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Section : A

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Q. No. 2

Answer:

Railways :-

The transportation by the use of railways is very important and useful for the goods & also the pessengers especially for longer distance.

→ The transportation alons the railways depends upon the roads.

→ The energy reqyired in railway to drag a unit load through a unit distance is qyite low and it is about 1/4 to 1/5 of that reqyired by the road.

→ This transport by railways is qyite safe as compared to roads.

Highways :-

The highways provides maximum service as compared to railways

→ The other modes of transport depends upon highways.
→ We can save our time by using this transport.
→ Higher rate of accidents on highways because of high traffic.
→ Also it requires small investment for the government.

Q.No. 2.

Answer:

OFFICE STUDY:

The first step for the design of a new highway is to study & examine all the available data of the area in which the road is to be constructed.

Data Sources:

The data resources which are required in this study are as under:

- Existing engineering reports
- Maps
- Charts
- Aerial Photographs

Area Characteristics covered in data collection:

- Engineering which may include topography, geology, climate and traffic volumes.
- Environmental including location of recreational, historic and archaeological sites, types of wild life.
- Social and demographic, including land use and zoning patterns.

Preliminary analysis of the data

- This step will indicate that which of the sites are to be included or excluded from further considerations.
- Then after this phase is completed, the engineer will be able to select the general areas through which the road can be constructed.

Q.No.3

Answer.

Importance of vehicle performance in highway design:

- The acceleration & deceleration rates of the vehicles are very important in determining the design of the highway.
- These rates provides information and helps to determine [illegible] of such design/features.

1- Freeway Ramps
2- Turnout bays for buses
3- Highway alignment
4- Climbing or passing lanes
5- Acceleration & deceleration lanes
6- Determine the need for truck climbing lanes.

Question No.4

Answer:

Directional distribution in design of highways.

- Highways should be designed in such a way that they should serve peak hour traffic volume in the peak direction of flow.
- Daily traffic or hourly traffic in both the directions can be used to design two lane roads.
- Directional traffic is used for multilane roads & streets. Knowledge of hourly traffic volume is important if we want to design highways with more than two lanes or when on two lane roads important intersections are provided.

Question No.5

Answer:

Broad Classification of Surface Distress Modes:

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

- Fracture:

Mainly due to the excess load, thermal changes, this could be in the form of cracking or breaking.

- Disintegration:

Disintegration may be in the form of stripping which can occur due to loss of bonding, chemical reactivity etc.

- Distortion:

Distortion may be in the form of deformation, which may result from excessive loading, consolidation or subgrade issues.

Question No. 6

Answer:

. Alligator Cracking:

* Also known as Crocodile cracking
* It is a series of the interconnected cracks at various staser of construction/development.
* This crackins occurs in those areas which are usually subjected to continous traffic loadings.

Block Cracking:

* These are the interconnected cracks that divides the pavement into rectangular pieces.
* These rectansular blocks ranse in size from 0.1 m^2 to 10 m^2.
* The main cause of this crack is the shrinkase of asphalt.

Longitudinal Cracking:

* These are the cracks which occur parallel to the centerline of the pavement.
* The main causes of these crackins includes poorly constructed joint, shrinkase of the asphalt layer.

Transverse Cracking:

* Transverse cracking is also a cracking which is across the centerline.
* The causes of the transverse cracking include expansion & contraction of the pavement material, roadbed settlement etc.