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Submitted by

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Section

B

Subject

Highway and Traffic engg

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Q No 1 Comparing Railways and Highways

Railway:-

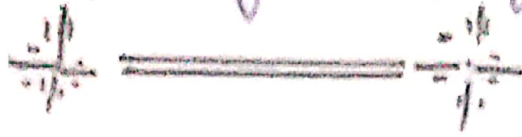
- (1) High maintainance cost
- (2) Not providing door to door service
- (3) more load carrying by railway
- (4) Long route service
- (5) Less Accident chances

Highway:-

- (1) High Accident rate
- (2) low maintainance cost
- (3) less load carrying capacity

④ provides door to door service

⑤ makes life easy for any distance.



Ques 2

Being a transportation engineer I will consider the following steps for office study of highway

"Data Examination:-

⇒ It is the first step in which we examine all available data in which the road is to be constructed.

⇒ There is no use of photogrammetric investigation in this phase.

"Data Sources:-

⇒ The sources are majorly available with national and provincial departments

⇒ Mostly the data is calculated in form of

- ⇒ maps
- ⇒ Aerial photographs
- ⇒ charts
- ⇒ CAD visuals
- ⇒ Existing Engineering projects eg dams

⇒ The type of data to be collected is dependant on the highway type

"Topographic Data Collection:-"

1. Engineering include geology, climate and traffic volumes
2. Social and demographic includes land use and zoning pattern
3. Economic including unit cost for construction and the trend of agricultural, commercial and industrial activities
4. Environmental includes types of wildlife, location of recreational and historical sites' effect the air, noise and water pollution.

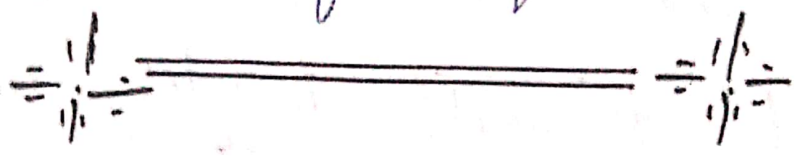


### "Preliminary Analysis of Data:-"

It will indicate if any specific sites should be excluded from consideration

At the completion of this phase, the engineer will be able to select generally areas through which highway can transverse

In the presence of any historical, Archeological sites the routes that transverse it is excluded from further consideration.



### Q No 3

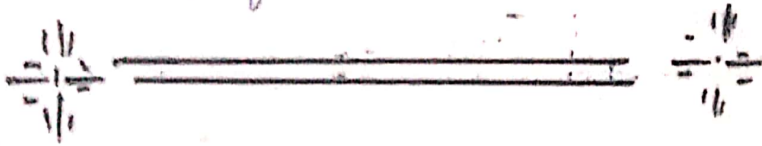
The vehicle performance in highway design is very important because of following points

Adequate passing and stopping sight distance

maximum grades

Acceleration and deceleration lanes

- ① Setting speed limit
- ② Freeway compo
- ③ Climbing or passing lane
- ④ Turning and signalized intersections
- ⑤ Braking characteristic also effects vehicle performance



Q. No. 4

### Directional Distribution:-

Highway must be designed to adequate serve the peak hourly traffic volume in the peak direction of flow.

In Directional Distribution the total traffic hourly in both directions is used to design two lane roads.

In the design of highway with more than two lanes and on two lane roads

where important intersection are encountered or where additional lanes are to be

Provided later knowledge of the hourly traffic volume for each direction of travel is essential

Example:-

If 80% of the DMV is in one direction at least three lanes in each direction would be needed for the 3200 vph.

Q No 5

Following are the classification of Surface distress mode;

1) Disintegration:-

This is in the form of stripping or removal of paving material, which can result from such things as loss of bonding and chemical reactivity, traffic abrasion aggregate degradation or binder-aging



## 2) Fracture :-

This is in the form of cracking or breaking, generally due to excessive loading and thermal changes.

## 3) Distortion :-

This could be in the form of ~~the~~ deformation which can result such things as excessive loading, densification or subgrade issue.

Q. NO 6

## Alligator cracking :-

Alligator cracking is a series of interconnecting cracks caused by fatigue failure of a asphalt surface under repeated traffic loading. The cracks initiate from the bottom of the asphalt surface where tensile stress and strain highest under a wheel load.

## 2) Block cracking:-

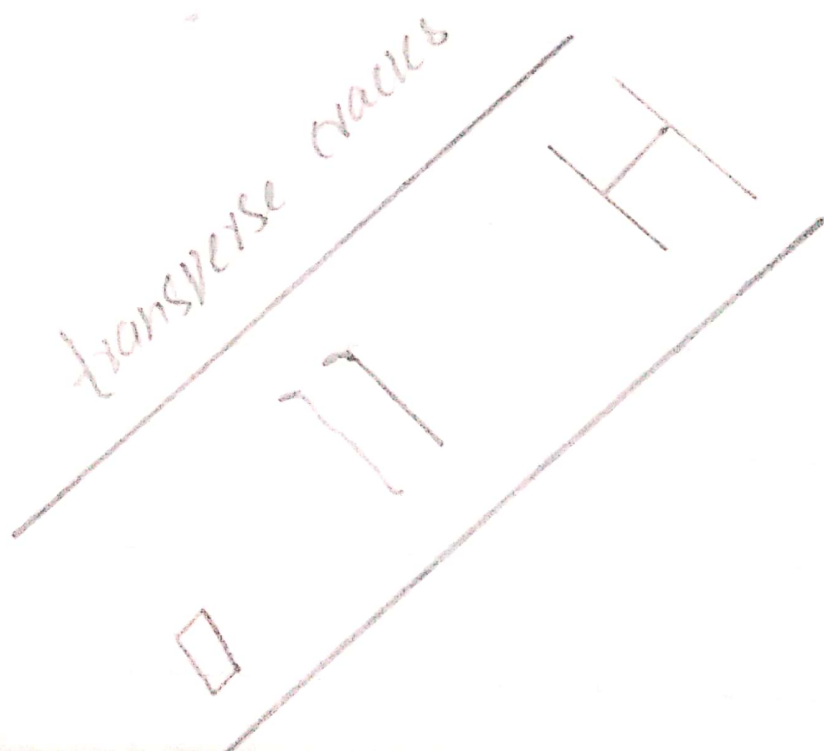
Block cracks are interconnected cracks that divide the pavement into approximate rectangular pieces block ranging in size 1 by 1 foot to 10 by 10 feet. It is caused by shrinkage of the asphalt concrete and daily temperature.

## 3) Longitudinal cracking:-

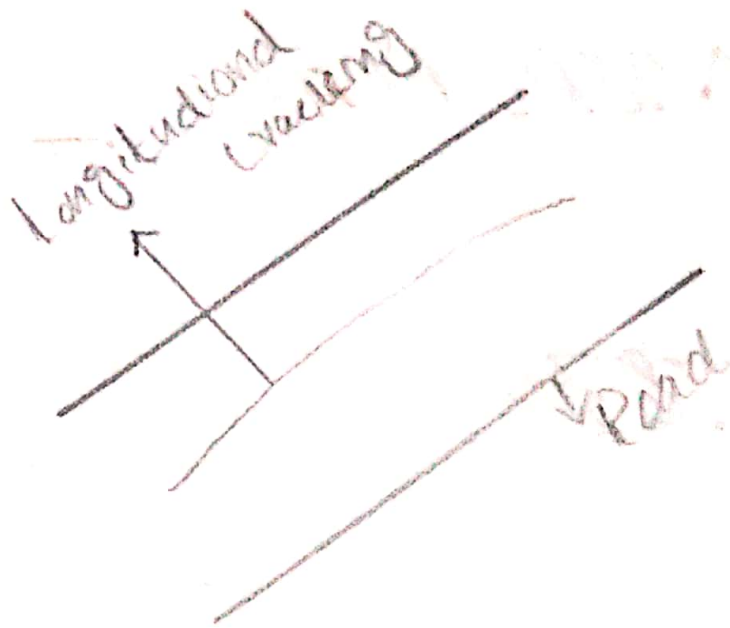
Longitudinal cracks are parallel to the pavement center line or laydown direction caused by poorly constructed paving line joint the shrinkage of AC surface due to low temp of the asphalt.



4) transverse cracking:- transverse cracks extend across the pavement at approximate right angles to the pavement center line direction of laydown. These type of cracks are not usually load associated.



⇒ Longitudinal cracking



⇒ Block Cracking

