

Q1 :-

$$\mu_t = \frac{\sum u_i}{n} = \frac{(11.6 + 12.5 + 13.2 + 13.9 + 14.5)}{5}$$

$$\mu_t = 13.14 \text{ m/sec}$$

$$\Rightarrow t_1 = \frac{200}{11.6} = 17.2$$

$$t_2 = 16 \text{ sec}$$

$$t_3 = 15.15$$

$$t_4 = 14.9$$

$$t_5 = 13.8$$

$$\mu_s = \frac{(5)(200)}{\sum t}$$

$$\boxed{\mu_s = 12.98}$$

$$\sigma^2 = 1.303 \xrightarrow{\text{can be found}}$$

① by Calculator

② From (6-3) equation

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Q2:-

$$N = 3$$

$$FFS = BFFS - \textcircled{0} = 75 \text{ mph}$$

the correction is zero because it is rural freeway.

$$V = DHV = ADT * K * D = 4500 \text{ pcph}$$

$$V_p = \frac{V}{(PHF * N)} = 1630$$

$$D = \frac{V_p}{FFS} = 21.73 \text{ pcphpl}$$

⇒ From table 6-3:- LOS = C

Q3

$$V = 3600/10 = 360 \text{ Vph}$$

$$t = 45$$

$$M = Vt/3600 = 4.5$$

$$\therefore P(X > 4) = 1 - [P(0) + P(1) + P(2) + P(3)]$$

$$= 1 - e^{-4.5} [4.5^0/0! + 4.5^1/1! + 4.5^2/2! + 4.5^3/3!]$$

$$= 1 - e^{-4.5} [1 + 4.5 + 10.125 + 15.1875]$$

$$= 0.6577 = 65.77 \%$$