Ans- 1 :- An IVP is an imaging test used to look at the kidneys and ureters. The ureters are the narrow tubes that carry urine from the kidneys to the bladder. During the test, the radiologist injects a contrast dye into one of your veins.

3- Ans :- As an initial-initial value problem (IVP), where all four boundary conditions are given at one point, or as a boundary value Problem (BVP) where four boundary conditions are specified at two distinct points.

	IVP	BVP
$N(t,x)$	$N(0,x)$: cumulative vehicle Profile at $t=0$	$N(t,0)$: cumulative count curve at $x=0$
$T(n,x)$	$T(0,x)$: trajectory of the lead vehicle.	$T(n,0)$: time every vehicle enters the freeway
$X(t,n)$	$X(0,n)$: position of all vehicles at $t=0$	$X(t,0)$: trajectory of the lead vehicle.

Ans-5 :- We have to solve the following initial value Problem given as:

$$6y'' - 5y' + y = 0,\ y(0) = 4,\ y'(0) = 0.$$

Assuming the solution to be $y = e^{kt}$ we get:

$$6y'' - 5y' + y = 0$$

$$\Rightarrow 6((e^{kt}))'' - 5((e^{kt}))' + e^{kt} = 0$$

$$\Rightarrow e^{kt}(6k^2 - 5k + 1) = 0$$

$$\Rightarrow (6k^2 - 5k + 1) = 0$$

$$\Rightarrow k = \frac{1}{2}, k = \frac{1}{3}$$

So the general solution is:

$$y = c_1 e^{\frac{1}{2}} + c_2 e^{\frac{1}{3}}$$

Next we need to apply the initial condition

$y(0) = 4,\ y'(0) = 0$, to get

$$4 = c_1 e^{\frac{0}{2}} + c_2 e^{\frac{0}{3}}$$

$$\Rightarrow c_1 = 4 - c_2$$

Also

$0 = (4 - c_2)e^{-\frac{1}{2}} \frac{1}{2} + \frac{c_2 \frac{2}{3}}{3}$

$\Rightarrow c_2 = 12$

$\Rightarrow c_1 = -8$

So the solution obtained is:

$y = -8e^{-\frac{1}{2}} + 12e^{\frac{1}{3}}$

Ans — 4

Solve for y in the equation $y - 18y + 77y = 0; y(0) = 4y(0) = 8$

We first need to simplify the expression removing parentheses

Simplify $y(0)$: Distribute the y to each term in (0)

$y * 0 = y0y$

Our Total expanded term is 0y

Simplify $4y(0)$: Distribute the 4y to each term in (0)

4y* 0= y0y

Our Total expanded term is 0y

Our updated term to work with is y-18y+77y=

0;0y=40y=8

We first need to simplify the expression re moving parentheses

Our updated term to work with is y-18y+77y=

0;0y=40y=8

Step 1: Group the y terms on the left hand side;

1-18+77)y=60y

Step 2: Form modified equation

60y=0;0y

Step 3: ~~Correct 0;0y on the Right Side:~~

~~50y=0~~

Step 3: Group variables:

We need to group our variables 60y and 0;0y.

To do that we Subtract 0;0y from both sides

60y-0;0y=0;0y-0;0y

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Step 4: Cancel 0;0y on the right side:

$59y = 0$

Step 5: Divide each side of the equation by 59

$$\frac{59y}{59} = \frac{0}{59}$$

$$\therefore y = 0$$