

NAME : M. MUSTAFA . KHAN

SEC : A

ID : 7753

QUESTION #1:

Given Data:

60000 vehicles monthly (30 day)
peak flow rate of 550
vehicle @ 15 min.

Required Data:

number of vehicles moving per
hour in each lane in each
direction = ?

Peak hour factor = ?

Solution :

60000 vehicle moves in
30 days.

So

$$\text{vehicles per day} = \frac{60000}{30}$$

$$= 2000 / \text{day}$$

Now vehicle per hour.

So

$$\frac{2000}{24} = 83.3 \approx 84 \text{ veh/hr}$$

Consider three lanes in each direction so total six lanes for both directions.

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

Hence 14 vehicles moves per lane per hour in each direction.

$$PHF = \frac{\text{hourly vol}}{4 \times \text{max 15min vol in hour}}$$

$$PHF = \frac{14}{4 \times 550}$$

$$PHF = 0.0063$$

QUESTION # 2:

Vehicles number	Distance in meter	Travel time in min	Speed km/hr
1	1400	1.31	64:122
2	1400	1.51	55:629
3	1200	1.11	64:865
4	1500	0.90	100:000
5	1000	1.12	85:714
6	1800	1.52	71:053
7	1200	1.45	49:055
8	950	0.90	63:333
9	1175	1.33	53:008
10	1200	1.13	63:717
11	1300	1.30	60:00
12	1400	1.20	70:00
13	1800	1.24	87:097
14	1700	1.11	91:892
15	1800	1.00	108:000
16	2100	1.12	112:500
17	1200	0.87	82:759
18	1700	1.40	72:857
19	1600	1.21	79:339
20	1700	0.55	185:455

Total = 29725	= 23.28	1620.995
Average = $\frac{29725}{20}$	= $\frac{23.28}{20}$	= $\frac{1620.995}{20}$
= 1486.25 (m)	= 1.164 (min)	
1.48625 (km)	= 0.0164 (hr)	= 81.049 km/hr

$$TMS = \frac{\sum \text{speed}}{n}$$

$$= \frac{1620.995}{20} = 81.049 \text{ km/hr.}$$

$$SMS = \frac{n \cdot \bar{v}}{\sum T}$$

$$= \frac{20 \times 1.48625}{0.388}$$

$$= \frac{29.725}{0.388}$$

$$= 76.61 \text{ km/hr.}$$

QUESTION # 3:

Railway Engineering:

the branch of civil engineering which deal with the planning, design, construction, operation and maintenance of the railway tracks for safe and efficient movement of trains is called railway engineering.

Primary objective of railway engineering are:

* Safety

* Efficiency

History:

* The history of railway is closely linked with civilization.

* As the necessity arose the human being invented various methods for transporting goods from one place to another.

* In the primitive goods were carried as head loads or in cart drawn by men.

* Then efforts were made to replace animals power with mechanical power.

* In 1769, Nicholas Carnot carried out a the pioneering work of developing steam energy.

* This work has very limited success & it was only in 1804 that Richard Trevithick designed and a steam locomotive.

* This locomotive however could be used for traction on railway

* The first public railway in the world was opened to traffic on 27th sept 1825 between stockton and darlington in the United Kingdom.

* Simountaneously other countries in europe also developed such railway ~~station~~ system most introduced trains for carriage of passenger traffic.

* the first train consisting of one steam engine and four coaches made it maiden trip on its 16 april 1853, when it traversed a 21-mile stretch b/w Bombay and thane in 1.25 hours.

* It was on 13th may 1862
the ~~the~~ first railway line was
opened for public between
karachi and kotri, the distance
was 105 miles, (169 km)

* then speed was 12 mph

* Now is 375 mph.

QUESTION # 4:

AIRPORT ENGINEERING:

* Airport engineering encompasses the planning, design and construction of terminals, runway and navigation aids to provide safe movement for passenger and freight service

* an airport is a facility where passengers connect from ground transportation to air transportation

International Civil Aviation Organization (ICAO)

ICAO an agency of the united nations codifies the principle and techniques of international air navigation and foster the planning

and development of international air transport to ensure safe and orderly growth.

Component of Airport:

Runway: is a paved strip on which landing and takeoff operation of aircraft take place, it is in leveled position with out any obstruction on it.

* runway should be in the direction of wind some times cross wind may happen so for safety second runway should be laid.

* runway can be laid by using bitumen or concrete.

Taxiway:

Taxiway is a path which connects each end of the runway with terminal area, hanger etc.

- * These are laid with asphalt or concrete like runway.
- * Taxiway in modern airport are laid at an angle of 30° .

Apron:

It is the parking place for the aircraft. It is also used for loading and unloading of aircraft.

- * It is paved surface located in front of terminal building.
- * The area for apron is governed by the number of aircraft and characteristics of aircraft.

Terminal building:

The administrative block of airport in which pre journey and post journey checking of passengers takes place.

- * terminal building can house cafes and lounges to serve as waiting area.
- * large airport can have more than one terminal building that are connected to one another.

Control tower:

The control tower is a place where aircraft under a particular zone is controlled whether they are on land or air. The observation is done by radars.

* it observe all the aircraft in the zone and inform the pilot about the air traffic landing routes, visibility, wind speed and attempts safe landing

Hanger:

Hanger is a place where the servicing and repairs of aircraft take place.

* it is constructed in a form of large shed using steel trusses and frames, large areas should be provided for hangers.

Parking:

the area for the parking of vehicles.

it may be outside or under the terminal building.