

$T = 5$ yrs

$$S.I = \frac{P \times R \times T}{100} = \frac{4200 \times 11 \times 5}{100 \times 2} = ₹ 1155$$

Secondly $P = ₹ 7500$, $T = 6$ yrs, $R = 9\%$

$$S.I = \frac{7500 \times 6 \times 9}{100} = 4050$$

Total S.I $= 1155 + 4050 = 5205$

∴ Total earnings $= ₹ 5205$

(14) Firstly $P = ₹ 3500$, $R = 4\%$, $T = 5$ yrs

$$S.I = \frac{3500 \times 4 \times 5}{100} = 700$$

Secondly $P = 8000 - 3500 = ₹ 4500$

$R = 6\%$ $T = 5$ yrs

$$S.I = \frac{4500 \times 6 \times 5}{100} = ₹ 1300$$

Total interest $= 4500 + 1300 = ₹ 2050$

(15) Case I - $P = 2800$, $A = 3500$

$$A = P\left(1 + \frac{RT}{100}\right) \Rightarrow 3500 = 2800\left(1 + \frac{RT}{100}\right)$$

$$\frac{3500}{2800} = \frac{100 + RT}{100}$$

$$\frac{35 \times 100}{28} = 100 + RT \Rightarrow 125 - 100 = RT$$

$$RT = 25 \quad \text{---(1)}$$

Case II $P = ₹ 6000$, $A = 8160$, $T = 6$ yrs

$$A = P\left(1 + \frac{RT}{100}\right) \Rightarrow 8160 = 6000\left(1 + \frac{6R}{100}\right)$$

$$\frac{8160}{6000} = \frac{100 + 6R}{100}$$

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$\frac{8160 \times 100}{6000} = 100 + 6R$

$136 - 100 = 6R$

$36 = 6R$

$6 = R$

Put $R = 6$ in (1)

$6T = 25$

$T = \frac{25}{6}$ yrs $= 4\frac{1}{6}$ yrs

(16) $P = 2150$, $A = 2167.20$, $R = 4\%$

$A = P + S.I \Rightarrow S.I = A - P$

$S.I = 2167.20 - 2150 = 17.2$

$T = \frac{S.I \times 100}{P \times R} = \frac{17.2 \times 100}{10 \times 2150 \times 4} = \frac{1}{5}$

$T = \frac{1}{5} \times 365$ days $= 73$ days

[Count 73 day from 26th Feb 2009]

⇒ he will return money after 73 days that mean on 9 may 2009

Ex - 10.2

(1) Principal = ₹ 7000 , R = 9% p.a
T = 2 yrs

for Ist year : P_1 = ₹ 7000

Interest = $\frac{P \times R \times T}{100}$

Interest (I_1) = $\frac{7000 \times 9 \times 1}{100}$ = ₹ 630

Amt (A_1) = $P_1 + I_1$
= 7000 + 630
= ₹ 7630

for 2nd year

P_2 = ₹ 7630

Interest (I_2) = $\frac{P_2 \times R \times T}{100}$

= $\frac{7630 \times 9 \times 1}{100}$

I_2 = 686.70

Amt (A_2) = $P_2 + I_2$
= 7630 + 686.70
= 8316.70

Compound Interest = first Amt - Original Pri
= $A_2 - P$
= 8316.70 - 7000
= ₹ 1316.70

(2) Principal = ₹ 10,000 , R = 6% , T = 3 yrs

for Ist year = P_1 = ₹ 10,000

Interest (I_1) = $\frac{P_1 \times R \times T}{100}$

= $\frac{10000 \times 6 \times 1}{100}$ = ₹ 600

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Amount (A_1) = $P_1 + I_1$
= 10000 + 600
= ₹ 10,600

for 2nd year P_2 = ₹ 10600

Interest (I_2) = $\frac{10600 \times 6 \times 1}{100}$

= ₹ 636

$A_2 = P_2 + I_2$
= 10600 + 636
= ₹ 11236

For 3rd year

P_3 = ₹ 11236

$I_3 = \frac{11236 \times 6 \times 1}{100}$

₹ 674.16

$A_3 = P_3 + I_3$
= 11236 + 674.16
= 11910.16

Compound Interest = $A_3 - P$
= 11910.16 − 10000
= ₹ 1,910.16

(3) P = ₹ 12,000 , R = 5% , T = 2 yrs

For Ist year

P_1 = 12000

$I_1 = \frac{P_1 \times R \times T}{100}$

$= \frac{12000 \times 5 \times 1}{100}$

I_1 = 600

$A_1 = P_1 + I_1$
= 12000 + 600
= 12600

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for 2nd year $P_2 = 12,600$

$$I_2 = \frac{12600 \times 5 \times 1}{100}$$

$$I_2 = 630$$

$$A_2 = P_2 + I_2$$

$$= 12600 + 630$$

$$= ₹\ 13,230$$

Compound Interest $= A_2 - P$

$$= 13230 - 12000$$

$$= ₹\ 1230$$

(4) $P = ₹\ 20000$

$R = 12\ \%$

$T = 3$ yrs

for Ist year $P_1 = ₹\ 20,000$

$$I_1 = \frac{P_1 \times R \times T}{100}$$

$$= \frac{20,000 \times 12 \times 3}{100}$$

$$= 2400$$

$$A_1 = P_1 + I_1$$

$$= 20000 + 2400$$

$$= ₹\ 22,400$$

for 2nd yeare: $P_2 = 22400$

$$I_2 = \frac{22400 \times 12 \times 1}{100}$$

$$= ₹\ 2,688$$

$$A_2 = P_2 + I_2$$

$$= 22400 + 2688$$

$$= 25088$$

for 3rd year: $P_3 = ₹\ 25088$

$$I_3 = \frac{25088 \times 12 \times 1}{100}$$

$$= ₹\ 3010.56$$

$A_3 = P_3 + I_3$

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$= 25088 + 3010.56$

$= 28,098.56$

(i) Amt = ₹ 28098.56

(ii) Total Interest means C.I

$\therefore CI = A_3 - P$

$= 28098.56 - 20,000$

$= ₹ 8098.56$

(5) $P = 35,000$ $R = 5\%$ $T = 3$ yrs

For Ist year $P_1 = 35000$

$I_1 = \frac{35000 \times 5 \times 1}{100}$

$I_1 = 1750$

Interest of 2nd year = ₹ 1750

$A_1 = P_1 + I_1$

$= 35000 + 1750$

$= 36,750$

for 2nd year $P_2 = ₹ 36750$

$I_2 = \frac{36750 \times 5 \times 1}{100}$

$= ₹ 1837.5$

(ii) $\therefore$ Interest for 2nd year = ₹ 1837.5

$A_2 = P_2 + I_2$

$A_2 = 36750 + 1837.5$

$= ₹ 38587.5$

(iii) Amt at the end of 3rd year = ₹ 38587.5

for 3rd year:

$P_3 = ₹ 38587.5$

$I_3 = \frac{38587.5 \times 5 \times 1}{100}$

$= 1929.375$

$I_3 = 1929.38$

The interest for the 3rd year = ₹ 1929.38

(6) $P = ₹15,000$, $R = 8\%$, $T = 3$ yrs

for Ist year:

$P_1 = 15000$

$I_1 = \frac{15000 \times 8 \times 1}{100}$

$I_1 = 1200$

$A_1 = P_1 + I_1$

$= 15000 + 1200$

$= ₹ 16200$

for 2nd year:

$P_2 = 16200$

$I_2 = \frac{16200 \times 8 \times 1}{100}$

$= ₹ 1296$

$A_2 = P_2 + I_2$

$= 16200 + 1296$

$= 17496$

(i) C.I for 2nd year $= A_2 - P$

$= 17496 - 15000$

$= 2496$

for 3rd year:

$P_3 = 17496$

$I_3 = \frac{17496 \times 8 \times 1}{100}$

$= 1399.68$

$A_3 = P_3 + I_3$

$= 17496 + 1399.68$

$= ₹ 18895.68$

(ii) ∴ the sum due at the end of 3rd year $= ₹ 18895.68$

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Ex - 10.2

(7) P = ₹ 30,000 R = 15% T = 3 yrs

For Ist year :

$P_1 = 30,000$

$I_1 = \frac{30000 \times 15 \times 1}{100}$

$= ₹ 4500$

$A_1 = P_1 + I_1$

$= 30000 + 4500$

$= 34500$

For 2nd year :

$P_2 = 34500$

$I_2 = \frac{34500 \times 15 \times 1}{100}$

$= 5175$

$A_2 = P_2 + I_2$

$= 34500 + 5175$

$= 39675$

∴ Interest during 2nd year $= A_2 - P$

$= 39675 - 30000$

$= ₹ 9675$

(8) P = ₹ 6000

Rate of interest = R%

Time = 2 yrs

For Ist year : $P_1 = 6000$

$I_1 = \frac{6000 \times R \times 1}{100}$

$I_1 = 60R$ — (i)

∴ $A_1 = P_1 + I_1$

but A_1 i.e the sum amounts at the

end of one year = ₹ 6540

$\therefore A_1 = P_1 + I_1$

$6540 = 6000 + 60R$

$6540 - 6000 = 60R$

$60R = 540$

$R = \frac{540}{60}$

$R = 9\%$ p.a

now by (1) $I_1 = 60 \times 9$

$I_1 = 546$

$\therefore A_1 = P_1 + I_1$

$= 6000 + 540$

$= 6540$

for 2nd year:

$P_2 = 6540$

$I_2 = \frac{6540 \times 9 \times 1}{1050} = 588.6$

$A_2 = P_2 + I_2$

$= 6540 + 588.6$

$= 7128.6$

(ii) $\therefore$ amt at the end of 2nd year = ₹ 7128.6

(9) $P = ₹ 4000$

Rate of interest for successive yrs are 5% & 7%

$T = 2$ yrs

[means for 2 yrs; for Ist year, we use $R = 5\%$, for 2 year, we use $R = 7\%$

for Ist year; $P_1 = 4000$

$R = 5\%$

$\therefore I_1 = \frac{P_1 \times R \times T}{100}$

$= \frac{4000 \times 5 \times 1}{100}$

$I_1 = 200$

$A_1 = P_1 + I_1$

$= 4000 + 200$

$= ₹ 4200$

for 2nd year : $P_2 = 4200$

$R = 7\%$

$I_2 = \frac{4200 \times 7 \times 1}{100}$

$= 294$

$A_2 = P_2 + I_2$

$= 4200 + 294$

$= 4494$

$A_2 = 4494$

$\therefore C.I = A_2 - P$

$= 4494 - 4000$

$= ₹ 494$

Q10 Same as Q9 do by yourself

(11) $P = ₹ 8500$ $R = 6\%$ $T = 2$ yrs

firstly, $S.I = \frac{P \times R \times T}{100}$

$= \frac{8500 \times 6 \times 2}{100}$

$= ₹ 1020$

Now Ist year : $P_1 = 8500$

$I_1 = \frac{P_1 \times R \times T}{100} \Rightarrow \frac{8500 \times 6 \times 1}{100}$

$I_1 = 510$

$A_1 = P_1 + I_1$

$= 8500 + 510$

$= 9010$

for 2nd year $= P_2 = 9010$

$I_2 = \frac{9010 \times 6 \times 1}{100}$

$= 540.6$

$A_2 = P_2 + I_2$

$= 9010 + 540.6$

$= 9550.6$

$C.I = A_2 - P$

$= 9550.6 - 8500$

$= ₹\ 1050.6$

Difference between C.I and S.I

$= 1050.6 - 1020$

$= ₹\ 30.6$

(12) $P = ₹\ 10,000$, $R = 6\%$, $T = 2yrs$

$S.I = \frac{P \times R \times T}{100}$

$= \frac{10000 \times 6 \times 2}{100}$

$S.I_1 = ₹\ 1200$

for Ist year $P_1 = 10000$

$I_1 = \frac{10000 \times 6 \times 1}{100}$

$I_1 = 600$

$A_1 = P_1 + I_1 \Rightarrow 10000 + 600$

$= 10600$

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for 2nd year $P_2 = 10600$

$$I_2 = \frac{10600 \times 6 \times 1}{100}$$

$$I_2 = 636$$

$$A_2 = P_2 + I_2$$

$$= 10600 + 636$$

$$C.I = 11236$$

Now the excess amt that he paid is the difference b/w C.I and S.I

$\therefore$ Diff b/w C.I & S.I $= 1236 - 1200$

$= ₹ 36$

(13) Let Principal $= x$

$R = 5\%$

$T = 2$ yrs

$$S.I = \frac{P \times R \times T}{100} = \frac{x \times 5 \times x}{100}$$

$$S.I = \frac{x}{10} \quad \text{---(1)}$$

Now $C.I = A - P$

$\left[\because A = P\left(1 + \frac{R}{100}\right)^T\right]$

$$\therefore C.I = P\left(1 + \frac{R}{100}\right)^T - P$$

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

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

$$= x\left[\left(1 + \frac{1}{20}\right)^2 - 1\right]$$

$$= x\left[\left(\frac{20+1}{20}\right)^2 - 1\right] = x\left[\left(\frac{21}{20}\right)^2 - 1\right]$$

$= x\left[\frac{21\times21}{20\times20} - 1\right]$

$= x\left[\frac{441}{400} - 1\right]$

$= x\left[\frac{441-400}{400}\right] \Rightarrow x\left(\frac{41}{400}\right)$

$C.I = \frac{41}{400}x$ ——— (2)

As difference b/w CI and S.I = ₹ 2.50

i.e $C.I - S.I = 2.50$

Put values of C.I, S.I from (1) & (2)

$\frac{41}{400}x - \frac{x}{10} = 2.50$

$\frac{1}{10}\left(\frac{41}{40}x - x\right) = 2.50$

$\frac{41x}{40} - x = 2.50 \times 10$

$\frac{41x - 40x}{40} = 25$

$\frac{x}{40} = 25$

$x = 25 \times 40$

$x = 1000$

∴ Principal = ₹ 1000

(14) $P = ₹\,1500$, $R = 12\% = \frac{12}{4} = 3\%$

$T = 9$ months $= \frac{9}{12} = \frac{3}{4}$ yrs

$\frac{3}{4} \times 4 = 3$ yrs

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

$= 1500\left(1+\frac{3}{100}\right)^3$

$= 1500\left(\frac{100+3}{100}\right)^3$

$= 1500\left(\frac{103}{100}\right)^3$

$= 1500 \times \frac{103}{100} \times \frac{103}{100} \times \frac{103}{100}$

$= \frac{16390905}{10000} = 1639.0905$

$= 1639.09$

$C.I = A - P$

$= 1639.09 - 1500$

$= 139.09$

$C.I = ₹\ 139$

(15) $P = ₹\ 12,000$ $R = 5\%$ $T = 4$ years

for Ist year, $A = P\left(1+\frac{R}{100}\right)^T$

$= 12000\left(1+\frac{5}{100}\right)^1$

$= 12000\left(1+\frac{1}{20}\right)^1$

$= 12000\left(\frac{20+1}{20}\right) \Rightarrow \frac{12000 \times 21}{20}$

$= 600 \times 21 = 12600$

C.I for Ist year $= A - P$

$= 12600 - 12000$

$= ₹\ 600$

for 2nd year $P_2 = 12600$

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

$$= 12600\left(1 + \frac{5}{100}\right)^1$$

$$= 12600\left(1 + \frac{1}{20}\right)$$

$$= 12600\left(\frac{20+1}{20}\right) \Rightarrow 12600 \times \frac{21}{20}$$

$$= 630 \times 21 = 13230$$

C.I for 2nd year $= A - P_2$

$= 13230 - 12600$

$= ₹\ 630$

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Ex-12.1

(1) (i) $(x+6)(x-6) = x^2 - 6^2$
$= x^2 - 36$ $[(a+b)(a-b) = a^2 - b^2]$

(ii) $(3x+5)(3x-5) = (3x)^2 - (5)^2$
$= 9x^2 - 25$ $[(a+b)(a-b) = a^2 - b^2]$

2 (i) do yourself

(ii) $\left(7 - \frac{2}{3}x\right)\left(7 + \frac{2}{3}x\right) = (7)^2 - \left(\frac{2}{3}x\right)^2$
$= 49 - \frac{4}{9}x^2$

3 (i) $\left(\frac{2}{3}a + \frac{4}{5}b\right)\left(\frac{2}{3}a - \frac{4}{5}b\right) = \left(\frac{2}{3}a\right)^2 - \left(\frac{4}{5}b\right)^2$
$= \frac{4}{9}a^2 - \frac{16}{25}b^2$

(ii) Do yourself

(4) (i) $(xy+3)(xy-3) = (xy)^2 - (3)^2 = x^2y^2 - 9$

(ii) Do yourself

(5) (i) $(0.4a - 0.3b)(0.4a + 0.3b) = (0.4a)^2 - (0.3b)^2$
$= 0.16a^2 - 0.09b^2$

(ii) Do yourself

(6) (i) $(xy^2 + x^2y)(xy^2 - x^2y) = (xy^2)^2 - (x^2y)^2$
$= x^2y^4 - x^4y^2$

(ii) Do yourself

(7) (i) $(x+5)(x-5)(x^2 + 25) = (x^2 - 5^2)(x^2 + 25)$
$= (x^2 - 25)(x^2 + 25)$
$= (x^2)^2 - (25)^2$
$= x^4 - 625$

(ii) H.W

8 (i) same as (7)

(ii) $(a^2b^2 + x^2y^2)(a^2b^2 - x^2y^2)(a^4b^4 + x^4y^4)$

$[(a^2b^2)^2 - (x^2y^2)^2](a^4b^4 + x^4y^4)$

$(a^4b^4 - x^4y^4)(a^4b^4 + x^4y^4)$

$(a^4b^4)^2 - (x^4y^4)^2$

$a^8b^8 - x^8y^8$

(9) (i) $207 \times 193 = (200+7)\times(200-7)$

$= (200)^2 - (7)^2$

$= 40000 - 49$

$= 39951$

(ii) same as (i) $703 \times 697 = (700+3)(700-3)$

(10) (i) $11.5 \times 10.5 = (11+0.5)(11-0.5)$

$= (11)^2 - (0.5)^2$

$= 121 - 0.25$

$= 120.75$

(ii) Do yourself

$1.07 \times 0.93 = (1+0.07)(1-0.07)$

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EX - 12.2

Identities used : $(a+b)^2 = a^2 + b^2 + 2ab$ I

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

I (1) i) $(\underset{a}{4x} + \underset{b}{7y})^2$

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

$= (4x)^2 + (7y)^2 + 2(4x)(7y)$

$= 16x^2 + 49y^2 + 56xy$

(ii) $\left(\frac{2}{3}x + \frac{3}{4}y\right)^2 = \left(\frac{2}{3}x\right)^2 + \left(\frac{3}{4}y\right)^2 + 2\left(\frac{2}{3}x\right)\left(\frac{3}{4}y\right)$

$= \frac{4}{9}x^2 + \frac{9}{16}y^2 + xy$

I (2) (i) $(\sqrt{2}x + 3y)^2 = (\sqrt{2}x)^2 + (3y)^2 + 2(\sqrt{2}x)(3y)$

$= 2x^2 + 9y^2 + 6\sqrt{2}xy$

(ii) Do yourself

I (3) (i) $\left(2x + \frac{1}{3x}\right)^2 = (2x)^2 + \left(\frac{1}{3x}\right)^2 + 2(2x)\left(\frac{1}{3x}\right)$

$= 4x^2 + \frac{1}{9x^2} + \frac{4}{3}$

(ii) Do yourself

(4) (i) $(203)^2 = (200+3)^2$

$= (200)^2 + (3)^2 + 2(200)(3)$

$= 40000 + 9 + 1200$

$= 41209$

(ii) $(14.3)^2 = (14 + 0.3)^2$

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II (5) (i) $(3x-7y)^2$ [use identity $= (a-b)^2 = a^2+b^2-2ab$]

$= (3x)^2 + (7y)^2 - 2(3x)(7y)$

$= 9x^2 + 49y^2 - 42xy$

(ii) do yourself

II (6) (i) $(\sqrt{3}x - \sqrt{5}y)^2 = (\sqrt{3}x)^2 + (\sqrt{5}y)^2 - 2(\sqrt{3}x)(\sqrt{5}y)$

$= 3x^2 + 5y^2 - 2\sqrt{15}xy$

(ii) $\left(\frac{1}{\sqrt{3}}x - \frac{1}{\sqrt{5}}y\right)^2 = \left(\frac{1}{\sqrt{3}}x\right)^2 + \left(\frac{1}{\sqrt{5}}y\right)^2 - 2\left(\frac{1}{\sqrt{3}}x\right)\left(\frac{1}{\sqrt{5}}y\right)$

$= \frac{x^2}{3} + \frac{y^2}{5} - \frac{2xy}{\sqrt{15}} \times \frac{\sqrt{15}}{\sqrt{15}}$

$= \frac{x^2}{3} + \frac{y^2}{5} - \frac{2\sqrt{15}xy}{15}$

(7) (i) $\left(3x - \frac{1}{3x}\right)^2 = (3x)^2 + \left(\frac{1}{3x}\right)^2 - 2(3x)\left(\frac{1}{3x}\right)$

$= 9x^2 + \frac{1}{9x^2} - 2$

(ii) do yourself

(8) (i) $(197)^2 = (200-3)^2$ solve it

(ii) $(13.96)^2 = (14-0.04)^2$ solve it

(15) (i) $4x^2 + 12xy + 9y^2 = 4x^2 + 9y^2 + 12xy$

$= (2x)^2 + (3y)^2 + 2(2x)(3y)$

$= (2x+3y)^2$

(ii) $16x^2 + 36y^2 + 48xy = (4x)^2 + (6y)^2 + 2(4x)(6y)$

$= (4x+6y)^2$

(iii) $9x^2 - 54xy + 81y^2$

$= 9x^2 + 81y^2 - 54xy$

$= (3x)^2 + (9y)^2 - 2(3x)(9y)$

$= (3x - 9y)^2$

(iv) do yourself

Ex- 18.3

(1) i) $a+b=4$, $ab=3$, $a^2+b^2=?$

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

$(4)^2 = a^2 + b^2 + 2(3)$

$16 = a^2 + b^2 + 6$

$a^2 + b^2 = 16 - 6 \Rightarrow a^2 + b^2 = 10$

ii) $a^2 + b^2 = 25$, $ab = 12$, $a+b=?$

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

$(a+b)^2 = 25 + 2(12)$

$= 25 + 24$

$= 49$

$(a+b) = \pm\sqrt{49}$

$a+b = \pm 7$

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

$(a-b)^2 = 25 - 2(12)$

$(a-b)^2 = 25 - 24$

$(a-b)^2 = 1$

$a-b = \pm\sqrt{1} = \pm 1$

(3) (i) $x + \frac{1}{x} = 7$, $x^2 + \frac{1}{x^2} = ?$

$\left(x + \frac{1}{x}\right)^2 = (7)^2$ (sq both sides)

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$$x^2 + \frac{1}{x^2} + 2(x)\left(\frac{1}{x}\right) = 49$$

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

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

$$x^2 + \frac{1}{x^2} = 47$$

(3) (i) $x^2 + \frac{1}{x^2} = 83$, $x - \frac{1}{x} = ?$

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

$$= 83 - 2$$

$$= 81$$

$$x - \frac{1}{x} = \pm\sqrt{81}$$

$$x - \frac{1}{x} = \pm 9 \text{ Ans}$$

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EX - 16.1

(1) Three angles of quadrilateral are 62°, 118° & 70°

Let fourth angle be x

by Angle sum property of quad, the sum of angles of quad. is 360°

$\therefore 62^\circ + 118^\circ + 70^\circ + x^\circ = 360^\circ$

$250 + x = 360$

$x = 360 - 250$

$x = 110^\circ$

$\therefore 4^{th}$ angle is 110°

(2) Let equal angles be x, x

by Angle sum property,

sum of all angles = 360°

$136 + x + x = 360^\circ$

$2x = 360^\circ - 136$

$2x = 224$

$x = \frac{224}{2}$

$\therefore$ Equal Angles are 112°, 112°

(3) a) Ratio of angles = 1 : 1 : 1 : 3

Let the angles be x, x, x, 3x

Sum of angles = 360° (by angle sum pro. of quad)

$x + x + x + 3x = 360^\circ$

$6x = 360^\circ \Rightarrow x = \frac{360}{6}^{60^\circ}$

$x = 60^\circ$

$\therefore$ the angles are $60^\circ, 60^\circ, 60^\circ, 3 \times 60^\circ$

ie $60^\circ, 60^\circ, 60^\circ, 180^\circ$

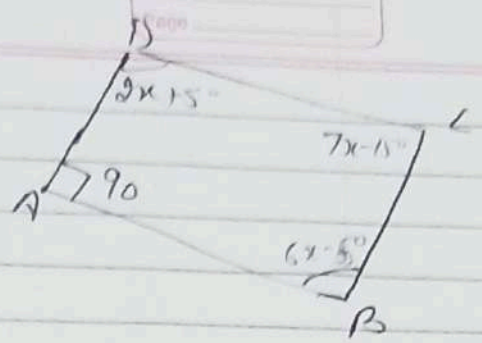
(b) No, as the 4th angle is 180° and a quad can't has any of its angle equal to 180°

(4) Ratio of three angles = 2 : 3 : 4
Let three angles be 2x, 3x, 4x
Now sum of Ist and 3rd angle = 180°
$\Rightarrow 2x + 4x = 180°$
$6x = 180° \Rightarrow x = \frac{180}{6}$
$x = 30°$
∴ Three angles are 2(30), 3(30), 4(30)
i.e 60°, 90°, 120°
Let y be 4th angle
By angle sum prop, sum of angles = 360°
$60° + 90° + 120° + y = 360°$
$270 + y = 360$
$y = 360° - 270°$
$y = 90°$
∴ all the angles of quad are 60°, 90°, 120°, 90°

(5) Ratio of angles = 2 : 3
Let the angles be = 2x, 3x
other two angles of quad are 70°, 40°
by angle sum prop.
$70 + 40 + 2x + 3x = 360°$
$110 + 5x = 360°$
$5x = 360 - 110$
$x = \frac{250}{5}$ 50 $\Rightarrow x = 50$
∴ angles are 2(50), 3(50)
100, 150°
∴ all the angles of quad are 70°, 40°, 100°, 150°

Arsh

(6) (i) by angle sum prop,
sum of angle = 360°



$\angle A + \angle B + \angle C + \angle D = 360°$

$90 + 6x - 5 + 7x - 15 + 2x + 5 = 360$

$90 - 15 + 6x + 7x + 2x = 360$

$75 + 15x = 360$

$15x = 360 - 75$

$15x = 285 \Rightarrow x = \frac{285}{15}$

$x = 19$

(ii) $\angle B = 6x - 5 \Rightarrow 6(19) - 5 = 114 - 5 = 109°$

$\angle C = 7x - 15 \Rightarrow 7(19) - 15 = 133 - 15 = 118°$

(7) Given angles of quad. are $(4x)°$, $(12x + 15)°$, $(5x - 30)°$ & $(x + 3)°$

(a) by angle sum prop, sum of all angles = 360°

$4x + (2x + 15) + (5x - 30) + (x + 3) = 360°$

$4x + 2x + 5x + x + 15 + 3 - 30 = 360°$

$12x - 12 = 360°$

$12x = 360 + 12$

$x = \frac{372}{12} \Rightarrow 31$

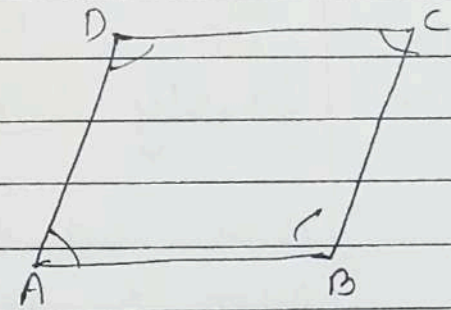
(b) angles are: $4x = 4 \times 31 = 124°$

$2x + 5 = 2(31) + 15 = 62 + 15 = 77°$

$5x - 30 = 5(31) - 30 = 155 - 30 = 125°$

$x + 3 = 31 + 3 = 34°$

(8) In quad. ABCD, AD ∥ BC



$\angle A : \angle B = 2 : 3$

$\frac{\angle A}{\angle B} = \frac{2}{3}$

Let $\angle A = 2x$, $\angle B = 3x$

As $\angle A$ and $\angle B$ are adjacent angles of given quad

$\therefore \angle A + \angle B = 180^\circ$ (Sum of adjacent angles is 180°)

$2x + 3x = 180^\circ$

$5x = 180$

$x = \frac{180}{5}$ 36°

$x = 36$

$\Rightarrow \angle A = 2(36) = 72^\circ$, $\angle B = 3(36) = 108^\circ$

Similarly, $\angle C : \angle D = 4 : 5$

Let $\angle C = 4y$, $\angle D = 5y$

$\angle C$ & $\angle D$ are adjacent angles

$\therefore \angle C + \angle D = 180^\circ$

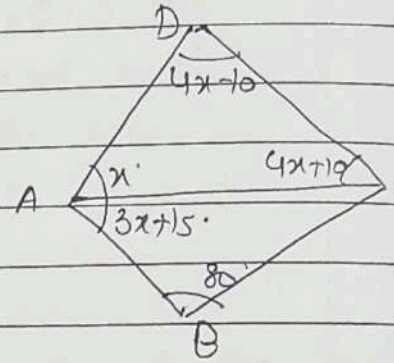
$4y + 5y = 180^\circ$

$9y = 180^\circ$

$y = \frac{180}{9}$ 20 $\Rightarrow y = 20$

$\angle C = 4(20) = 80^\circ$, $\angle D = 5(20) = 100$

(9)(i) In $\triangle ADC$, by angle sum prop, sum of angles of a $\triangle$ is 180°



$\Rightarrow x + (4x-10) + (4x+10) = 180^\circ$

$x + 4x + 4x - 10 + 10 = 180^\circ$

$9x = 180^\circ$

$x = \frac{180}{9} \Rightarrow x = 20^\circ$

(iii) $\angle ADC = 4x - 10 = 4(20) - 10 = 80 - 10 = 70^\circ$

(ii) firstly $\angle BAC = 3x + 15$

$= 3(20) + 15 = 60 + 15 = 75^\circ$

Now in $\triangle ABC$, by angle sum property, sum of all angles of triangle is 180°

Arsh

$\therefore \angle BAC + \angle B + \angle ACB = 180^\circ$

$75 + 80 + \angle ACB = 180$

$\angle ACB = 180 - 155$

$= 25^\circ$

(10) $\angle A = 66^\circ$, $\angle B = (\angle C + 16)^\circ$, $\angle C = 6(x+4)^\circ$

$\angle D = (\angle A - 16)^\circ$

by angle sum prop, sum of angles of quad. is 360°

$\angle A + \angle B + \angle C + \angle D = 360^\circ$

$66 + \angle C + 16 + 6(x+4) + \angle A - 16 = 360^\circ$

$66 + 6(x+4) + 16 + 6(x+4) + 66 - 16 = 360^\circ$

$66 + 6x + 24 + 16 + 6x + 24 + 66 - 16 = 360^\circ$

$12x + 180 = 360^\circ$

$12x = 360 - 180^\circ$

$12x = 180 \Rightarrow x = \frac{180}{12} 15$

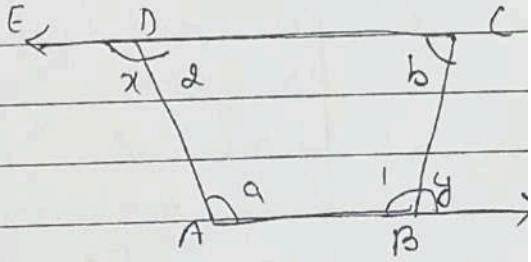
$x = 15$

$\angle C = 6(x+4) = 6(15+4) = 6(19) = 114$

$\angle B = \angle C + 16 = 114 + 16 = 130^\circ$

$\angle D = \angle A - 16 = 66 - 16 = 50^\circ$

(11)



As

$\angle 1 + y = 180^\circ$ (Linear pair)

$\angle 1 = 180 - y$

Also, $\angle 2 + x = 180^\circ$ (L.P)

$\angle 2 = 180 - x$

Now In quad ABCD, by angle sum prop.

$\angle A + \angle ABC + \angle C + \angle CDA = 360^\circ$

$a + \angle 1 + b + \angle 2 = 360^\circ$

$a + 180 - y + b + 180 - x = 360^\circ$

$a + b - x - y + 360 = 360$

$a + b - x - y = 360 - 360$

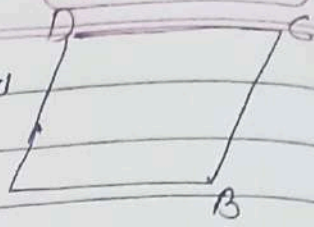
$a + b - x - y = 0$

$a + b = x + y$ hence proved

(12) H.W

Ex - 16.2

1 $\angle A = \angle B$ — (1) [given as adjacent angles are equal in ||gm



Also $\angle A = \angle C$ { opp angles $\angle B = \angle D$ are equal — (2)

by angle sum prop, sum of angles of quad is 360°

$\therefore \angle A + \angle B + \angle C + \angle D = 360°$

$\angle A + \angle A + \angle A + \angle A = 360°$

$4\angle A = 360°$

$\angle A = \frac{360}{4}\ 90°$

$\angle A = 90°$

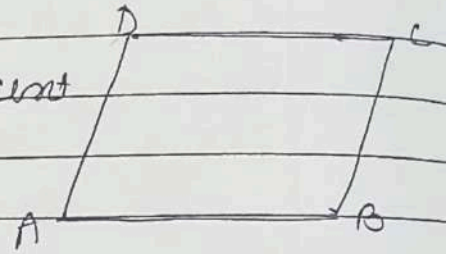
As $\angle A = \angle B \Rightarrow \angle B = 90°$

$\angle A = \angle C \Rightarrow \angle C = 90°$

$\therefore$ Each angle of parallelogram is 90°

$\therefore$ ABCD is a rectangle

(2) Consider $\angle A$ and $\angle B$ as adjacent angle



Now $\angle A : \angle B = 5 : 4$

Let $\angle A = 5x$, $\angle B = 4x$

$\angle A = \angle C$ { opp angles of ||gm are equal }

$\angle B = \angle D$

$\therefore \angle C = 5x$ and $\angle D = 4x$

Now by angle sum prop, sum of angles of ||gm is 360°

$\therefore \angle A + \angle B + \angle C + \angle D = 360°$

$5x + 4x + 5x + 4x = 360°$

$18x = 360°$

$x = \frac{360}{18}\ 20 \Rightarrow x = 20$

$\angle A = 5x = 5 \times 20 = 100^\circ$

$\angle B = 4x = 4 \times 20 = 80^\circ$

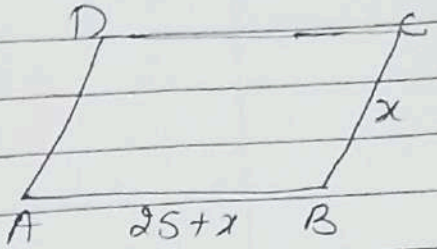
$\angle A = \angle C \Rightarrow \angle C = 100^\circ$

$\angle B = \angle D \Rightarrow \angle D = 80^\circ$

(3) Consider the adjacent sides as AB and BC

Let $BC = x$

$AB = 25 + x$



now in ||gm, opp sides are equal

$\therefore AB = DC$ & $BC = AD$

Now perimeter = 170

(peri means sum of all sides)

$\therefore AB + BC + CD + DA = 170^\circ$

$25+x + x + 25+x + x = 170$

$50 + 4x = 170$

$4x = 170 - 50$

$4x = 120$

$x = \frac{120}{4} \; 30 \Rightarrow x = 30$

$\therefore BC = 30cm$

$AB = 25 + x \Rightarrow 25 + 30 = 55cm$

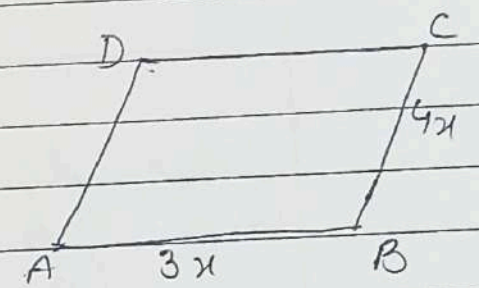
$AB = DC \Rightarrow DC = 55cm$

$BC = AD \Rightarrow AD = 30cm$

(4) $AB : BC = 3 : 4$

Let $AB = 3x$, $BC = 4x$

As in ||gm the opposite sides are equal



$\therefore AB = DC \Rightarrow DC = 3x$

and $BC = AD \Rightarrow AD = 4x$

now perimeter = 84cm

$\Rightarrow AB + BC + DC + AD = 84$

$3x + 4x + 3x + 4x = 84$

$14x = 84$

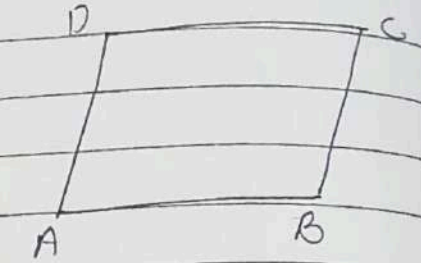
$x = \frac{84}{14}\ 6 \Rightarrow x = 6$

$AB = 3x \Rightarrow 3 \times 6 = 18\text{cm}$

$BC = 4x \Rightarrow 4 \times 6 = 24\text{cm}$

As $AB = DC \Rightarrow DC = 18\text{cm}$

also $BC = AD \Rightarrow AD = 24\text{cm}$



(5) Given $AB = 3x + 2$

$DC = 5x - 8$

And $\angle A = 2\angle B$

(i) As opp angles of ||gm are equal

$\therefore \angle A = \angle C$ and $\angle B = \angle D$

Now by angle sum prop

$\angle A + \angle B + \angle C + \angle D = 360^\circ$

$2\angle B + \angle B + \angle A + \angle B = 360^\circ$

$2\angle B + \angle B + 2\angle B + \angle B = 360^\circ$

$6\angle B = 360^\circ$

$\angle B = \frac{360}{6}\ 60^\circ$

$\angle B = 60^\circ$

$\angle A = 2\angle B \Rightarrow 2 \times 60^\circ = 120^\circ$

Now $\angle A = \angle C \Rightarrow \angle C = 120^\circ$

$\angle B = \angle D \Rightarrow \angle D = 60$

(ii) Given $AB = 3x + 2$, $DC = 5x - 8$

As opp sides of ||gm are equal

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$AB = DC$

$3x + 2 = 5x - 8$

$2 + 8 = 5x - 3x$

$10 = 2x$

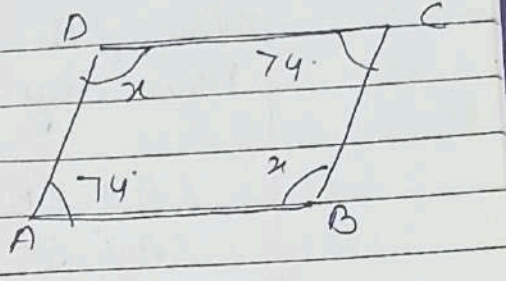
$2x = 10$

$x = \frac{10}{2} 5 \Rightarrow x = 5$

$AB = 3(5) + 2 = 15 + 2 = 17$

(6) $\angle A = \angle C$ (as opp angles of llgm are equal)

$\therefore \angle C = 74°$



Let angle $\angle B = x$

$\therefore \angle D = x$

As $\angle B = \angle D$ (Opp angles of llgm are equal)

Now by angle sum prop,

$\angle A + \angle B + \angle C + \angle D = 360$

$74 + x + 74 + x = 360$

$148 + 2x = 360$

$2x = 360 - 148$

$2x = 212$

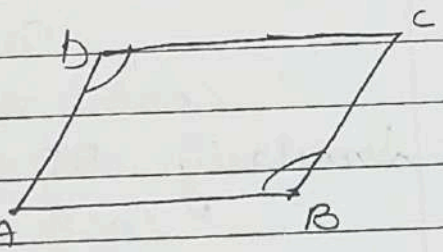
$x = \frac{212}{2} \Rightarrow x = 106$

$\therefore \angle B = 106$, $\angle D = 106$

(7) $\angle B = 2x + 25$

$\angle D = 4x - 5$

(i) $\angle B = \angle D$ (as opp angles of llgm are equal)



$2x + 25 = 4x - 5$

$25 + 5 = 4x - 2x$

$30 = 2x$

$x = \frac{30}{2}$ 15

$x = 15$

(7)(ii) $\angle B = 2x + 25 = 2(15) + 25 = 30 + 25$

$\angle B = 55°$

$\angle D = 4x - 5 = 4 \times 15 - 5 = 60 - 5$

$\angle D = 55°$

Also $\angle A = \angle C$ (opp angles of ||gm are equal)

Now by angle sum prop.

$\angle A + \angle B + \angle C + \angle D = 360°$

$\angle A + 55° + \angle A + 55 = 360°$

$2\angle A + 110 = 360°$

$2\angle A = 360 - 110$

$2\angle A = 250$

$\angle A = \frac{250}{2}$ 125

$\angle A = 125$

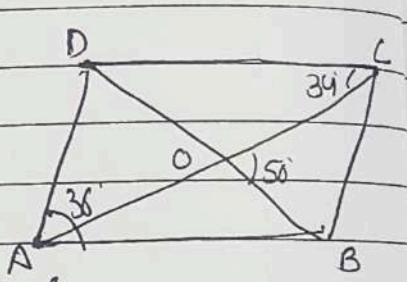
As $\angle A = \angle C \Rightarrow \angle C = 125°$

(8)(i) As AB || DC and AC is transversal line

$\therefore \angle AOB = \angle ACD$

(alt. angles are equal)

$\therefore \angle AOB = 34°$



(ii) Similarly AD || BC and AC is transversal

$\therefore \angle OCB = \angle CAD$ (alt angles)

$\therefore \angle OCB = 36°$

(iii) find $\angle ADC$

In $\triangle ADC$, by angle sum prop, sum of all angles of $\triangle$ is 180°

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$\therefore \angle CAD + \angle ADC + \angle ACD = 180^\circ$

$36^\circ + \angle ADC + 34^\circ = 180^\circ$

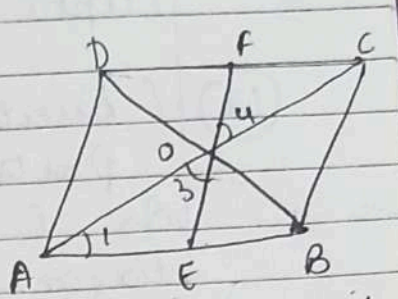
$70^\circ + \angle ADC = 180^\circ$

$\angle ADC = 180^\circ - 70^\circ$

$= 110^\circ$

(9) As diagonals of ||gm bisect each other

$\therefore AO = OC \quad -(1)$



Now In $\triangle AOE$ & $\triangle COF$

$\angle 1 = \angle 2$ (alt angles, AB||CD and AC is transversal)

$\angle 3 = \angle 4$ (Vertical opp angles)

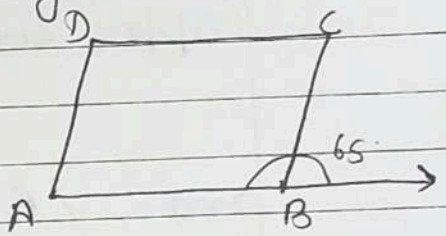
$OA = OC$ (by (1))

$\therefore$ by ASA congruence

$\therefore \triangle AOE \cong \triangle COF$

$\Rightarrow OE = OF$ (by C.P.C.T)

(9) Now $\angle CBA + \angle CBE = 180^\circ$ (linear pair of angles)



$\angle CBA + 65^\circ = 180^\circ$

$\angle CBA = 180^\circ - 65^\circ$

$\angle CBA = 115^\circ$ or $\angle B = 115^\circ$

Now $\angle A = \angle B$ (opp angles of ||gm are equal)

By Angle sum prop

$\angle A + \angle B + \angle C + \angle D = 360^\circ$

$\angle A + 115^\circ + \angle A + 115^\circ = 360^\circ$

$2\angle A + 230^\circ = 360^\circ$

$2\angle A = 360^\circ - 230^\circ$

$\angle A = \frac{130}{2}^\circ 65^\circ$

$\angle A = 65°$

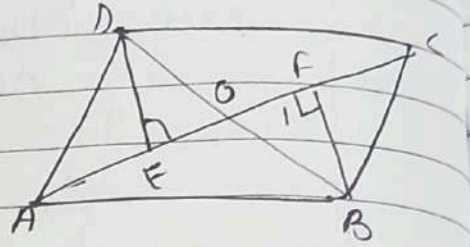
As $\angle A = \angle C \Rightarrow \angle C = 65°$

(11) To do $\square$ll gm theorem - 3 on Pg no - 194 (upto $OB = OD$) with diagram

(12) (bisector means dividing into 3 equal parts)

As E and F bisect the diagonal AC

$\therefore AE = EF = FC$



Draw diagonal BD that intersect AC at O

Now As $AE = CF$

add EF on both sides

$AE + EF = CF + EF$

$\therefore AF = CE \quad — (1)$

In $\triangle ABF$ and $\triangle CDE$

$AB = CD$

(opp sides of ||gm are equal)

$AF = CE$ (by (1))

and $\angle BAF = \angle DCE$

(alternate angles are equal as $AB \parallel CD$ and AC is transversal)

$\therefore$ by SAS property of congruence,

$\triangle ABF \cong \triangle CDE$

$\therefore \angle 1 = \angle 2$ (By C.P.C.T)

but as they are alternate interior angles

$\therefore DE \parallel BF$ (hence proved)

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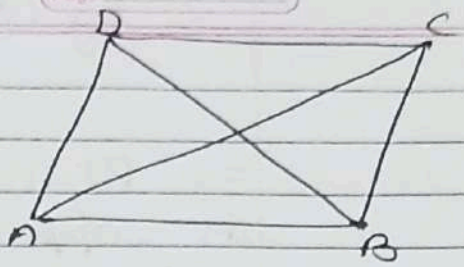
(13) Given: ABCD is a ||gm and diagonals are equal ie $AC = DB$ — (1)



To Prove: ABCD is a rectangle ie we will prove that any angle of ABCD is of 90°

Now in $\triangle ADB$ and $\triangle ABC$

$AD = BC$ (opp sides of ||gm are equal)

$AC = DB$ ($\because$ by (1))

$AB = AB$ (Common sides)

$\therefore$ by SSS property of congruence

$\triangle ADB \cong \triangle ABC$

$\therefore \angle DAB = \angle ABC$ (by C.P.C.T)

Or $\angle A = \angle B$

But $\angle A + \angle B = 180°$

(As adjacent angles of ||gm are supplementary)

$\therefore \angle A + \angle A = 180°$

$2\angle A = 180°$

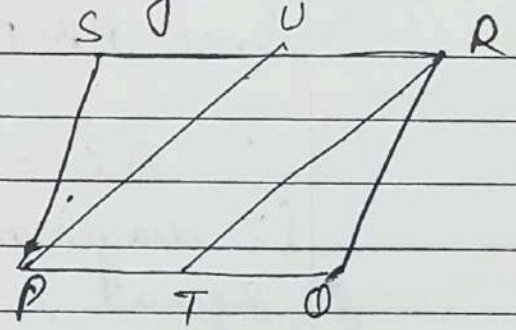
$\angle A = \frac{180}{2}$

$\angle A = 90°$

ABCD is a rectangle

(14) Since PQRS is a ||gm

$\therefore PQ \parallel RS$ and $PQ = RS$ — (1)



And T, U are mid pts of PQ and SR

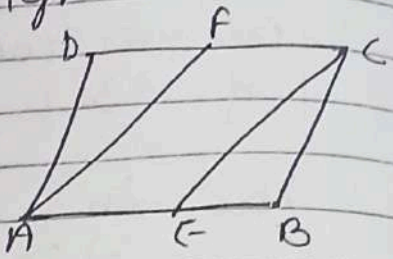
∴ by (i)

$\frac{1}{2}PQ \parallel \frac{1}{2}RS$ and $\frac{1}{2}PQ = \frac{1}{2}RS$

$\Rightarrow$ PT ∥ UR and PT = UR

As opp sides are parallel and equal

∴ PTRU is also a ∥gm



(15) (i) Since ABCD is a ∥gm

∴ AB = CD

$\Rightarrow \frac{1}{2}AB = \frac{1}{2}CD$

∴ AE = FC [∵ E, F are mid pts of AB, DC]

(ii) Since ABCD is a ∥gm

∴ AB ∥ CD

∴ $\frac{1}{2}AB \parallel \frac{1}{2}CD$

$\Rightarrow$ AE ∥ FC or AE is parallel to FC

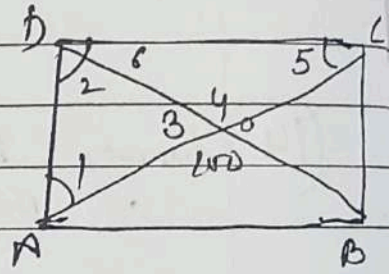
(iii) by (i) and (ii), we have

AE = FC and AE ∥ FC

As opp sides of AEFC are equal as well as parallel

∴ AECF is a ∥gm

(16) Since ABCD is a rectangle



∴ AC = BD

(∵ diagonals of rectangle are equal)

now AC = BD

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$\frac{1}{2}AC = \frac{1}{2}BD$

$\therefore OA = OD$

$\therefore \angle 1 = \angle 2$ —(1) [opp angles to equal sides are equal]

Now $\angle 3 + 100 = 180$ (angles on straight line)

$\angle 3 = 180 - 100$

$\angle 3 = 80$

Now in $\triangle AOD$, by angle sum prop, sum of all angles of $\triangle$ is 180

$\therefore \angle 1 + \angle 2 + \angle 3 = 180$

$\angle 1 + \angle 1 + 80 = 180$ $(\because \angle 1 = \angle 2)$

$2\angle 1 = 180 - 80$

$2\angle 1 = \frac{100}{2}$

$\angle 1 = 50$

$\therefore \angle 2 = 50$

(i) $\therefore \angle 2 = \angle ODA = 50$

(ii) $\angle 4 = 100$ (Vertical opp angles)

Since ABCD is a rectangle

$\therefore AC = BD$

$\frac{1}{2}AC = \frac{1}{2}BD$

$\therefore OC = OD$

$\angle 5 = \angle 6$ (opp angles to equal sides are equal)

Now In $\triangle COD$, by angle sum prop

$\angle 5 + \angle 6 + \angle 4 = 180$

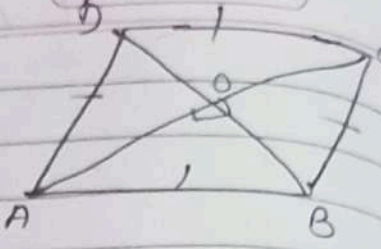
$\angle 5 + \angle 5 + 100 = 180$ $(\because \angle 5 = \angle 6)$

$2\angle 5 = 180 - 100$

$\angle 5 = \frac{80}{2}$ $\angle 5 = \angle 6 = 40$

$\angle 5 = 40$

(17)



In $\triangle AOB$, by pythagoras theorem

$h^2 = b^2 + p^2$

$(AB)^2 = AO^2 + BO^2$ — (1)

In $\triangle BOC$, by pythagorus thm

$(BC)^2 = (BO)^2 + (CO)^2$ — (2)

In $\triangle DOC$, by pythagorus thm

$(CD)^2 = (OC)^2 + (OD)^2$ — (3)

In $\triangle AOD$, by Pythagorus thm

$(AD)^2 = (OD)^2 + (OA)^2$ — (4)

by adding (1), (2), (3), (4)

$AB^2 + BC^2 + CD^2 + AD^2 = AO^2 + BO^2 + BO^2 + CO^2 + CO^2 + OD^2 + OD^2 + OA^2$

$AB^2 + BC^2 + CD^2 + AD^2 = 2AO^2 + 2BO^2 + 2CO^2 + 2OD^2$ — (5)

Since ABCD is rhombus

$\therefore$ diagonals bisect each other

$\therefore OA = OC$ and $BO = OD$

by (5)

$AB^2 + BC^2 + CD^2 + DA^2 = 2AO^2 + 2BO^2 + 2AO^2 + 2BO^2$

$AB^2 + BC^2 + CD^2 + DA^2 = 4AO^2 + 4OB^2$

$AB^2 + BC^2 + CD^2 + DA^2 = 4(OA^2 + OB^2)$

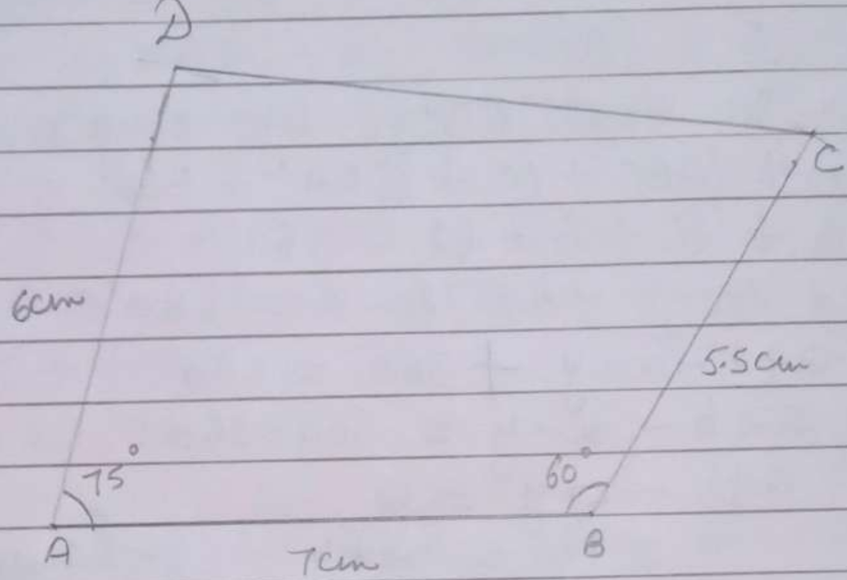
Hence proved

Chapter - 17

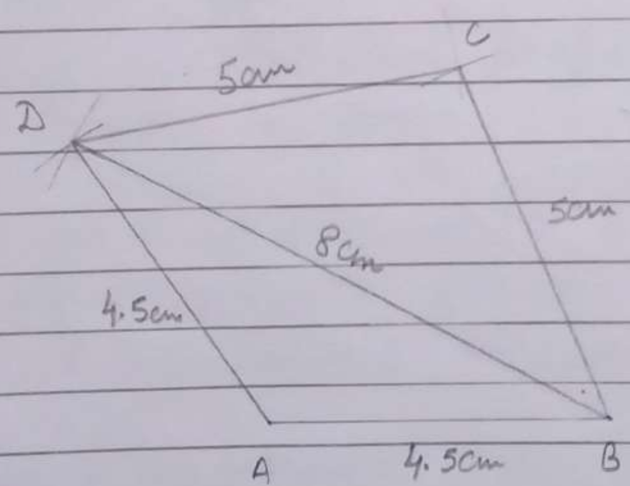
STD - 8th (Construction of Quadrilaterals)

Ex - 17

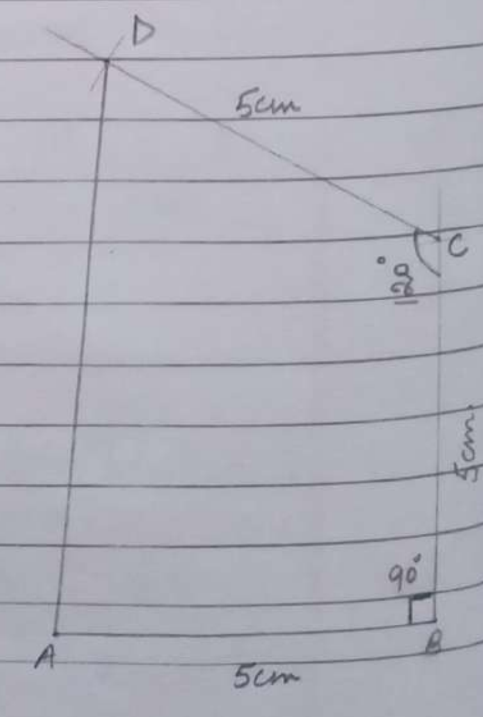
(3) (Construction - 2)



(4) (Construction - 4)

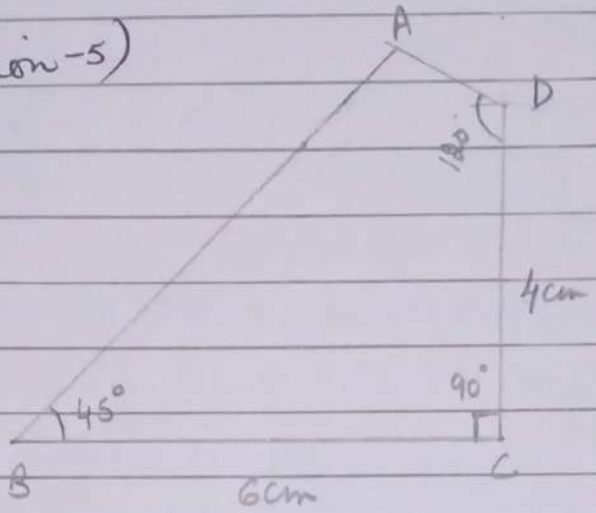


(5) (Construction - 2)



(6) Do yourself (same as (3)) (Construction-2)

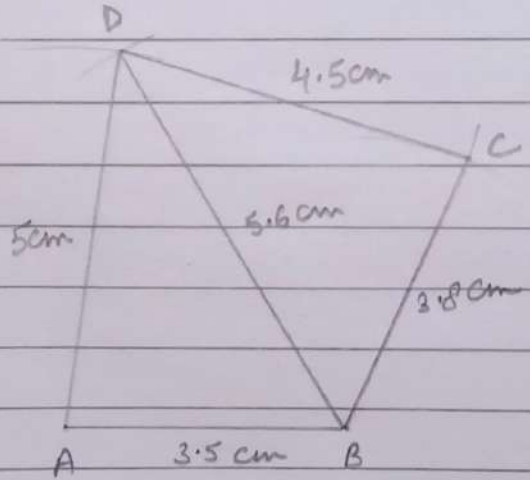
(7) (Construction-5)



(8) Do yourself (same as Construction-4 on Pg 208)

(9), (10) Do yourself (same as Q7)

(11)



(Construction-3)

(12) do yourself (same as Construction-4 on Pg-208) (same que as 8).

SPD-8th

Chapter - 22

Volume and Capacity

18 Aug 20.

(*) **Volume**: The space occupied / covered by any object is called its volume.

(*) **Capacity**: The maximum amount that something can contain.

Eg: If a water bottle contain 300ml water (not more than it) then 300 ml is the capacity of that bottle.

Ex - 22.

(1) Matching:

(i) - a , (ii) - f , (iii) - g , (iv) - e ,
(v) - b , (vi) - c , (vii) - d

(2) In (1) sum we matched the filled jars with the given containers according to capacity mentioned on them.

(2)

(i) 1 litre = 1000 ml

(ii) $\frac{1}{2}$ litre = 500 ml

(iii) $\frac{3}{4}$ litre = 750 ml

(iv) $\frac{1}{4}$ litre = 250 ml

As $1\,l = 1000$ ml

$\frac{1}{2}l = \frac{1000^{500}}{2}$ ml $= 500$ ml

$\frac{3}{4}l = \frac{3}{4} \times 1000^{250} = 750$ ml

$\frac{1}{4}l = \frac{1}{4} \times 1000^{250} = 250$ ml

Chapter finished.

Chapter-6 Ratio And Proportion

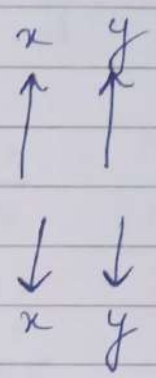
STD-8th Exercise - 6.2

~~11 May 2021~~

Direct Proportion (sign : $\propto$)

If value of x increase then value of y increase

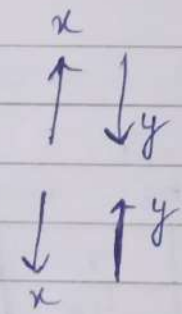
OR If value of x decrease then value of y decrease



Inverse Proportion

If value of x increase then value of y decrease.

OR If value of x decrease then value of y increase



Ex - 6.2

(1)(i) Take $\frac{x}{y}$ $\frac{15}{30_2} = \frac{1}{2}$, $\frac{18}{36_2} = \frac{1}{2}$

$\frac{4.5}{9} = \frac{45}{9\times10} = \frac{45}{90_2} = \frac{1}{2}$

$\frac{10.5}{21} = \frac{105}{210_2} = \frac{1}{2}$, $\frac{45}{90_2} = \frac{1}{2}$

As $\frac{15}{30} = \frac{18}{36} = \frac{4.5}{9} = \frac{10.5}{21} = \frac{45}{90} = \frac{1}{2}$

$\therefore$ Given set of variables x and y are in direct proportion.

(ii) $\frac{2}{28_{14}} = \frac{1}{14}$, $\frac{3.5}{16} = \frac{3.5}{16}$ (no cutting)

$\frac{4^2}{14_7} = \frac{2}{7}$, $\frac{0.2}{280} = \frac{2}{2800_{1400}} = \frac{1}{1400}$

As $\frac{x}{y} = \frac{2}{28} \neq \frac{3.5}{16} \neq \frac{4}{14} \neq \frac{0.2}{280}$

$\therefore$ x and y are inverse proportion.

(2) ~~As~~ ~~x ∝ y~~ Let

x	10	5	x_1	3	x_2	x_3
y_0	y_1	65	91	y_2	104	143

Now as $x \propto y$

$\therefore \frac{x}{y} = \frac{10}{y_1} = \frac{5}{65}$ (cross multiplication)

$10 \times 65 = 5 \times y_1$

$y_1 = \frac{2\cancel{10} \times 65}{\cancel{5}} = 130$

Also, $\frac{5}{65} = \frac{x_1}{91}$

$x_1 \times 65 = 5 \times 91$

$x_1 = \frac{\cancel{5} \times 91^{7}}{\cancel{65}_{13}} = 7$

Now $\frac{5}{65} = \frac{3}{y_2}$

$y_2 \times 5 = 3 \times 65$

$y_2 = \frac{3 \times 65^{13}}{5} = 39$

Now

$\frac{5}{65} = \frac{x_2}{104}$

$x_2 \times 65 = 5 \times 104$

$x_2 = \frac{8 \times 104^{8}}{\cancel{65}_{\cancel{13}}} = 8$

Now,

$\frac{5}{65} = \frac{x_3}{143}$

$x_3 \times 65 = 5 \times 143$

$x_3 = \frac{\cancel{5} \times 143^{11}}{\cancel{65}_{13}}$

$x_3 = 11$

$\therefore x_1 = 7, \quad x_2 = 8, \quad x_3 = 11$

$y_1 = 130, \quad y_2 = 39$ Ans.

(3) Do yourself (same as 2)

(4) Let consider the missing values

x	45	x_4	90	x_2	22.5	x_3
y	1	1.5	y_1	6	y_2	3

As $x \propto \frac{1}{y}$ ie. x is inversely proportion to y

ie. $45 \times 1 = x_4 \times 1.5$

$$x_1 = \frac{45}{1.5} = \frac{45 \times 10}{15} = 30$$

Now $45 \times 1 = 90 \times y_1 \Rightarrow 45 = 90 y_1$

$$y_1 = \frac{45}{90_2} = \frac{1}{2} = 0.5$$

Now $45 \times 1 = x_2 \times 6$

$$x_2 = \frac{45}{6_2}^{15} = \frac{15}{2} = 7.5$$

Also, $45 \times 1 = 22.5 \times y_2$

$$y_2 = \frac{45}{22.5} = \frac{45 \times 10}{225}^{2} = 2$$

Now, $45 \times 1 = x_3 \times 3$

$$x_3 = \frac{45}{3}^{15} = 15$$

$\therefore \quad x_1 = 30, \quad x_2 = 7.5, \quad x_3 = 15$

$y_1 = 0.5, \quad y_2 = 2$ Ans

Q. i) As 7.5 : 6 and x : 18 are in direct prop.

then $7.5 : 6 :: x : 18$

Now POM = POE

$6 \times x = 7.5 \times 18$

$$x = \frac{75 \times 18^{3}}{6 \times 10} = \frac{225}{10}$$

$x = 22.5$ Ans

ii) As $\frac{2}{3} : \frac{4}{15}$ & x : 2 are in direct prop.

$\therefore \quad \frac{2}{3} : \frac{4}{15} :: x : 2$

POM = POE

$$\frac{4}{15} \times x = \frac{2}{3} \times 2$$

$$\frac{4x}{15} = \frac{4}{3}$$

$$x = \frac{4}{3} \times \frac{15^{5}}{4}$$

$x = 5$ Ans

6. i) As 2.6 : x and 7.6 : 15.2 are in inverse prop.

then 2.6 : x = inverse of 7.6 : 15.2

2.6 : x :: 15.2 : 7.6

POM = POE

$x \times 15.2 = 2.6 \times 7.6$

$x = \frac{2.6 \times 7.6}{15.2}$

$x = \frac{26 \times 76 \times 10}{152 \times 10 \times 10} = \frac{13}{10}$

$x = 1.3$

ii) (write same wording as in (i))

$x : \frac{1}{8}$ = inverse of $\frac{4}{5} : 2$

$x : \frac{1}{8} :: 2 : \frac{4}{5}$

POM = POE

$\frac{1}{8} \times x = x \times \frac{4}{5}$

$\frac{1}{4} = \frac{4x}{5}$

$\frac{1}{4} \times \frac{5}{4} = x$

$x = \frac{5}{16}$ Ans

Exercise - 6.2

Q7. More diaries ⟶ More cost
∴ diaries and cost are directly prop. to each other.
So Let the cost of 26 diaries = x

∴ 18 : 26 :: 802.80 : x
POM = POE

$$26 \times 802.80 = 18 \times x$$

$$x = \frac{\overset{13}{\cancel{26}} \times \overset{89.2}{\cancel{802.80}}}{\underset{1}{\cancel{18}}}$$

$$x = 1159.6$$

∴ Cost of 26 diaries = ₹ 1159.6 Ans.

8. Let the interest be x
As interest and rate of interest are direct prop. to each other.

∴ 8100 : x :: 4.5 : 5.5
POM = POE

$$x \times 4.5 = 8100 \times 5.5$$

$$x = \frac{\overset{900}{\cancel{8100}} \times \overset{11}{\cancel{55}} \times 10}{\underset{1}{\cancel{45}} \times 10}$$

$$x = 9900$$

∴ interest = ₹ 9900 Ans

9. (Same as Eg. 8)

Sum of ratio = $5+8+9 = 22$

Total sum = ₹ 3410

$$1^{st} \text{ part} = \frac{5}{22} \times 3410^{155}$$

$$= 775$$

$$2nd \text{ part} = \frac{8}{22} \times 3410^{155}$$

$$= 1240$$

$$3rd \text{ part} = \frac{9}{22} \times 3410^{155}$$

$$= 1395 \quad \text{Ans.}$$

10 Given ratio $= 1\frac{1}{2} : 1\frac{2}{3} : 2\frac{1}{3} = \frac{3}{2} : \frac{5}{3} : \frac{7}{3}$

{ To make the ratio simple, take LCM of denominator and then multiple each ratio with that LCM.

Now LCM of 2, 3, 3 = 6

$\therefore$ ratio $= \frac{3}{2} \times 6^{3} : \frac{5}{3} \times 6^{2} : \frac{7}{3} \times 6^{2}$

ratio = 9 : 10 : 14

Sum of ratio = 33

Total Amount = 6600

1st part $= \frac{200}{6600} \cdot \frac{9}{33} \times 6600 = ₹ 1800$

2nd part $= \frac{10}{33} \times 6600^{200} = ₹ 2000$

3rd part $= \frac{14}{33} \times 6600^{200} = ₹ 2800$

Ans

11. Let $2A = 3B = 4C = x$

$\Rightarrow 2A = x, \quad 3B = x, \quad 4C = x$

$A = \frac{x}{2}, \quad B = \frac{x}{3}, \quad C = \frac{x}{4}$

$\therefore A:B:C = \frac{x}{2} : \frac{x}{3} : \frac{x}{4}$

$= \frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ [leave the common no. or variable

Now LCM of 2, 3, 4 = 12

$\therefore A:B:C = \frac{1}{x} \times 12^{6} : \frac{1}{3} \times 12^{4} : \frac{1}{4} : 12^{3}$

$A:B:C = 6:4:3$

Sum of ratio = 6+4+3 = 13

Total Amount = 4160

A's share = $\frac{6}{13} \times 4160^{320} =$

= 1920.

B's share
C's share — do yourself.

12. Given ratio = 2:3:5

Sum of ratio = 2+3+5 = 10

Let Total Sum = x

Now B = 4.20

$\therefore B = \frac{3}{10} \times x$

$4.20 = \frac{3}{10} \times x$

$4.20 \times \frac{10}{3} = x$

$\therefore x = \frac{42}{3} = 14 \Rightarrow x = 14$

$\therefore$ Total Sum = 14

$\therefore A = \frac{2}{10} \times 14 = \frac{28}{10} = 2.8$

$C = \frac{5}{10} \times 14^{7} = 7$ Ans:

13. given Ratio = 3 : 7 : 8

Sum of ratio = 3+7+8 = 18

Total Sum = 180 [$\because$ Sum of angles of a triangle is 180

$\therefore$ 1st angle $= \frac{3}{18} \times 180^{10} = 30^\circ$

2nd angle & 3rd angle → do yourself.

14. i) A : B = 2 : 3 , B : C = 4 : 5

$\frac{A}{B} = \frac{2}{3}$, $\frac{B}{C} = \frac{4}{5}$ [Make B's value same by Take LCM of 3, 4 = 12

$\frac{A}{B} = \frac{2 \times 4}{3 \times 4}$, $\frac{B}{C} = \frac{4 \times 3}{5 \times 3}$

$\frac{A}{B} = \frac{8}{12}$, $\frac{B}{C} = \frac{12}{15}$

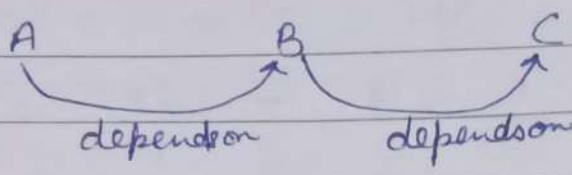
$\therefore$ A : B : C = 8 : 12 : 15 Ans:

15. Sum of ratio = 3+4+8 = 15

Total Amount = 1500

1st partner's Share $= \frac{3}{15} \times 1500^{100} = 300$

2nd, 3rd partner's share → do yourself

16. 

Qo Let C = x

∴ B = thrice of C = 3x

and A = twice of B = 2(3x) = 6x

∴ A : B : C = 6x : 3x : x

A : B : C = 6 : 3 : 1 { leave the common number

Sum of ratio = 6+3+1

= 10

Total Amount = ₹ 60

C receive = $\frac{1}{10} \times 60^{6}$ = ₹ 6 Ans

17. Given ratio = 3 : 5 : 7

Sum of ratio = 3+5+7 = 15

Total Sum (perimeter = Sum of all sides) = 60 cm

1st side = $\frac{3}{15} \times 60^{4}$ = 12 cm

2nd & 3rd side → do yourself

19. Given ratio = $\frac{1}{2} : \frac{3}{5} : \frac{4}{7}$

{ To make the ratio simple, take LCM of 2, 5, 7 and then multiple each ratio with that LCM

LCM (2, 5, 7) = 70

∴ ratio = $\frac{1}{2} \times 70^{35} : \frac{3}{5} \times 70^{14} : \frac{4}{7} : 70^{10}$

= 35 : 42 : 40

Sum of ratio = 35+42+40 = 117

Total Amount = ₹ 5850

1st share = $\frac{35}{117} \times 5850^{50}$ = ₹ 1750

2nd share & 3rd share → do yourself.

20. given ratio = 3 : 4 : 5

Total Sum = 120

(further solve by yourself) ↓ same procedure

21. Do yourself (Some as other sums)

22. given ratio = $\frac{1}{2} : 2 : \frac{1}{2} = \frac{3}{2} : 2 : \frac{1}{2}$

$= \frac{3}{x} \times x : 2 \times 2 : \frac{1}{x} \times x$ [LCM (2,2) = 2

= 3 : 4 : 1

Sum of ratio = 3+4+1 = 8

Let cost of article = x

Material cost = $\frac{3}{8} \times x$

$11.25 = \frac{3x}{8}$

$x = \frac{11.25 \times 8}{3} = 30$

3 : 4 : 1
3 - cost of material
4 - cost of labour
1 - cost of wastage

∴ ~~Material cost = ₹ 30~~

∴ cost of article = ₹ 30 Ans.

18. Let no. of ₹ 10 coins = $2x$

" " " ₹ 5 " = $5x$

" " " ₹ 2 " = $7x$

∴ Total money of ₹ 10 coins = $10 \times 2x = 20x$

" " " ₹ 5 " = $5 \times 5x = 25x$

" " " ₹ 2 " = $2 \times 7x = 14x$

∴ Total Amount = $20x + 25x + 14x = 59x$

Total Value of coins = 236

∴ $59x = 236$

$$x = \frac{236}{59}^{4} \Rightarrow x = 4$$

∴ ~~No. of ₹ 10~~

No. of coins of ₹ 10 = $2x = 2(4) = 8$

" " " ₹ 5 = $5x = 5(4) = 20$

" " " ₹ 2 = $7x = 7(4) = 28$

Chapter - 8

STD- 8th

Profit and Loss,

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Selling Price > Cost Price ⟶ Profit (Gain)
Selling Price < Cost Price ⟶ Loss

∴ Profit = SP - CP
Loss = CP - SP

{ P - Profit
{ L - Loss

$$\text{Profit \%} = \frac{P}{CP} \times 100$$

$$\text{Loss \%} = \frac{L}{CP} \times 100$$

{ You must have CP to calculate P% or L%

(Read formulas given on Pg 94 and 95)

Ex- 8.1

(1) i) SP = ₹ 900, CP = ₹ 800
As SP > CP, there is profit.

$P = SP - CP \Rightarrow P = 900 - 800$
$P = ₹\ 100$

$$P\% = \left(\frac{P}{CP} \times 100\right)\% = \frac{\cancel{100}^{50}}{\cancel{800}_{4}} \times \cancel{100}^{25}$$

$$P\% = \frac{25}{2}\% = 12\frac{1}{2}\%$$

(ii) Do yourself (same as (i)) CP > SP ⇒ Loss

(2) Gain = ₹ 63, SP = ₹ 1113, Gain% - ?
Gain = SP - CP ⇒ 63 = 1113 - CP
~~CP = 63~~ CP = 1113 - 63
CP = ₹ 1050

Now $G\% = \frac{Gain}{CP} \times 100 = \frac{63}{1050} \times 100$

$= \frac{630}{105} 6 \Rightarrow G\% = 6\%$ Ans.

(3) Try yourself (same as (2))

(4) Cost of 12 ball pens = ₹72

[" / " 1 / " " $= \frac{72}{12} 6 / = ₹6$]

Selling price of 12 ball pens $= 12 \times 8 =$ ₹96

Gain = SP − CP = 96 − 72 = 24

$G\% = \frac{G}{CP} \times 100 = \frac{24}{72} \times 100 = \frac{100}{3}\%$

$G\% = 33\frac{1}{3}\%$ Ans.

(5) Let the CP = ₹100

$SP = \frac{7}{10}$ of $CP = \frac{7}{10} \times 100 = 70$

As CP > SP ⇒ there is Loss

Loss = CP − SP = 100 − 70 = 30

Loss % $= \frac{L}{CP} \times 100 = \frac{30}{100} \times 100 = 30\%$

(6) SP = ₹444, $L = \frac{1}{5}$ of CP $\Rightarrow L = \frac{1}{5} \times x$

Let CP = x

$L = \frac{x}{5}$

Now L = CP − SP $\Rightarrow \frac{x}{5} = x - 444$

$444 = x - \frac{x}{5} = \frac{5x - x}{5} = \frac{4x}{5}$

$444 = \frac{4x}{5} \Rightarrow x = \frac{444 \times 5}{4} = 555$

(i) CP = ₹ 555

(ii) $\because L = \frac{x}{5} = \frac{555}{5}$

$L = ₹\ 111$

$L\% = \left(\frac{L}{CP} \times 100\right)\% = \frac{111}{555} \times 100$

$L\% = 20\%$ Ans.

(7) Do yourself (same as 6.)

(8) (i) same as (5)

(ii) try yourself

(9) Let SP = ₹ 100

25% of SP $= \frac{100 \times 25}{100} = 25$

$\therefore$ CP = 100 + 25 = 125

As CP > SP $\Rightarrow$ there is Loss

Loss = CP − SP = 125 − 100 = 25

Loss% $= \frac{L}{CP} \times 100 = \frac{25}{125} \times 100 = 20\%$

Ans.

(10) SP of 4 mangoes = ₹ 5

SP of 1 mango $= \frac{5}{4} = ₹\ 1.25$

CP of 5 mangoes = ₹ 4

CP of 1 mango $= \frac{4}{5} = ₹\ 0.8$

As SP > CP ⇒ There is gain

gain = SP − CP = 1.25 − 0.8 = ₹ 0.45

gain % $= \frac{G}{CP} \times 100 = \frac{0.45}{0.8} \times 100$

$= \frac{45 \times 10}{8 \times 100} \times 100 = \frac{450}{8} = 56.25\%$

or $56\frac{1}{4}\%$ Ans,

(11) SP = ₹ 6000 , G = $\frac{2}{5}$ of SP

(i) $G = \frac{2}{5} \times 6000^{1200} \Rightarrow G = ₹\ 2400$

(ii) G = SP − CP ⇒ CP = SP − G

CP = 6000 − 2400 ⇒ CP = ₹ 3600

(iii) $G\% = \frac{G}{CP} \times 100 = \frac{2400^{2}}{3600_{3}} \times 100 = \frac{200}{3}$

$= 66\frac{2}{3}\%$ Ans.

$3\overline{)200}\ (66$, 18, 20, 18, 2

(12) CP of 1 dozen eggs = ₹ 10.80

CP of 10 dozen eggs = 10.80 × 10 = ₹ 108

Now 1 dozen = 12 eggs

10 dozen = 12 × 10 = 120 eggs

∴ CP of 120 eggs = ₹ 108

Now 20 eggs broken

Left eggs = 120 − 20 = 100

SP of 100 eggs = ₹ 100 | As he sold 1 egg at ₹1

Now CP > SP

∴ there is Loss ⇒ Loss = CP − SP

Loss = 108 − 100 = 8

$$\text{Loss \%} = \frac{L}{CP} \times 100 = \frac{8}{108} \times 100$$

$$= \frac{200}{27}\ \%$$

$$\text{Loss \%} = 7\frac{11}{27}\ \%$$ Ans

STD-8th

Ex- 8.2

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$SP = CP(1 + \text{gain }\%)$ — (1)

and $SP = CP(1 - \text{loss }\%)$ — (2)

(1) $CP = ₹\ 1050$, $P = 10\%$

$SP = CP(1 + P\%) = 1050\ (1 + 10\%)$

$= 1050\left(1 + \frac{1}{10}\right) = 1050\left(\frac{10+1}{10}\right)$

$SP = \frac{105 \times 11}{1} = ₹\ 1155$ Ans.

(2) i) $SP = ₹\ 848$, $P = 6\%$

$SP = CP(1 + P\%)$

$848 = CP\left(1 + \frac{6}{100}\right) = CP\left(\frac{100+6}{100}\right)$

$848 = CP\left(\frac{106}{100}\right)$ 8

$CP = \frac{848 \times 100}{106} = ₹\ 800$

(ii) Same as (i) (use (2) formula)

(3) $SP = ₹\ 1610$, gains $= 15\%$

(i) Same as 2(i) $\Rightarrow$ $CP = 1400$

(ii) gain $= SP - CP = 1610 - 1400 = ₹\ 210$ Ans.

(4) $SP = ₹\ 1449$, $L = 8\%$

(i) $SP = CP(1 - L\%) =$

$1449 = CP\left(1 - \frac{8}{100}\right) = CP\left(\frac{100-8}{100}\right) = CP\left(\frac{92}{100}\right)$

$$CP = \frac{1449 \times 100}{92} = \frac{63 \times 25}{1}$$

CP = ₹ 1575

(ii) Loss = CP − SP = 1575 − 1449 = ₹ 126 Ans

(5) Cost price of wristwatch = ₹ 1350
cost of repair = ₹ 50
Total CP of watch = 1350 + 50 = ₹ 1400
P = 15%

SP = CP (1 + P%) = $1400\left(1 + \frac{15}{100}\right)$

$= 1400\left(\frac{20+3}{20}\right) = 1400 \times \frac{23}{20}$

SP = ₹ 1610 Ans.

(6) Cost price of calculator = ₹ 1100
Cost of cover & battery = ₹ 79
Total CP of Calculator = 1100 + 79
CP = ₹ 1179
Now ~~cost SP = CP~~ L = 10%

SP = CP (1 − L%) = $1179\left(1 - \frac{10}{100}\right)$

Now solve it.

(7) SP = ₹ 558, L = 7%.

SP = CP(1 − L%) ⇒ 558 = CP(1 − 7/100)

558 = CP((100 − 7)/100) ⇒ CP(93/100)

CP = 6 558 × 100 / 93 = 600

CP = ₹ 600

Now P = 6%.

SP = CP(1 + P%) ⇒ SP = 600(1 + 6/100)

SP = 600((100 + 6)/100) = 6 600 × 106 / 100

SP = ₹ 636 Ans.

(8) SP = ₹ 10200, L = 15%.

SP = CP(1 − L%) ⇒ 10200 = CP(1 − 15/100)

10200 = CP((20 − 3)/20) = CP(17/20)

CP = 600 10200 × 20 / 17

CP = ₹ 12000

Now New SP = ₹ 12240

As SP > CP ⇒ There is gain

gain = 12240 − 12000 = ₹ 240

gain% = (Gain / CP) × 100 = 2 240 / 12000 × 100

= 2% Ans

(Same as Eg. 15 on Pg.-100)

(9) Let CP = ₹ 100, gain = 8%.

$SP = CP(1 + \text{gain}\%) = 100\left(1 + \frac{8}{100}\right)$

$= 100\left(\frac{100+8}{100}\right) = 108$

SP = ₹ 108

In order to get (profit) gain of 10%,

$SP = CP(1 + \text{gain}\%) = 100\left(1 + \frac{10}{100}\right)$

$SP = 100\left(\frac{100+10}{100}\right) = 110$

SP = ₹ 110

Difference of SP = 110 − 108 = ₹ 2

If difference of SP is ₹ 2, then CP = 100

" " " " ₹ 1, " " $= \frac{100}{2}$ 50

= ₹ 50

" " " " ₹ 35, " CP = 50 × 35

CP = ₹ 1750 Ans.

(10) (i) SP of TV = ₹ 11000, gain = 10%.

$SP = CP(1 + \text{gain}\%)$

$11000 = CP\left(1 + \frac{10}{100}\right)$

$11000 = CP\left(\frac{100+10}{100}\right)$

(ii) SP of VCR = ₹ 9785, Loss = 5%

$SP = CP(1 - \text{Loss}\%)$

$9785 = CP\left(1 - \frac{5}{100}\right)$

$9785 = CP\left(\frac{100-5}{100}\right)$

$11000 = CP\left(\frac{110}{100}\right)$	$9785 = CP\left(\frac{95}{100}\right)$
$CP = \frac{11000 \times 100}{110}$	$CP = \frac{9785 \times 100}{95}$
$CP = ₹\ 10{,}000$	$CP = ₹\ 10300$

(iii) Total SP of both = $11000 + 9785 = ₹\ 20{,}785$

(iv) Total CP of both = $10{,}000 + 10{,}300 = ₹\ 20{,}300$

As total SP > total CP

∴ there is gain

∴ gain = total SP − total CP

gain = $20{,}785 - 20{,}300 = 485$

$$\text{gain \%} = \frac{\text{gain}}{\text{total CP}} \times 100$$

$$= \frac{485}{20{,}300} \times 100 = 2.38$$

gain % = 2.4 % (approx.) Ans.

(11) Try yourself.

(12) Let the amount paid by A for sofa be ₹ x

As A sold sofa to B at gain of 15%.

So amount paid by B = $x\left(1 + \frac{15}{100}\right) = \frac{115x}{100}$

Now B sold sofa to C at loss of 5%.

So amount paid by C = $\left(1 - \frac{5}{100}\right)$ of (amount paid by B)

$$= \frac{95}{100} \times \frac{115x}{100} = \frac{1093x}{1000}$$

$$\frac{19}{\cancel{95}_{100}} \times \frac{23}{\cancel{115}_{\cancel{100}_{264}}} x = \frac{437}{400} x$$

But C paid ₹ 2622

$\Rightarrow$

$$2622 = \frac{437}{400} x$$

$$x = \frac{\cancel{2622}^{6} \times 400}{\cancel{437}}$$

$$x = 2400$$

$\therefore$ amount paid by A = ₹ 2400 Ans.

(13) Same as (12) try yourself.

(14) SP of 5 oranges = ₹ 4

SP of 1 orange = ₹ $\frac{4}{5}$

gain = 40 %.

$SP = CP(1 + \text{gain of }\%) \Rightarrow \frac{4}{5} = CP\left(1 + \frac{40}{100}\right)$

$\frac{4}{5} = CP\left(\frac{14}{10}\right) \Rightarrow CP = \frac{4}{5} \times \frac{10}{14}^{2}$

$CP = ₹\ \frac{4}{7}$

Now SP of 1 orange $= \frac{4}{5} = 0.8$

CP of 1 orange $= \frac{4}{7} = 0.57$

As $SP > CP$, there is profit

$P = SP - CP = \frac{4}{5} - \frac{4}{7} = \frac{28-20}{35} = \frac{8}{35}$

∴ Profit made by selling 1 orange $= \frac{8}{35}$

If profit is ₹ $\frac{8}{35}$, no. of oranges $= 1$

If " " ₹ 1, " " " $= 1 \div \frac{8}{35}$

$= 1 \times \frac{35}{8} = \frac{35}{8}$

If " " ₹ 16, " " " $= \frac{35}{8} \times 16^{2}$

$= 70$ Ans.

(15) SP of (1 dozen) 12 bananas = ₹ 25

gain = 25%

$SP = CP(1 + \text{gain}\%) \Rightarrow 25 = CP\left(1 + \frac{25}{100}^{4}\right)$

$25 = CP\left(\frac{4+1}{4}\right) \Rightarrow 25 = CP\left(\frac{5}{4}\right)$

$CP = \frac{25 \times 4}{5} = 20$

In ₹ 20, no. of bananas = 12

In ₹ 1, no. of " = $\frac{12}{20}$

In ₹ 50, " " " = $\frac{12}{20} \times 50$

= 30 Ans;

(16) SP of 8 articles = CP of 10 articles

Let SP of 1 article = ₹ 1

∴ SP of 8 " = ₹ 8

SP of 10 articles = 10

CP of 10 articles = SP of 8 articles

∴ CP of 10 articles = 8

As SP of 10 articles > CP of 10 articles

∴ there is gain.

∴ gain = SP − CP = 10 − 8 = 2

$g\% = \frac{g}{CP} \times 100 = \frac{2}{8} \times 100 = 25\%$

= 25% Ans.

(17) CP of 18 articles = SP of 21 articles

Let CP of 1 article = ₹ 1

CP of 18 " = 18

CP of 21 " = 21

SP of 21 articles = 18

As CP > SP, there is loss

$$\text{Loss} = CP - SP = 21 - 18 = 3$$

$$L\% = \frac{3}{21} \times 100 = \frac{100}{7}$$

$$= 14\frac{2}{7}\% \quad \text{Ans.}$$

$$7\overline{)100}\ (14$$
$$7$$
$$30$$
$$28$$
$$2$$

STD-8th Ex- 8.3

{Read definations of Marked Price, Discount, Selling Price, Sales Tax (Pg - 102, 103)}

Selling price = Marked Price - Discount

→ SP = MP − D

→ ⇒ D = MP − SP

→ D% = $\left(\frac{D}{MP} \times 100\right)$ %

→ Also SP = MP (1 − D%)

→ Sale Tax = $\frac{\text{Rate of Sale Tax}}{100} \times SP$

→ Amount of bill = SP + Sale Tax

{Understand examples given on Pg - 103 to understand the concept better}

(1) i) MP = ₹ 1400, SP = ₹ 1274

D = MP − SP = 1400 − 1274 = ₹ 126

D% = $\left(\frac{D}{MP} \times 100\right)$ % = $\frac{126}{1400} \times 100$

= 9% Ans

(ii) Same as (i) (Printed price = Marked price)

2 i) D% = 10%, MP = 680

~~D%~~ SP = MP (1 − D%)

SP = $680\left(1 - \frac{10}{100}\right) = 680\left(\frac{10-1}{10}\right) = 68 \times \frac{9}{10}$

SP = ₹ 612

Now D = MP − SP = 680 − 612 = ₹ 68 Ans

(ii) D = $16\frac{2}{3}$% = $\frac{50}{3}$%, MP = ₹ 14850

SP = MP (1 − D%) = $14850\left(1 - \frac{50}{3 \times 100}\right)$

$= 14850\left(1 - \frac{1}{6}\right) = \overset{2475}{14850}\left(\frac{5}{6}\right)$

SP = ₹ 12375

D = MP − SP = 14850 − 12375 = ₹ 2475 Ans

(3) Selling price of 1 pen = ₹ 6

SP of 10 " = ₹ 6 × 10 = 60

Sale Tax = 12% of 60

$= \frac{60 \times 12}{100} = \frac{36}{5}$

Amount of bill = SP + Sale tax = $60 + \frac{36}{5}$

$= \frac{300+36}{5} = \frac{336}{5}$ = ₹ 67.2 Ans

(4) SP = ₹ 1700, D = 15%

SP = MP (1 − D%) ⇒ $1700 = MP\left(1 - \frac{15}{100}\right)$

$1700 = MP\left(\frac{20-3}{20}\right) \Rightarrow 1700 = MP\left(\frac{17}{20}\right)$

MP = $\frac{1700 \times 20}{17}$ = ₹ 2000 Ans

(5) CP = ₹ 1800

(i) MP = 75% above the CP
= CP + 75% of CP
= 1800 + 75% of 1800

$MP = 1800\left(1+\frac{75}{100}\right) = 1800\left(\frac{7}{4}\right)$

MP = ₹ 3150

(ii) Now D = 10%

$SP = MP(1-D\%) = 3150\left(1-\frac{10}{100}\right)$

$SP = 3150\left(\frac{9}{10}\right)$ = ₹ 2835

(iii) As SP > CP, there is profit

P = SP − CP = 2835 − 1800 = 1035

$P\% = \frac{P}{CP} \times 100 = \frac{1035}{1800} \times 100$

$= \frac{115}{2}$ or $57\frac{1}{2}\%$ Ans.

(6) CP = ₹ 700, P = 25% D = 20%

(i) $SP = CP(1+P\%) = 700\left(1+\frac{25}{100}\right) = 700\left(\frac{5}{4}\right)$

SP = ₹ 875

(ii) Now $SP = MP(1-D\%)$

$875 = MP\left(1-\frac{20}{100}\right) = MP\left(1-\frac{1}{5}\right)$

$875 = MP\left(\frac{4}{5}\right)$ ⇒ $MP = 875 \times \frac{5}{4}$

$MP = \frac{4375}{4}$ = ₹ 1093.75 Ans.

(7) MP = ₹ 2400, D = 10%, P = 8%

(i) $SP = MP(1-D\%)$ Solve it and get SP

(ii) $SP = CP(1+P\%)$ Solve it and get CP

(8) gain = 25%, D = 15%, SP = ₹ 1700

(i) $SP = MP(1-D\%)$ Solve and get MP

(ii) $SP = CP(1+\text{gain}\%)$ Solve and get CP

(9) SP = ₹ 560, D = 15%

firstly, $SP = MP(1-D\%)$ Solve it and get MP.

After solving MP = 658.82

Now, D = 10%, SP = ?

$SP = MP(1-D\%)$

new $SP = 658.82\left(1-\frac{10}{100}\right)$ Solve and get new SP.

(10) CP = ₹ 3600 D = 10%

(i) Also, CP is 20% less than MP

∴ CP = MP − 20% of MP

3600 = (1 − 20%) MP (Take MP common

$3600 = \left(1-\frac{20}{100}\right)MP = \left(\frac{5-1}{5}\right)MP$

$3600 = \frac{4}{5}MP \Rightarrow MP = \frac{3600 \times 5}{4}$

$MP = ₹ 4500$

(ii) $SP = MP(1-D\%) = 4500\left(1-\frac{10}{100}\right)$

$SP = 4500 \times \frac{90}{100} = 4050$

As $SP > CP$, there is profit

$P = SP - CP = 4050 - 3600 = 450$

$P\% = \left(\frac{P}{CP} \times 100\right)\% = \frac{450}{3600} \times 100$

$= \frac{25}{2}\%$ or $12\frac{1}{2}\%$ Ans.

(11) (Concept of Successive discounts is given on Pg 103)

(i) — Same as Eg. 24. Pg. – 106.

(ii) Let MP be ₹ 100

$D_1\% = 10\%$, $D_2\% = 20\%$, $D_3\% = 5\%$

$SP = (1-D_1\%)(1-D_2\%)(1-D_3\%)$ of MP

$SP = \left(1-\frac{10}{100}\right)\left(1-\frac{20}{100}\right)\left(1-\frac{5}{100}\right) \times 100$

$SP = \frac{9}{10} \times \frac{8}{10} \times \frac{95}{100} \times 100$

$SP = 9 \times \frac{8}{10} \times \frac{95}{100} \times 100 = \frac{342}{5}$

$SP = ₹ 68.4$

Now single discount is D%

$SP = MP(1-D\%)$

$68.4 = 100\left(1-\frac{D}{100}\right) = 100\left(\frac{100-D}{100}\right)$

$68.4 = 100 - D$

$D = 100 - 68.4 = 31.6\%$ Ans.

(iii) — Same as (ii). [(i) n also same as (ii), iii

(12) $MP = ₹ 24000$, $D_1 = 10\%$, $D_2 = 20\%$

$SP = MP(1-D_1\%)(1-D_2\%)$

$= 24000\left(1-\frac{10}{100}\right)\left(1-\frac{20}{100}\right)$

$= 24000 \times \frac{9}{10} \times \frac{8}{10}$

$SP = ₹ 17280$ Ans.

(13) For dealer A: $MP = ₹ 500$, $D_1\% = 40\%$, $D_2\% = 20\%$

$SP = MP(1-D_1\%)(1-D_2\%) = 500\left(1-\frac{40}{100}\right)\left(1-\frac{20}{100}\right)$

$SP = 500 \times \frac{6}{10} \times \frac{8}{10} = ₹ 240$

For dealer B : $D_1\% = 30\%$, $D_2\% = 20\%$, $D_3\% = 10\%$

$$SP = MP(1-D_1\%)(1-D_2\%)(1-D_3\%)$$

$$= 500\left(1-\frac{30}{100}\right)\left(1-\frac{20}{100}\right)\left(1-\frac{10}{100}\right)$$

$$= 500 \times \frac{70}{100} \times \frac{80}{100} \times \frac{90}{100}$$

$$SP = \frac{2520}{10} = ₹\ 252$$

For Customer, the successive discounts of 40% and 20% is better offer.

∴ Offer given by dealer A is better for customer.

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1 (i) $(343)^{\frac{1}{3}}$

7	343
7	49
7	7
	1

$(7^3)^{\frac{1}{3}} = 7$

(ii) $(27)^{\frac{2}{3}}$

3	27
3	9
3	3
	1

$(3^3)^{\frac{2}{3}} = 9$

(iii) $(81)^{-\frac{3}{2}} = \left(\frac{1}{81}\right)^{\frac{3}{4}}$

3	81
3	27
3	9
3	3
	1

$= \left(\frac{1}{3^4}\right)^{\frac{3}{2}}$

$= \left(\frac{1}{9^2}\right)^{\frac{3}{2}} = \frac{1}{729}$

(iv) $\frac{1}{16^{-3/4}} = (16)^{3/4}$

$= (2^4)^{3/4}$

$= (2)^3$

$= 8$

(v) $\left((32)^{-3}\right)^{\frac{1}{5}}$

$(32)^{-3/5}$

$(2^5)^{-3/5} = (2)^{-3}$

$= \left(\frac{1}{2}\right)^3 = \frac{1}{8}$

(vi) $\left(\frac{16}{81}\right)^{-3/4} \times \left[\left(\frac{9}{25}\right)^{-3/2} \div \left(\frac{2}{5}\right)^{-3}\right]$

$\left(\frac{81}{16}\right)^{3/4} \times \left[\left(\frac{25}{9}\right)^{3/2} \div \left(\frac{5}{2}\right)^{3}\right]$

$\left(\frac{3}{2}\right)^{4 \times 3/4} \times \left[\left(\frac{5}{3}\right)^{2 \times \frac{3}{2}} \div \left(\frac{5}{2}\right)^{3}\right]$

$\left(\frac{3}{2}\right)^{3} \times \left[\left(\frac{5}{3}\right)^{3} \times \left(\frac{2}{5}\right)^{3}\right]$

$\frac{27}{8} \times \frac{125}{27} \times \frac{8}{125}$

$= 1$

(VII) $\left[(27)^{-4/3} \div 3^{-2} \right]^{1/2}$

$\left[\left(\frac{1}{27}\right)^{4/3} \div \left(\frac{1}{3}\right)^{2} \right]^{1/2}$

$\left[\left(\frac{1}{3}\right)^{3 \times 4/3} \div \left(\frac{1}{3}\right)^{2} \right]^{1/2}$

$\left[\left(\frac{1}{3}\right)^{4} \div \left(\frac{1}{3}\right)^{2} \right]^{1/2}$

$\left[\left(\frac{1}{3}\right)^{4-2} \right]^{1/2} = \left(\frac{1}{3}\right)^{2 \times \frac{1}{2}} = \frac{1}{3}$

(VIII) $\left[(8)^{\frac{2}{3}} \times 2^{-2} \div 6^{\circ} \right]$

$\left[(2)^{3 \times 2/3} \times \left(\frac{1}{2}\right)^{2} \div 1 \right]$

$\left[2^{2} \times \frac{1}{4} \div 1 \right]$

$\left[4 \times \frac{1}{4} \right] = 1$

(IX) $\left(\frac{2}{3}\right)^{0} + \left(\frac{2}{3}\right)^{-1} + \left(\frac{1}{2}\right)^{2}$

$1 + \left(\frac{3}{2}\right) + \frac{1}{4}$

$\frac{4 + 6 + 1}{4} = \frac{11}{4}$

(X) $5^{3} \times 5^{7} \div (5^{4})^{2}$

$5^{3} \times 5^{7} \div 5^{8}$

5^{3+7-8}

$5^{-2} = 25$

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(xi) $\frac{2^{-5} \times 2^{9}}{2^{-2}} \div \frac{3^{-2} \times 3^{2}}{3^{-4}}$

$\frac{2^{2} \times 2^{9}}{2^{5}} \div \frac{3^{4} \times 3^{2}}{3^{2}}$

$\frac{2^{2+9}}{2^{5}} \div \frac{3^{4+2}}{3^{2}}$

$\frac{2^{11}}{2^{5}} \div \frac{3^{6}}{3^{2}}$

$2^{11-5} \div 3^{6-2}$

$2^{6} \div 3^{4}$

$\frac{2^{6}}{3^{4}} = \frac{64}{81}$

(xii) $\frac{3^{4} \times 2^{-2} \times 5^{-3}}{(-6)^{3}}$

$\frac{3^{4}}{2^{2} \times 5^{3} \times (-1)^{3}} \Rightarrow \frac{81}{4 \times 125 \times \frac{(-216)}{8}} = \frac{-3}{4000}$

(xiii) $\frac{5^{-4}}{5^{-6} \times (-2)^{3}}$

$\frac{5^{6}}{5^{4} \times (-2)^{3}} \Rightarrow \frac{5^{6-4}}{(-2)^{3}} = \frac{5^{2}}{-8} = \frac{-25}{8}$

(xiv) $\frac{(32)^{\frac{2}{5}} \times (4)^{-\frac{1}{2}} \times (8)^{\frac{1}{3}}}{2^{-2} \div (64)^{-1/3}}$

$\frac{2^{5 \times \frac{2}{5}} \times 2^{2 \times -\frac{1}{2}} \times 2^{3 \times \frac{1}{3}}}{2^{-2} \div 4^{3 \times -\frac{1}{3}}} \Rightarrow \frac{2^{2} \times 2^{-1} \times 2}{2^{-2} \div 4^{-1}}$

$$\frac{2^{2+(-1)+1}}{2^{-2} \div (2^2)^{-1}} \Rightarrow \frac{2^2}{2^{-2} \div 2^{-2}}$$

$$\Rightarrow \frac{2^2}{2^{-2-(-2)}} = \frac{2^2}{2^0} = \frac{4}{1} = 4$$

(xv) $(16)^{-\frac{1}{4}} + (0.8)^0 + (32)^{2/5} + (8)^{1/3}$

$$2^{4 \times -\frac{1}{4}} + 1 + (2)^{5 \times \frac{2}{5}} + 2^{3 \times \frac{1}{3}}$$

$$2^{-1} + 1 + (2)^2 + 2$$

$$\frac{1}{2} + 1 + 4 + 2$$

$$\frac{1}{2} + 7$$

$$\frac{1+14}{2} = \frac{15}{2}$$

(xvi) $\left(\frac{-1}{2}\right)^4 \times \left(\frac{-1}{2}\right)^6 \div \left(\frac{-1}{2}\right)^5$

$$\left(\frac{-1}{2}\right)^{4+6-5} = \left(\frac{-1}{2}\right)^5 = \frac{-1}{32}$$

(xvii) $(-3)^4 \times (-3)^6 \div (-3)^9$

$$(-3)^{4+6-9} = (-3)^1 = -3$$

2 (i) $a^{6+4+(-5)+0}$

$= a^5$

(ii) $a^{\left(\frac{-1}{3} - \frac{2}{3}\right)}$

$= a^{-\frac{3}{3}} = a^{-1} = \frac{1}{a}$

(iii) H.W

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(iii) $(a^{-1}+b^{-1}) \div (ab)^{-1} + (a^{-1}-b^{-1}) \div (a^{-2}+b^{-2})$

$\left(\frac{1}{a}+\frac{1}{b}\right) \div \left(\frac{1}{ab}\right) + \left(\frac{1}{a}-\frac{1}{b}\right) \div \left(\frac{1}{a^2}-\frac{1}{b^2}\right)$

$\left(\frac{b+a}{ab}\right) \times \frac{ab}{1} + \left(\frac{b-a}{ab}\right) \div \left(\frac{b^2-a^2}{a^2b^2}\right)$

$(b+a) + \frac{b-a}{ab} \times \frac{a^2b^2}{b^2-a^2}$

$(b+a) + \frac{b-a}{ab} \times \frac{a^2b^2}{(b-a)(b+a)}$ ab

$(b+a) + \frac{ab}{(b+a)}$

$\frac{(b+a)^2+ab}{(b+a)} = \frac{b^2+a^2+2ab+ab}{b+a}$

$= \frac{b^2+a^2+3ab}{b+a}$

$= \frac{a^2+b^2+3ab}{a+b}$

3 (i) $\left[(-5)^3\right)^{\frac{2}{3}} + (3)^5 \div 3^3 + \left(\frac{1}{7}\right)^0$

$(-5)^2 + (3)^5 \div (3)^3 + 1$

$25 + (3)^{5-3} + 1$

$25 + (3)^2 + 1$

$25 + 9 + 1$

35

(ii) $3^5 \times 3^{-4} - (2^2 \times 3)^2 + \left(\frac{3}{2}\right)^{-1} + 3^{-1} + (3^3)^{-\frac{1}{3}}$

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

$3^1 - (12)^2 + \frac{2}{3} + \frac{1}{3} + \frac{1}{3}$

$3 - 144 + \frac{2}{3} + \frac{1}{3} + \frac{1}{3}$

$-\frac{141}{1} + \frac{2}{3} + \frac{1}{3} + \frac{1}{3}$

$-\frac{423 + 2 + 1 + 1}{3} = \frac{-419}{3}$

(iii) $(x^{-1} y^2 z^{-3})^{-3}$

$(x^{-1})^{-3} \quad (y^2)^{-3} \quad (z^{-3})^{-3}$

$x^3 \quad y^{-6} \quad z^9$

$\frac{x^3 z^9}{y^6}$

(iv) $\frac{a^3 b^3 c^{-2}}{a^{-3} b^{-3} c}$

$\frac{a^3 . b^3 . a^3 . b^3}{c^2 . c}$

$\frac{a^{3+3} \quad b^{3+3}}{c^{2+1}}$

$\frac{a^6 b^6}{c^3}$

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4 $\left(\frac{1}{81}\right)^{\frac{1}{4}} - \left(\frac{27}{64}\right)^{-\frac{1}{3}} \div \left(\frac{1}{8}\right)^{-\frac{2}{3}} + \left(\frac{1}{16}\right)^{-\frac{3}{4}}$

$\left(\frac{1}{3}\right)^{4\times\frac{1}{4}} - \left(\frac{3}{4}\right)^{3\times-\frac{1}{3}} \div \left(\frac{1}{2}\right)^{3\times-\frac{2}{3}} + \left(\frac{1}{2}\right)^{4\times-\frac{3}{4}}$

$\left(\frac{1}{3}\right) - \left(\frac{3}{4}\right)^{-1} \div \left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{2}\right)^{-3}$

$\left(\frac{1}{3}\right) - \left(\frac{4}{3}\right) \div \left(\frac{2}{1}\right)^{2} + \left(\frac{2}{1}\right)^{3}$

$\frac{1}{3} - \frac{4}{3} \times \frac{1}{4} + 8$

$\frac{1}{3} - \frac{1}{3} + 8 = 8$ Ans

5(i) $(27x^{-3})^{\frac{1}{3}}$

$3^{3\times\frac{1}{3}} \cdot x^{-3\times\frac{1}{3}}$

$3 \cdot x^{-1} = \frac{3}{x}$

(ii) $(64p^3)^{\frac{4}{3}}$

$(4^3 p^3)^{\frac{4}{3}}$

$4^{3\times\frac{4}{3}} \; p^{3\times\frac{4}{3}}$

$4^4 p^4 = 256p^4$

(iii) $(-243)^{\frac{2}{5}} \; (x^{-3})^{\frac{2}{3}}$

$(-3)^{5\times\frac{2}{5}} \; (x)^{-2}$

$\frac{(-3)^2}{(x)^2} = \frac{9}{x^2}$

(iv) $\sqrt[3]{x^6 y^{-9} z^{12}} \div \sqrt[4]{x^4 y^8 z^{-4}}$

$\frac{x^{\frac{6}{3}} \cdot y^{\frac{-9}{3}} \; z^{\frac{12}{3}}}{x^{\frac{4}{4}} \cdot y^{\frac{8}{4}} \cdot z^{\frac{-4}{4}}}$

$\frac{x^2 \; y^{-3} \; z^4}{x^1 \; y^2 \; z^{-1}}$

$x^{2-1} \; y^{-3-2} \; z^{4-(-1)}$

$x^1 y^{-5} z^5 \Rightarrow \frac{xz^5}{y^5}$

6(i) $\frac{8^{\frac{2n}{3}} \times (64)^{-\frac{n}{6}}}{(27)^{\frac{4n}{3}}}$

$\frac{2^{3\times\frac{2n}{3}} \times 2^{6\times-\frac{n}{6}}}{(3)^{3\times\frac{4n}{3}}} \Rightarrow \frac{2^{2n} \times 2^{-n}}{(3)^{4n}} \Rightarrow \frac{2^{2n+(-n)}}{3^{4n}}$

$\Rightarrow \frac{2^n}{3^{4n}} = \left(\frac{2}{3^4}\right)^n = \left(\frac{2}{81}\right)^n$

(ii) $\frac{2^{n+1} \times 4^{n+1}}{2^{n-1} \times 4^{n-1}} \Rightarrow \frac{2^n \cdot 2^1 \times 4^n \cdot 4^1}{2^n \cdot 2^{-1} \times 4^n \cdot 4^{-1}}$

$\frac{2^1 \times 4^1}{2^{-1} \times 4^{-1}} \Rightarrow 2^{1-(-1)} \times 4^{1-(-1)}$

$\Rightarrow 2^2 \times 4^2$

$\Rightarrow 4 \times 16$

$\Rightarrow 64$

(iii) $\frac{4 \times 16^{n+1} - 16 \times 4^{2n}}{4 \times 4^{2n+3} - 16^{n+1}}$

$= \frac{4 \times 4^{2(n+1)} - 4^2 \times 4^{2n}}{4 \times 4^{2n+3} - 4^{2(n+1)}}$

$= \frac{4 \times 4^{2n+2} - 4^{2n+2}}{4 \times 4^{2n+3} - 4^{2n+2}}$

$= \frac{4^{2n+2}(4-1)}{4^{2n+2}(4^2-1)}$

$= \frac{3}{16-1} = \frac{3}{15} = \frac{1}{5}$

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(iv) $\dfrac{6^{2n+3} - (36)^{n+2}}{[(216)^{n+1}]^{2/3}}$

$= \dfrac{6^{2n+3} - 6^{2(n+2)}}{(6)^{3(n+1)\times\frac{2}{3}}}$

$= \dfrac{6^{2n+3} - 6^{2n+4}}{6^{2(n+1)}}$

$= \dfrac{6^{2n}\cdot 6^3 - 6^{2n}\cdot 6^4}{6^{2n}\cdot 6^2}$

$= \dfrac{6^{2n}\, 6^3\,(1-6)}{6^{2n}\cdot 6^2}$

$= 6(1-6)$

$= 6(-5) = -30$

7 (i) $\left(\dfrac{x^b}{x^a}\right)^{b+a-c} \cdot \left(\dfrac{x^c}{x^b}\right)^{c+b-a} \cdot \left(\dfrac{x^a}{x^c}\right)^{c+a-b}$

$(x^{b-a})^{b+a-c} \cdot (x^{c-b})^{c+b-a} \cdot (x^{a-c})^{c+a-b}$

$x^{(b-a)(b+a-c)} \cdot x^{(c-b)(c+b-a)} \cdot x^{(a-c)(c+a-b)}$

by product law : base same → powers added

$x^{(b-a)(b+a-c) + (c-b)(c+b-a) + (a-c)(c+a-b)}$

$b^2 + ab - bc - ab - a^2 + ac + c^2 + bc - ac - bc - b^2 + ab + ac + a^2 - ab - c^2 - ac + bc$

$x^0 = 1$ R.H.S = L.H.S

(ii) L.H.S:

$$\left(\frac{x^m}{x^n}\right)^{\frac{1}{mn}} \left(\frac{x^n}{x^r}\right)^{\frac{1}{nr}} \left(\frac{x^r}{x^m}\right)^{\frac{1}{rm}}$$

$$\left(x^{m-n}\right)^{\frac{1}{mn}} \cdot \left(x^{n-r}\right)^{\frac{1}{nr}} \left(x^{r-m}\right)^{\frac{1}{rm}}$$

$$x^{\frac{m-n}{mn}} \cdot x^{\frac{n-r}{nr}} \cdot x^{\frac{r-m}{rm}}$$

$$x^{\frac{m-n}{mn} + \frac{n-r}{nr} + \frac{r-m}{rm}}$$

$$x^{\frac{r(m-n) + m(n-r) + n(r-m)}{mnr}}$$

$$x^{\frac{mr - nr + mn - mr + nr - mn}{mnr}}$$

$$x^{\frac{0}{mnr}} \Rightarrow x^0 = 1 = R.H.S$$

(iii) L.H.S $\dfrac{1}{1-x^{m-n}} + \dfrac{1}{1-x^{n-m}}$

$$\frac{1-x^{n-m} + 1-x^{m-n}}{(1-x^{m-n})(1-x^{n-m})} \qquad \text{(Take L.C.M)}$$

$$\frac{2 - x^{n-m} - x^{m-n}}{1(1-x^{n-m}) - x^{m-n}(1-x^{n-m})}$$

$$\frac{2 - x^{n-m} - x^{m-n}}{1 - x^{n-m} - x^{m-n} + x^{m-n} \cdot x^{n-m}}$$

$$\frac{2 - x^{n-m} - x^{m-n}}{1 - x^{n-m} - x^{m-n} + x^{m-n+n-m}}$$

$$\frac{2 - x^{n-m} - x^{m-n}}{1 - x^{n-m} - x^{m-n} + x^0}$$

$$= \frac{2 - x^{n-m} - x^{m-n}}{1 - x^{n-m} - x^{m-n} + 1}$$

$$= \frac{2 - x^{n-m} - x^{m-n}}{2 - x^{n-m} - x^{m-n}} = 1 = R.H.S$$

(iv) L.H.S $(x^{a-b})^{a+b} \cdot (x^{b-c})^{b+c} \cdot (x^{c-a})^{c+a}$

$x^{(a-b)(a+b)} \cdot x^{(b-c)(b+c)} \cdot x^{(c-a)(c+a)}$

$x^{a^2-b^2} \cdot x^{b^2-c^2} \cdot x^{c^2-a^2}$ $[a^2-b^2 = (a+b)(a-b)]$

$x^{a^2-b^2+b^2-c^2+c^2-a^2}$

$x^0 = 1$ R.H.S

8 (i) $3^{x+1} = \frac{1}{(27)^{x-3}}$

$3^{x+1} = \frac{1}{(3^3)^{x-3}} \Rightarrow 3^{x+1} = \frac{1}{(3)^{3(x-3)}}$

$3^{x+1} = 3^{-3(x-3)} \Rightarrow 3^{x+1} = 3^{-3x+9}$

$x+1 = -3x+9$

$x+3x = 9-1$

$4x = 8$

$x = \frac{8}{4} 2 \Rightarrow x = 2$

(ii) $2^{5x-1} = 2^{3x+1}$

$5x-1 = 3x+1$

$5x-3x = 1+1$

$2x = 2$

$x = \frac{2}{2} 1 \Rightarrow x = 1$

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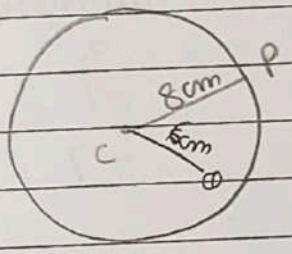
1. (i) Radius (ii) Diameter (iii) Minor arc
(iv) Point of contact (v) Tangent (vi) Minor segment

2 (i) Equal (ii) Radius (iii) Circle
(iv) Twice (v) Major arc (vi) an arc and its two radii
(vii) Segment (viii) Tangent (ix) circumference
(x) Circular region

3. (i) True (ii) True (iii) False
(iv) False (v) False (vi) True
(vii) True

4 (i) circle (ii) 16 cm (iii) inside the circle $CO < CP$



5 Diameter = 15cm
Radius = $\frac{15}{2}$ cm = 7.5cm

(i) OP = 7cm
∴ P lies inside the circle as OP < radius
(ii) OQ = 9cm
∴ Q lies outside the circle as OQ > radius
(iii) OR = 7.5cm
∴ R lies on the circumference of the circle