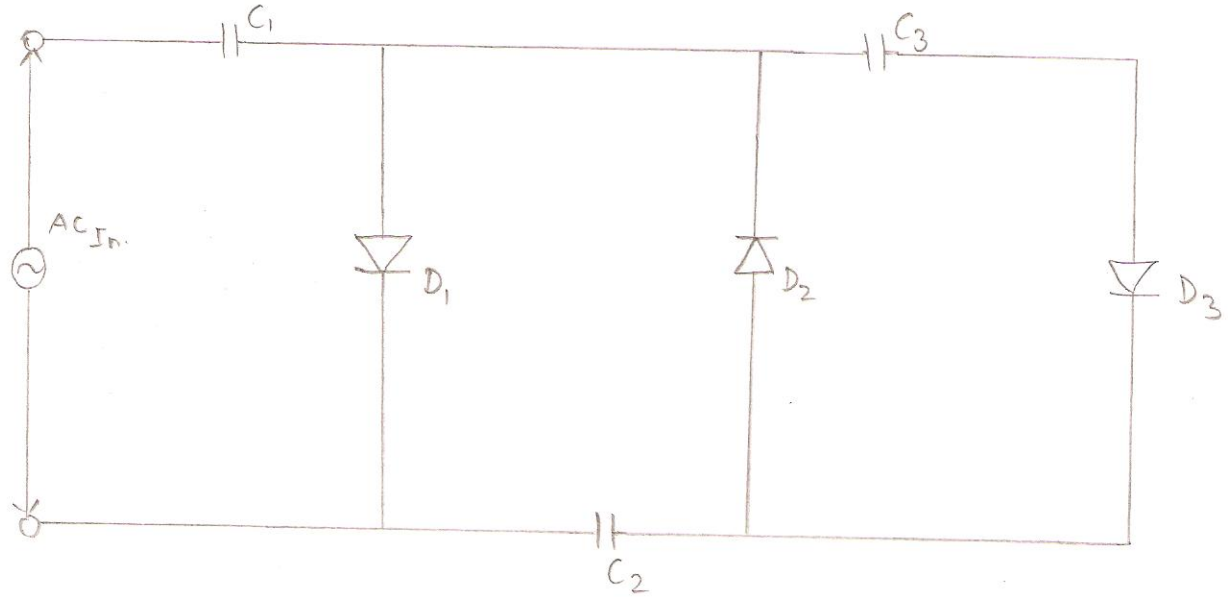
Que-6 What is voltage tripler and quadrupler?

Ans:→ Voltage tripler :→

A generalized diode circuit for voltage tripler is shown in figure Below :→

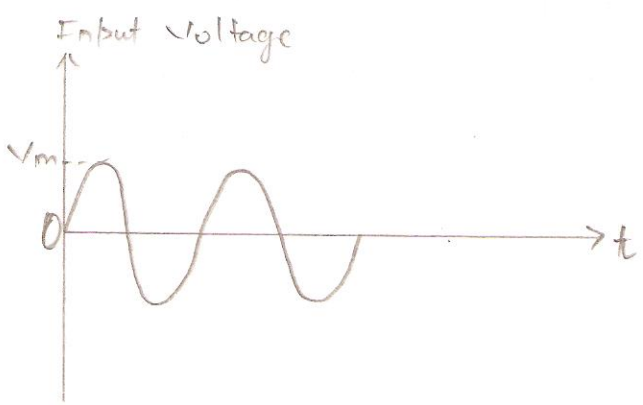


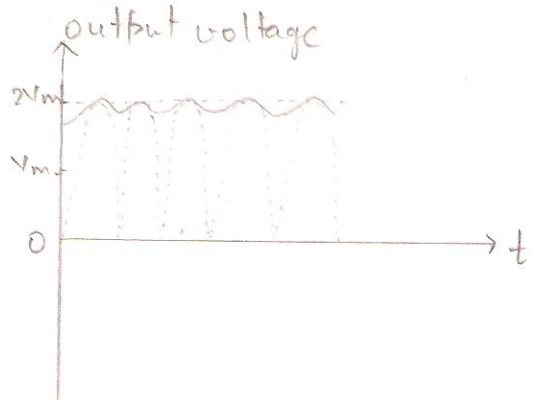
	C_1	C_2	C_3
(+) 1st half Cycle	$0 \to V_m$	0	0
(-) 2nd half Cycle	$V_m \to 0$	$V_m + V_m = 2V_m$	0
(+) 3rd half Cycle	$0 \to V_m$	$2V_m \to 0$	$V_m + 2V_m - V_m = 2V_m$

During first +ve half cycle D_1 conducts charging C_1 to V_m during first -ve half cycle D_2 conducts and C_2 charge to voltage $2V_m$. C_1 starts ~~forward biased~~ discharging.

In +ve half cycle D_1 and D_3 forward biased. C_1 charges to V_m. C_2 will charge to $2V_m$ by the equations.

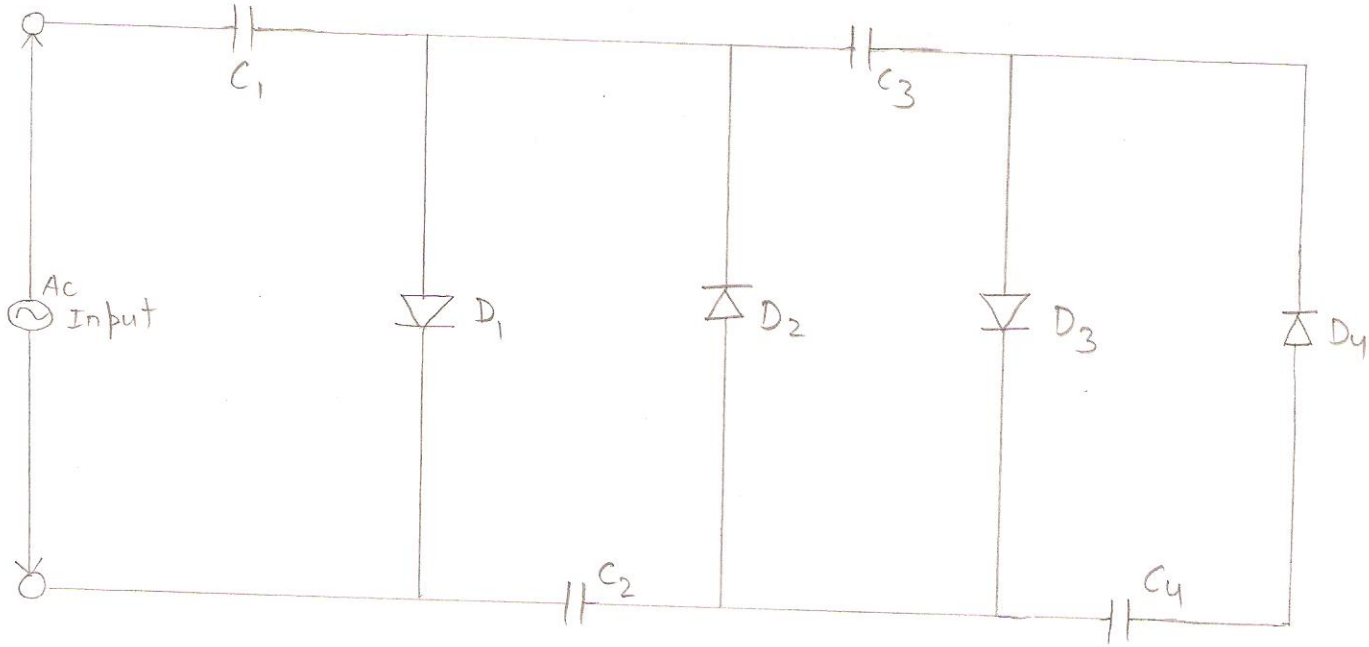
During -ve half cycle D_2 will conduct to $2V_m$ output off C_1 and C_3 could be the voltage tripler.





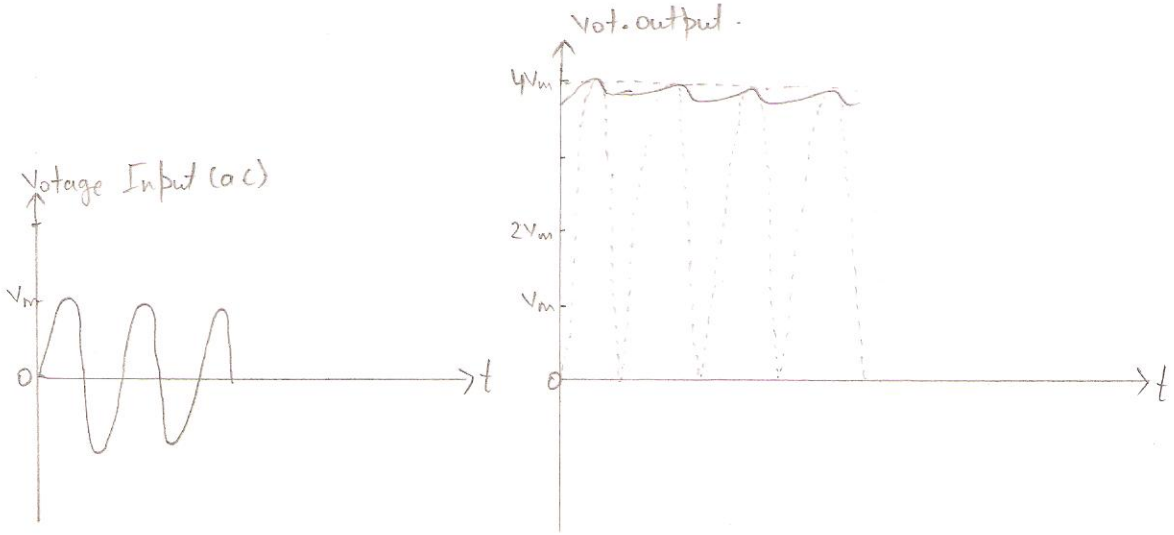
Votage Quadrupler :—>

A generalized diode circuit for voltage quadrupler is shown in figure below :—>



	C_1	C_2	C_3	C_4
I half cycle	$0 \to V_m$	0	0	0
II half cycle	$V_m \to 0$	$V_m + V_m = 2V_m$	0	0
III half cycle	$0 \to V_m$	$2V_m \to 0$	$V_m + 2V_m - V_m = 2V_m$	0
IV half cycle	0	$2V_m$	$2V_m \to 0$	$V_m + V_m - 2V_m + 2V_m = 2V_m$

During first +ve half cycle D_1 conducts charging C_1 to V_m During first -ve half cycle D_2 conducts and C_2 is charge to voltage $2V_m$. C_1 starts discharging. In +ve half cycle D_1 and D_3 forward biased. C_1 charges to V_m, C_2 will charge to $2V_m$ by the equations. During -ve half cycle D_2 will conduct to $2V_m$ output of C_1 and C_3 could be a voltage tripler. During IInd -ve half cycle D_2 and D_4 will conduct charging C_2 and C_4 both two $2V_m$. So, in quadrupler C_1 has V_m, C_2 has $2V_m$, C_3 has $2V_m$ and C_4 has $2V_m$. Output from C_2 and C_4 is four times of the peak value of input. So it is voltage Quadrupler.



Que-7:→ Differentiate between centre tap and bridge rectifier.

Ans→