

1.2 Mode of Transportation Systems

Road, Railway, Airways, Water ways

Importance of each mode, ~~can~~

S. no.	Road ways	Railways	Airways	Water ways
1.	Door to door delivery is possible.	Door to door delivery is not possible.	Door to door delivery is not possible.	Door to door delivery is not possible.
2.	Suitable for shorter distance	Suitable for longer distance.	Suitable for longer distance.	Suitable for longer distance.
3.	Suitable for hilly areas	Not suitable for hilly areas.	Suitable for hilly areas.	Not suitable for hilly areas.
4.	Starting & Destination points are not fixed	Starting & Destination points are fixed	Starting & Destination points are fixed	Starting & Destination points are fixed
5.	Traffic by bus, M. cycle, Rickshaws.	Traffic by Train only	Traffic by aeroplane	Traffic by ships.
6.	Costly as compare to waterways	Costly as compare to road way	Costly transportation system	Cheapest mode of transportation

1.3 Necessity of Road Ways -

The Roads serve the following purposes -

- (a) It is ideal for non bulk cargo movement.
- (b) Roads develop the area quickly.
- (c) It provides door to door service.
- (d) Quick and easy transportation of men, materials food grains, vegetables and other goods from one place to another.

Merits of Road ways -

- (a) It is economical structure.
- (b) Small vehicles can be driven on roads for personalized transport.
- (c) It is very convenient for passenger and small good transport.
- (d) Destination and starting points are not necessarily defined.

Demerits of Road ways -

- (a) It is not suitable for bulk cargo movement.
- (b) Overall maintenance of road is more.
- (c) There is a speed limit or speed is restricted.
- (d) It is suitable for small distance only.
- (e) Tractive resistance of wheels of vehicles to the road is more, hence there is a early wear to the road pavement.

Railways

- Railway is commonly termed as permanent way for transportation means.
- Railway transport is now a days, the life line of the nation and more essential for mass transportation of ~~men~~ men and materials for long distances.
- The part of on which the railway actually moves consists of steel rails, wooden or pre cast concrete sleepers, ballast and sub-grade.

Merits of Railway

- It provides economic means of transportation for common people.
- Travelling in railway is safe and comfortable.
- It requires less power to drive.
- ~~It requires less power to drive.~~
- It gives the maximum revenue to the country.
- Heavy goods and raw materials can be transported for long distance only by railway.

~~of necessity & importance~~ (3)

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(F) It gives the easy payment to the maximum peoples.

(G) Fractive resistance of railway is less.

Demerits of Railways -

(a) It requires maintenance frequently.

(b) Door to door deliver is not possible.

(c) Sharp curve and steep gradients can not be provided.

(d) Initial cost of construction is more.

(e) The goods have to loaded and unloaded at station yard only and then it is transported by road to require place, hence uneconomical.

Airways — or Importance of Airways -

This is the quickest mode of transportation. The mode of journey is continuous and without any distances. Air transport provide more comfortable and fast travel resulting in substantial saving in travel time for the passengers between the airports. Air transport is the most suitable mode of transport for long distance.

Airway save more and more time also.

Merits of Airways

- (a) It play a very important role at time ~~of~~ time of war.
- (b) Long distance can be covered within hours.
- (c) It can reach to the ~~places~~ ^{+ places} where other mode of transport can not reach.

Demerits of Airways

- (a) It is costly affair ~~in~~ ^{transport} system.
- (b) It can not be afforded by common people.
- (c) Initial investment is more.
- (d) It ~~is~~ depends on ~~the~~ favourable condition of climate and cannot be driven in storms and fogs and heavy rain fall.
- (e) Initial investment is more.

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Water Ways —

Water transportation is the cheapest mode of transportation and it existed from olden days and it existed from olden days and it is suitable for transporting heavy material.

Merits of Water Ways —

- (a) It is environment friendly mode of transport.
- (b) It can carry very heavy goods over a long distance.
- (c) Water ways is the cheapest mode of transport.
- (d) It is suitable for transporting very heavy materials like oil, steel, timber, food grains, etc.

Demerits of Water Ways —

- (a) Storms and hurricanes in sea disturb the journey and damage the cargo.
- (b) Due to this method sometimes oil spills and marine life may get affected.
- (c) It requires more time to reach to the destination.

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Comparison between Roadways and Railways


S. no.	Roadways	Railways
1.	Suitable to all types of Traffic. Provide door to door service	Suitable for only from one station to another station
2.	Roadways consist of a suitable pavement with specified width.	Railways consist of a pair of steel rail having constant gauge throughout the track.
3.	Load carrying capacity is less than Railways.	Load carrying is more than Roadways.
4.	Maintenance cost is less.	Maintenance cost is more.
5.	Suitable for any distance	Suitable for long distance
6.	Suitable for steeper gradients	Limitations on the steeper gradients

Cross Drainage —

— An efficient drainage system for disposing off the surface water collected in side drains or that of nature streams across a road or railway track or across a hill road is called cross drainage.

— Cross drainage can also be defined as, the structures which are constructed for carrying the road or railway track across a nature stream ~~of~~ such as river, drain and depression like valleys.

— Culvert, Causeway, Scuppers, minor and major bridges the structures built across nature streams and depression called as Cross ~~to~~ drainage.



Necessity and Importance of Cross Drainage Work for Road and Railways -

- It provides the continuous access to the surrounding village and towns even at the time of flood and heavy rain.
- It also maintain the gradient in underlating area incase of railway.
- It helps to drain the water by providing the structure called as scuppers in hilly areas.
- The cross drainage work helps to maintain the continuity of a road or railway track while going across the river, streams, nala, depressions and valleys.
- It maintain the continuous communications.

