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MID TERM

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Section; "B"

Semester; 6th

Subject; Highway And Traffic Engineering

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Question # 01

Answer:

Railway

Highway

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|---|--|
| <ul style="list-style-type: none">★ A track, consisting of parallel rails, over which wheeled vehicles such as trains may travel. | <ul style="list-style-type: none">★ A main direct public road, especially a multilane, highspeed thoroughfare connecting major populating centers. |
| <ul style="list-style-type: none">★ It depend upon the road transport. | <ul style="list-style-type: none">★ Others mode modes are depend on it. |
| <ul style="list-style-type: none">★ Do not provide door to door service. | <ul style="list-style-type: none">★ It provide door to door service. |
| <ul style="list-style-type: none">★ It required large investment for the government | <ul style="list-style-type: none">★ It required small investment for the government. |
| <ul style="list-style-type: none">★ Minimum crash rate occur if handled carefully. | <ul style="list-style-type: none">★ High degree of accident due to flexibility of movement. |

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Railway

* The transportation along the railway track could be advantages by railways between the station.

* Railway is a track, consisting of parallel rails, over which wheeled vehicles such as trains may travel.

Highway

It gives maximum flexibility for travel with reference to route choice direction time and traveling speed.

Highway is a main direct public road, especially a multi-lane, high speed thoroughfare connecting major populating centers.

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Question # 02

Answer: As a transportation engineer I have been design a new highway the following material I will study and data I will extract as preliminary step of office study.

- * The position of the feasible ~~study~~ routes and set as closely as possible by.
- * Establishing all the control point.
- * Determine preliminary vertical and horizontal for each.

=> Economic Evaluation:

Economic Evaluation of each alternative route is carried out.

→ The following factor considered in economic ~~at~~ evaluation.

- * Road user costs
- * construction costs
- * Maintenance costs
- * Road user benefits.

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Environmental Evaluation:

Highway

construct at any location - significant impact on surrounding.

→ The construction of a highway at a given location may result in significant change in one or more variables.

→ Essential to evaluate environmental of alignment selected.

→ In case environmental impact study (EIS) is required it is conducted at this stage to determine the environmental impact of each alternative route.

→ Environmental impact study will determine the negative and positive effect. The highway facility will have no environment.

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Question # 03

Answer: Importance of vehicle

Performance in Highway design are

-> Statics

-> Dynamics

-> Kinematic

=> Statics: It is defined as the characteristics of the selected representative vehicle related to the vehicle geometry, design and control system present in it.

Vehicle axle weight is used in the estimation of thickness of the pavement.

= Dynamics: An important aspect of improving highway safety lies in designing the geometric features of roadways in response to the characteristics and behaviour of drivers. This is been applied to specific features of Highway.

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with evidence of improvement in operation and safety. However, much more can be accomplished. There is now available additional operational experience and observations which can assist the driver's task in vehicle control and guidance, but which have not yet been fully reflected in design criteria.

=> Kinematic: This paper presents a mathematical ~~problem~~ model for computing the path of any one point on a wheeled vehicle and the steering angle necessary for a reference point to travel a specified curve. The vehicle could be a bus, an articulated truck, or a wheeled robot.

Application of the model would be for determination of a swept space of a vehicle while the reference point on the vehicle moves along a specified path (i.e. a bus driver negotiating a left turn as the back corner of the bus swings right).

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Question # 04

Answer: Directional Distribution:

The directional distribution, also known as the D factor, is an important traffic parameter that is frequently used for design and operational performance analysis. This research analyzes the variability of the D factor for bicycle traffic and identifies the factors that lead to such variability. The importance of the D factors stems from its potential application in estimating the daily volume of one travel direction at a particular counts station using the daily count of the other direction.

This case takes place when the sensor installed on one direction is down because of malfunction. This research explores the temporal and spatial

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transferability of the D factors of bicycle traffic. Different sets of bicycle D factors were developed according to different criteria, and were further used for estimation purposes.

The study made use of daily bicycle volume data, which were collected at 10 bidirectional count stations in the city of Vancouver, Canada, between 2009 to 2011.

Question # 05

Answer: Distress: It is defined as the indication on a performance of unfavorable pavement (unsatisfactory performance of the pavement) and it shows the sign of upcoming failure (impending failures). It is the irregularity (uneven) of the road surface which it affects the user comfort and safety.

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Classification of surface distress mode.

Surface distress modes can be broadly classified into the following three groups.

1: Fracture.

2: Distortion.

3: Disintegration.

1: Fracture: This could be in the form of cracking or spalling resulting from such things as excessive loading, fatigue, thermal changes, moisture damage, shrinkage or contraction.

2: Distortion: This is in the form of deformation (e.g rutting, corrugation and shoving), which can result from such things as excessive loading, creep, densification, consolidation, swelling or frost action.

3: Disintegration: This is in the form of stripping, raveling or spalling, which can result from such things as loss of bondings, chemical reactivity, traffic abrasion, aggregate degradation or binder aging.

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QUESTION # 06

Answer: Alligator cracking;

It is caused by failure of the surface layer or base due to repeated traffic loading (fatigue). Eventually the cracks lead to disintegration of the surface. The final result is potholes.

Alligator cracking is usually associated with base or drainage problems.

⇒ Block cracking:

Block cracking is an interconnected series of cracks that divides the pavement into irregular pieces. This is sometimes the result of transverse and longitudinal cracks intersecting.

They can also be due to lack of compaction during construction. Low severity block cracking may be repaired by a thin wearing course.

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Longitudinal Cracking:

Longitudinal cracks in bituminous pavement are usually caused by fatigue failure under repeated traffic loading.

In thin pavements, cracking starts at the bottom of the bituminous layer where the tensile stress is the highest and then it spreads to the surface as one or more longitudinal cracks.

⇒

Transverse Cracks:

Transverse cracking is an unconnected crack that runs across a road pavement, perpendicular to the direction of the road.

The cause of transverse cracks are also expansion and contraction of pavement material, road bed settlement poorly constructed paving joint.