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Subject Transpotation (II)

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* Q.NO.1 :.

MODES OF TRANSPORTION:.

Different modes of the transportation are given below.

Various modes:.

- Rail Transport:.
- Road Transport:.
- Water Transport:.
- Air Transport:.
- pipe line Transport:.

Details:.

Rail Transport:.

Definition:. It is a means of transport, on vehicles which run on tracks (rails or railroad).

- Trains are powered by an engine locomotive running on electricity or on diesel.
- Rail is one of the fastest mode of transportation.
- More load Transfering mode of transportation.
- It is for long distence as well as short distence.

More Faster then roads:- Rail is more faster then road and less friction. more uniform travelling.

Suitable for bulky Good:- Railways are more suitable for bulky and heavy goods. The trains can carry huge load. The railways freight for carrying such goods is comparatively less. Also the goods can reach safely.

(2) Road Transport:-

Detail:-

* Road transport means transportation of goods and personal from one place to the other on road.
* The cost of construction, operating cost and maintaining roads is cheaper than that of the railways.

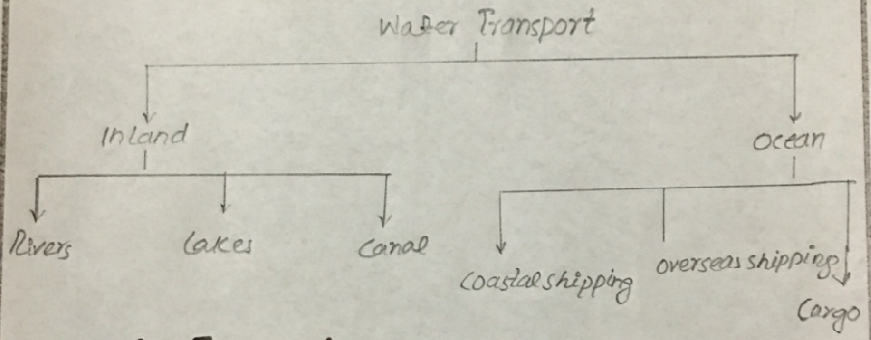
Adaptable Service:- Road transport has an incredible preferred advantage over different methods of transport for its adaptable administration.

Way to door Service:- The remarkble favourable position of street transport is that it gives way to entryway or distribution centre to stockroom benefit.

(3) Water Transport:

* Water transport is the process of transport a watercraft, such as a barge, boat, ship, sailboat, over a body of water, such as a sea, ocean, lake, canal, or river.

* Ship transport is primarily used for the carriage of people and non-perishable goods, generaly reffered to a Cargo.



(4) Air Transport:

* the mobility of men and material by air transport.

High Speed: It is the fast speed mean of transport.

Minimum Cost: Unlike railway and road transport, there is no need to spend money on the construction of any track or road only airport have to be constructed.

Useful for Agriculture:. (4)

* Air transport is useful for aerial During spray on pets and insects which Cause harm to Crops.

(5) Pipe line:.

Advantage:.

* It need very little maintenance.
* Pipelines are safe, accident-free, and environmental friendly.
* They are ideally suited to transport the liquids and gases.

Highway	Rail Roads:.
* It is the Smoth and more width mode of transpotation.	* It is also the Smoth but less width mode of transpotation.
* It is for normal distence.	* It is long travelling.
* It is less time Consuming.	* It is more time wasting.
* It is less load transformation.	* It is more load transformation mode.
* Highway are made for the Cars, Trucks, motorcycle, vain etc	* It is made for rail oney.
* More economic and more busy	* It is also economic but not busy as compared to road.
* 24 hour use.	* Less Time use as Compared to road.

Q.NO #2:- (5)

Q:-

Ans:-

Phases OF Highway Location Process:-

* Office Study of Existing Information:-
* Reconnaissance Survay:-
* Preliminary location Survay:-
* Final location Survay:-

Data Examination(office study):-

The first phase in highway location study is the eximination of all avilable data of the area in which the road is to be Constructed.

* In this phase photogramatic investigation.

Data Sources:-

* Existing engineering report.
* Maps.
* Aerial photographs.
* Charts.
* National/Provincial depeartment, Tranpotation, Agriculture, geology, hydrology, mining.

* Preliminary location Survey:-

* During this phase of the Study the position of the feasible routes are set as closely as possible by

  * Establishing all the Control points.
  * Determining preliminary verticale and horizantal alignments for each.

Economic Evaluation:-

* Economic Evaluation of each alternative routes is carried out to determine the future effect of investing the resources necessary to construct the highway.

Factor considered or Extract:-

* Road user costs.

  * Construction Costs.
  * Maintenance costs.
  * Road user costs.
  * Road user disbenefits, adverse effect due to dislocation of families, business, and so forth.

Results of economic evaluation:-

* provide information on the economic resources that will be gained or lost if a particular location is selected.

Enviromental Evaluation:

- Highway Construction at any location significant Impact on Sanoundings.
- A highway - an integral part of the local environment.

* Enviroment Includes plant, animal and humman Communities and encompasses Social, physical, natrual, and man made variables.

* These variable are interelated in a manner that maintains equilibrium and Sustains the life style of the different Communities.

* Essential to evalute Enviromental Impact of alignment Saleded.

* This may lead to a reduction of the quality of life of the animals and human Communities.

* on case Enviromental Impact study (EIS) is Jequired it is conducted at this to determined the enviromental Impact of each alternative route.
* EIS will determine the negative and/or possitive effects the highway facilaty will have on the Enviroment.

Example:.

*. At grade freeway construction, urban area- may result in unacceptable noise level for residents.

*. Highway facility may be located so that it provide better access to jobs and recreation centres.

*. Publich hearings are also held at this Stage- provide an opportunity for constituents to give there views point.

*. Best alternative, based on all the factors considered, is then Selected as the preliminary alignment of the highway.

Final location Survay:.

*. The final location Survay is a detailed layout of the selected route.

*. The horizantal and vertical alignments are determined and the position of structures and drainage channels are located.

*. The method used is to set out the points of intersection of the straight portions of the highway between these.

*. Best alignment is obtained using a trial-and-error process (designers opinion) considering both engineering and aesthetic factors.

Ans:. Q.NO. 3 (a)

IMPORTance OF vehicle Performance in highway Design:.

The project culminated in the development of a Computer programe that predicts the fuel consumption and Air pollutant Emission of vehicle when Operated on highway of arbitary lenght and geometric design.

EFFECTs OF Road Grade:.

* The total driveshaft torque was measured in a Series of replicate runs on 6.4 Km Section of private road at speed of 15 to 60 min/hr 24 to 96 Km/h on grade upto +8 Percent. A linear correlation b/w driveshaft torque and road grade was found that showed a Standard deviation of 2.2 Percent.

EFFECTS OF HORIZANTAL CURVATURE:.

*. At the outset of the this project or vehicle in highway clearly requirments were to demonstrate (a) whatever the effects of highway geometrical features on vehicle propulsive demand could be measured (b) Wheather such effects could be calculated reliable for vehicle without having to test each vehicle on the road.

INFLUENCE OF DRIVER VARIANCE ON Highway Fuel Economy :-

An Experiment was conducted with 10 drivers selected at random from the employee staff and consisted of 5 women and 5 men of various ages, plus a control driver who was the experiment conducter. The 10 drivers were not told that theire driving habits were the subjects of the experiment conducter. The understand they were evaluating some prototype road test equipment. The test road was a rural section of a limited access, divided highway used for this test only during low-traffic times. it had a uniform posted speed limit of 55 mi/h (88 Km/h).

Q.NO 4: (11)

Q:: **Directional Distribution=?**

Ans::

Directional Distribution::

* Highway must be designed to adequately serve the peak hour traffic volume in the peak direction of flow.

* Total hourly traffic in both directions is used to design two lane roads.

* In the design of highways with more then two lanes and on two-lane road where important intersection are encountred or where additional lanes are to be provided later, knowledge of the hourly traffic volume for each direction of travel is essential.

USE:: Directional traffic is used for each direction of multiline roads and streets.

* Typically, one direction contributes by 55-70% in total traffic occasionaly 80% is observed.

Example of Directional Distribution:.

* For Example, considered a rural road with a design volume of 4000 vehicle per hour (vph) for both direction of travelled combined.
* if during the design hour, the directional distribution is equally split, or, 2000 vph is one direction, two lanes in each direction may be adequate.
* if 80% of the DHV is in one direction, at least three lanes in each direction would be needed for the 32,00 vph.

Directional Distribution Design:.

Directional Design hourly volumes DDHV - ADTs are converted to a peak hour volume in the peak direction of flow.

$$DDHV = AADT * K(\text{peak hr}) * D(\text{peak hr-flow})$$

K = Proportion of daily traffic occuring during peak hour.

D = Proportion of peak hour traffic travelling in peak direction of flow.

→ For Design, the K factor often represents the proportion of ADT occuring during the 30th peak hour of the year.

Q.NO.5

Q:

Ans:

Surface Distress:

Definition: Surface distress is "Any indication of poor or unfavourable pavement performance or signs of impending failure.

Classification:

Fracture: This could be in the form of Cracking of Cracking (in flexible and rigid Pavements) or Spalling resulting from such things as excessive loading fatigue, thermal, moisture damage, contraction.

Distortion: This is in the form of deformation

Example: (Rutting, corrugation, shoving) creeps, densification consiladation, swelling or frost action.

Disintegration: this is the form of stripping, ravelling, Spalling, which can result from such things are loss of bonding Chemical reactivity, traffic abrasion, aggregate degredation, poor consolidation/compaction or binder aging.

Q.NO.6

Q.

Ans:

Aligator Cracking:- Aligator Cracking Indicative of fatigue failure of pavement due to repeated traffic load.

* Aligator Cracking may be Considered as combination of fatigue and block cracking.
* It is a series of interconneded cracks of various stages of development.
* Aligator Cracking develps into a many-sided pattern that resembles chicken wire or aligator skin.
* Occures in areas subjected to repeated traffic loading.

Block Cracking:

* A Pattern of Cracks that divides the pavements into approximately rectangular pieces, with sides, generally longer then one foot.
* Rectangular blocks range in size from approximately $0.1m^2$ to $10m^2$.

* **Possible Cause:** Shrinkage of Asphalt.

Longitudinal Cracking:.

* Cracks Predominantly parallel to pavement Centerline. location with in the lane.

possible Causes:. Expension and Contraction of pavement material, road bed, Settlement, poorly constructed paving Joints.

Traverse Cracking:.

Cracking occure across the Centeline- not due to reflection Cracking.

possible Causes:.

Expansion and Contraction of pavement material, roadbed settlement, poorly constructed paving Joints.

Causes of Cracks:.

1 → **Fatigue stresses:.**

2 → **Thermal Stresses:.**

3 → **Settlement:.**

4 → **poor drainage:.**

5 → **Exiting discontinuities:.** Cracks, Joints

6 → Asphalt Mix Design Issues:-

Improper bitumen Content, etc.

Causes of Traverse Cracking:-

1 → Slab longer than required.
2 → Excessive thermal stresses.

Cures:-

1 → Cracks Sealing.
2 → Full depth rigid repair.
3 → Dowel bar retrofit.

Causes of Longitudinal Cracking:-

→ Subsoil Settlement.

Cures:-

1 → Joint Sealing
2 → Full depth replacement
3 → Subsurface stabilization.