


Day: M T W T F S

Date: ___/___/___

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ID 7532

Subject Transportation
Engineering
I

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Q No 1

Given data

60000 = vehicles monthly
 peak flow rate of 550 vehicles
 @ 15 min

Required:-

PHF = ?

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

Solution:-

$$\text{vehicles per day} = \frac{60000}{30} = 2000$$

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

$$\text{vehicles per hour} = \frac{2000}{24} = 83.3$$

$$= 83.3 \approx 84 \text{ veh/h}$$

So

84 / 6 = 14

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Hence 14 vehicles are
moving per lane per hour
in each direction

Therefore

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

$$PHF = 0.0063$$

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S.P
3

Vehicle No	Distance	Travel time	Speed km/hr
1	1400	1.31	64.122
2	1400	1.57	55.629
3	1200	1.11	64.865
4	1500	0.90	100.000
5	1500	1.12	85.714
6	1800	1.52	71.053
7	1200	1.45	44.055
8	950	0.90	63.333
9	1175	1.33	53.008
10	1200	1.13	63.717
11	1300	1.30	60.000
12	1400	1.20	70.000
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	89.759
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

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$$\underline{\text{Average Distance}} = \frac{29725}{20}$$

$$= 1486.25 \text{ meter}$$

$$= 1.48625 \text{ km}$$

$$\underline{\text{Average time travel}} = 23.28/90$$

$$= 1.164 \text{ min}$$

$$= 0.0194 \text{ hr}$$

Average Speed

$$\frac{1620.995}{20}$$

$$= 81.049 \text{ km/hr}$$

$$\text{TMS} = \frac{\text{Speed}}{n}$$

$$= \frac{1620.995}{20}$$

$$= 81.049 \text{ km/hr}$$

$$SMS = \frac{n \times}{\Sigma T}$$

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

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

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

Q No 3 Explain Railway engineering in details.

Ans: The branch of civil Engineering which deals with the planning, design, construction, operation and maintenance of railway tracks for safe and efficient movement of trains is called Railway Engineering.

History

- * The history of railway is closely linked with the development of civilization.
- * As the necessity arose, human beings developed various methods of transporting goods from one place to another.
- * In 1769 Nicholas Carnot, a Frenchman, carried out the pioneering work of developing steam energy.
- * The work had very limited success and it was only in 1825 that Richard Trevithick

designed and constructed a steam locomotive.

★ The locomotive, however, could be used for traction on roads only

★ The credit of perfecting the design goes to George Stephenson who in 1814 developed the first steam locomotive used for traction on railway.

★ The first public railway in the world was opened to traffic on 27th September 1825 between Stockton and Darlington in the UK.

★ Simultaneously, other countries in Europe also developed such railway system. Most introduced train for carriage of passengers

★ The US operated its first railway line b/w Mohawk and Hudson in 1833

★ The railway line in Germany was operated from Nuremberg to Furth

in 1835

* It was on 13th May 1861 that first railway line was opened for public traffic b/w Karachi city and Kotri the distance was 105 miles (169 km).

* speed was 12 mph

* speed is 37.5 mph.

Components of railway track

An engineered structure consisting of two metal guiding rails on which vehicles are self-propelled or pulled by a locomotive is called a railway track.

Rail

Ballast

Sleeper

Fastening.

Q No 4

Ans:- Airport Engineering.

* Airport Engineering encompasses the planning, design, and construction of terminals, runways, and navigation aids to provide safe moment for passenger and freight service.


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

Airfield:-

is a area where all aircraft can land and take off which is equipped with any navigational aids, markings and terminal facilities.

Aerodromes:-

is a defined area on land or water including any buildings, installation and

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equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

History of Air Transport:

* The world's first airport was built in 1928 at Croydon near London (England).

* The International Civil Aviation Organization (ICAO)

The International Civil Aviation Organization (ICAO), an agency of the United Nations, codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.

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Components of Airport

- 1) Runway.
- 2) Taxiway.
- 3) Apron.
- 4) Terminal building.
- 5) Control tower.
- 6) Hangar.
- 7) Parking.

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