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Section " A

Subject " Transportation - 1

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Q No 1.

(1)

Given data:-

60000 Vehicles monthly (30 days)  
Peak Movement of 50 vehicles @ 15 min

Required

Peak hour factor = P.H.F.

Solution:-

$\therefore$  Average vehicle moves in 30 days

Vehicle per day =  $\frac{\text{Average}}{30} = 2000$  days

Now

Per hours =  $\frac{2000}{24} = 83.3 \approx 84$  veh

Consider 3 line in each line so  
total is 6. time for both direction

So

$\frac{84 \times 6}{6} = 14$  Vehicles

Place 14 vehicle are moving per  
way per hour in each direction

To Find P.H.F = ?

$$P.H.F = \frac{\text{Hourly Volume}}{4 \times \text{maximum 15 min vehicle with an hour}}$$

$$P.H.F = \frac{14}{4 \times 550} = 0.00636$$

$$P.H.F \approx 0.00636$$

Q No # 02

Calculate the TMS of SMI from given data.

Vehicle	Distance (km)	Travel time (min)	Speed Km/hr
1	1500	1.31	64.122
2	1700	1.51	55.625
3	1200	1.11	64.865
4	1500	0.90	100.00
5	1600	1.12	85.74
6	1900	1.52	71.053
7	1700	1.45	45.655
8	950	0.90	63.717
9	1175	1.37	53.008
10	1200	1.13	63.717
11	1300	1.20	60.000
12	1400	1.20	70.000
13	1800	1.71	87.054
14	1700	1.14	71.852
15	1800	1.10	108.00
16	200	<del>0.007</del> 1.42	112.500
17	1200	1.87	82.755
18	1200	1.40	92.857
19	1600	1.21	75.335
20	1900	2.55	125.455
Total	29.525	0.572168	1820.55
Average	1.47625	0.572168 ÷ 20	1820.55 ÷ 20
		0.028608	

3)

Find TMS :-

wh we know that

$$TMS = \frac{\sum \left( \frac{x_i}{e_i} \right)}{n}$$

$$TMS = \frac{1620.795}{0.572168}$$

20

$$TMS = \underline{2833.07525}$$

90

$$TMS = 141.6537 \text{ km/hr}$$

To find SMS :-

wh we know that

$$SMS = \frac{\sum x_i}{\sum e_i} = \frac{\sum x_i}{\sum e_i}$$

$$SMS = \frac{90 \times 1.47625}{0.572168}$$

$$SMS = 51.6015 \text{ km/hr}$$

Explain the railway engineering in detail

Ans: Railway engineering:-

The branch of civil engineering which deal with the design, construction and maintenance of railway tracks for safe and efficient movement of train is called Railway track.

Component of track

- 1) Ballast
- 2) Rails
- 3) Sleepers
- 4) Points of crossing
- 5) Point of switch

1) Ballast:-

Ballast is the granular material usually broken stone or bricks size and kankar, gravel and sand placed and packed and around the sleepers to transmit load from sleepers to formation layer.

Size = 20 mm - 65 mm

2) Rails:-

The rolled steel section laid end to end in two longer parallel lines over sleepers



(5)

a railway track are known as rails.

Types of rails:-

The rail way track are divided into following types.

1) Double headed rails

2) Flat footed rails

3) Bull headed rails

(1) Double headed rails.

These are the head and foot are in same dimension.

(2) Flat footed rails:-

The rail section having their foot rolled to a flat are known as flat footed rail.

(3) Bull headed rails:-

The head are more dimension than that of their foot

Rail joints:

1) Fish plate joint

2) Fasteners joint

3) Slide chairs joint 6) Chairs.

4) Junction plate joint

5) Bearing Plate joint

(6)

→ Sleepers = Sleepers are generally laid transverse to rails, on which the rail are fixed to transfer the load from rail to wheels and the best grade.

Type of Sleepers:

- Wooden Sleepers
- Metal Sleepers
- Concrete Sleepers.

Point of Crossing:

Point, crossings, tinnard, cross-overs and such related forms are arrangement by which different routes either parallel are connected and offered the means of dem to move from one route to another route is called point of crossing.

- 1) A pair of stock rail.
- 2) A pair of tongue rail
- 3) Heel Block
- 4) Stretcher bar
- 5) side chair.

Point Switch:

→ A switch consist of stock rail and tongue rail.

(7)

A pedal consist of left hand and right hand switch.

Q No # 04.

Airport Engineering:-

Airport Engineering refers to planning, design, and construction of terminal, runway navigation aid to provide safe movement for passengers and freight service.

Air field:-

Area where air craft can land and take off which is equipped with navigational aid, marking and terminal.

Aerodromes:-

Area on land or water included to be used either wholly or in part for arrival, departure and surface movement of aircraft.

Component of Air port:-

following are

- 1) Run way
- 2) Taxi way
- 3) Apron
- 4) Terminal
- 5) Central tower
- 6) Hangar
- 7) Parking.



(8)

- (1) Run way:- It's a paved land strip on which take off and landing operation of aircraft takes place. It is on levelled position and there's no obstruction on it. Special markings are made to differ it from normal roads eye-lighting helps in safe ~~formation~~ landing.
- Direction of runway should be in direction of wind.
  - width of runway depend on max size of aircraft utilizing it.

- (2) Taxi way:- <sup>that</sup> it is the ~~path~~ ~~which~~ ~~connect~~ ~~runway~~ ~~to~~ ~~the~~ ~~end~~ ~~of~~ ~~runway~~ ~~with~~ ~~terminal~~ ~~area~~ ~~1~~ ~~apron~~ ~~or~~ ~~hangar~~
- In modern airport its laid on the angle of 30 to runway so its used the aircraft to change runway from another.

- (3) Apron:- It is a basically parking for aircraft. it is also used for loading and unloading. from aircraft.

(7)  
It usually found and located in front of terminal building.

→ The size of area depend upon the number of aircrafts. ~~depend~~

#### (4) Terminal building:-

It is a place where airports administration facilities are located the pre-journey and post-journey checking of passenger take place

→ Cafe and lounges are there for waiting passengers. Ticket counter

→ large airport have more than one terminal building.

#### Control Tower

It is a place where aircraft under a particular zone are controlled whether in air or on land it is done through radar and information carried through radio.

→ It like a nervous system of airport.

#### (6) Hangar:-

A place where repair and service of aircraft is done. It is connected to runway through taxiway.

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- when repair of aircraft needed its moves to hanger
- its construct on steel Trusses and frame.

(77) Parking it provided a place for parking vehical of airport staff or Passengers which is Out side Terminal building or sometime under ground.

8 Runway markings:- Runway markings are provided with different purpose like.

- Runway center line Marking  
↳ For guidance & identify center of road
- Runway edge strip
- Touch down are landing zone marking
- Thrushold marking.

Air Port lighting:

- 1) Approach lighting
- 2) Runway edge lighting
- 3) Thrushold lighting
- 4) Taxiway lighting
- 5) Boundary lighting
- 6) lighting of wind
- 7) Approach hange lighting