

UNIT - 4

TRANSPORTATION

After studying this unit you :

- recall the meaning of transportation.
- state the means of transportation.
- recognize fuels used in different vehicles.
- appreciate the modern transportation.

In olden days people used to go from one place to another on foot or by using animals like horses and camels tied to carts and chariots. Transportation in modern days has become very efficient due to the invention of heat engines.

Transportation :

Carrying people and goods (things) from one place to another is called **transportation**.

Means of Transportation :

1. Land Transport :

Land transport uses land routes to carry people and goods. Land route may be classified into roadways, railways and pipe line (usually for transportation of goods).

Know this :

Land transport may be slow moving, fast moving and very fast moving.

Activity 4.1 : Name the vehicles used for land transport.

i) Roadways : Cycle rickshaw, bullock cart, two wheelers, automobiles like car, bus, lorry etc., are used for road transport.



Fig. 4.1
Cycle rickshaw



Fig. 4.2
Bullock cart



Fig. 4.3
Automobiles

ii) Railways :

Most of the goods and people are transported by railways. They are very helpful to transport products to the market. About 80% of the goods and 70% of the people are transported by Railways.

Know this :

In our country the first railway line was constructed between Bombay and Thane (34 Km.) in 1853.

Know this :

Underground train service and metro trains have been introduced in Delhi, Kolkata and recently in Bengaluru.



Fig. 4.4
Train



Fig. 4.5
Bullet train

Know this :



Fig. 4.6
The fastest Train in the World J.R. Maglev, Japan (581km/hr.)

Know this :

Indian Rail transport is the largest public sector undertaking in the world and is included in the Guinness book of world records.

iii) Pipeline :

It is the transportation of goods through a pipe. Most commonly, liquids and gases are sent through these pipes.



Fig.4.7
pipeline transport

2. Water (Sea) Transport :

Water transport provides navigation facilities by means of boats and ships.



Fig. 4.8
Row boat



Fig. 4.9
Speed boat



Fig. 4.10
Ships

Waterways are the cheapest means of transport. Ships are useful to carry loads of goods and a large number of people at a time from one country to another. Ports allow the ships to stay in their docks. There are 12 major ports in India (2011 AD).

Example : Kandla (Gujarath), Mangaluru (Karnataka), Mumbai (Maharashtra), Chennai (Tamilnadu).

Activity 4.2 : Make a list of the other major ports of India.

- | | |
|----|----|
| 1. | 5. |
| 2. | 6. |
| 3. | 7. |
| 4. | 8. |

3. Air Transport :

Air transport is the fastest means of transport. The regions which cannot be connected by land and water transport can be connected by air transport.

Aeroplanes and helicopters are important vehicles in air route.



Fig. 4.11
Aeroplane



Fig. 4.12
Helicopter



Fig. 4.13
Jet aeroplane

There are 16 International Airports in India (2011 AD).

Example :

Devanahalli International Airport- Bengaluru.

Indira Gandhi International Airport - New Delhi.

Activity 4.3 : Make a list of the remaining International Airports of India.

- | | | |
|----|-----|-----|
| 1. | 5. | 11. |
| 2. | 6. | 12. |
| 3. | 7. | 13. |
| 4. | 8. | 14. |
| 5. | 10. | |

Fuels used in different vehicles :

- | | |
|-----------------------------|---|
| 1. Aeroplanes | - Petroleum based fuel or petroleum spirit |
| 2. Ships | - Coal, Bunker oil. |
| 3. Cars | - Petrol, Diesel |
| 4. Buses, Trucks | - Diesel, CNG |
| 5. Motorbikes and some cars | - Petrol, Diesel, LPG |
| 6. Trains | - Diesel, Coal |
| 7. Fishing crafts | - Diesel |
| 8. Helicopters | - Gasoline, Avgas
(Octane - gasoline),
Jet fuel |
| 9. Space Ships | - Liquid Hydrogen. |
| 10. Rockets | - Hydrazine (Inorganic chemical compound) |

Think :

Some trains also run without using Diesel/Coal. How?

Know this :

Hybrid Vehicle : It is a vehicle that uses two or more power sources to move. Ex. Petrol and Electric Current, LPG and Natural Gas.

Know this :

Fig. 4.14
First amphibious motor

Think :

What is an amphibious motor?

Remember :

- Carrying people and goods (things) from one place to another is called transportation.
- The different means of transportation are - land, water and air transport.
- About 80% of the goods and 70% of the people are transported by Railways.
- Water ways are the cheapest means of transport.
- Air transport is the fastest means of transport.
- Ports allow ships to stay in their docks.

Tips :

- Do not use kerosene as fuel in automobiles. On burning, it gives more carbon monoxide. This causes air pollution.
- Do not run the engine of a vehicle when it is at rest.

Exercises :

I. Choose the most appropriate answer and put a tick (✓) mark against it :

1. 80% of the goods and 70% of the people are transported by.
a) airways b) roadways
c) waterways d) railways
2. Pipeline transportation is used to transport goods like.
a) solids b) liquids
c) gases d) liquids and gases.
3. The cheapest means of transportation is
a) roadways b) airways
c) waterways d) railways

II. Fill in the blanks with suitable words :

1. There are _____ major ports in india.
2. The fastest means of transportation is _____

3. Ports allow the ships to stay in their _____
4. There are _____ international airports in india.

III. Match the vehicles given in column 'A' with the means of transportation given in column 'B':

A	B
1. aeroplane	a. road
2. boat	b. rail
3. bus	c. air
4. train	d. pipeline
	e. water (sea)

IV. Answer the following questions :

1. What is transportation ?
2. Mention the means of transportation.
3. How do you classify the land route ?
4. What fuels are used in the following vehicles.
 - a) bus
 - b) train
 - c) ship
 - d) helicopter
5. Which is the most economical vehicle to go for short distances ?

V. Find out at least 6 fuels from the box :

Example : PETROL

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

Books for reference :

1. Handbook of activities VI - VIII by NCERT, New Delhi.
2. UNESCO Source book for Science teaching, UNESCO 1962.
3. Daily life science, C.L. Bate, GINN and company Ltd. London.
4. ವಿಜ್ಞಾನ ಚಟುವಟಿಕೆಗಳು, ಭಾಗ-1, ಪ್ರೊ|| ಡಿ.ಆರ್. ಬಳೂರಗಿ, ಪ್ರೊ|| ಎಂ. ಆರ್. ನಾಗರಾಜು, ಕರ್ನಾಟಕ ರಾಜ್ಯ ವಿಜ್ಞಾನ ಪರಿಷತ್ತು, ಬೆಂಗಳೂರು.