

Q. Use the P-n junction diode or the semi-conductor diode (Do) as the full wave rectifier.

Ans → (A) Electrical circuit connection :-

For the full wave rectification two P-n junction diodes  $D_1$  &  $D_2$  are used. The electrical circuit is connected as shown in the following figure (1).

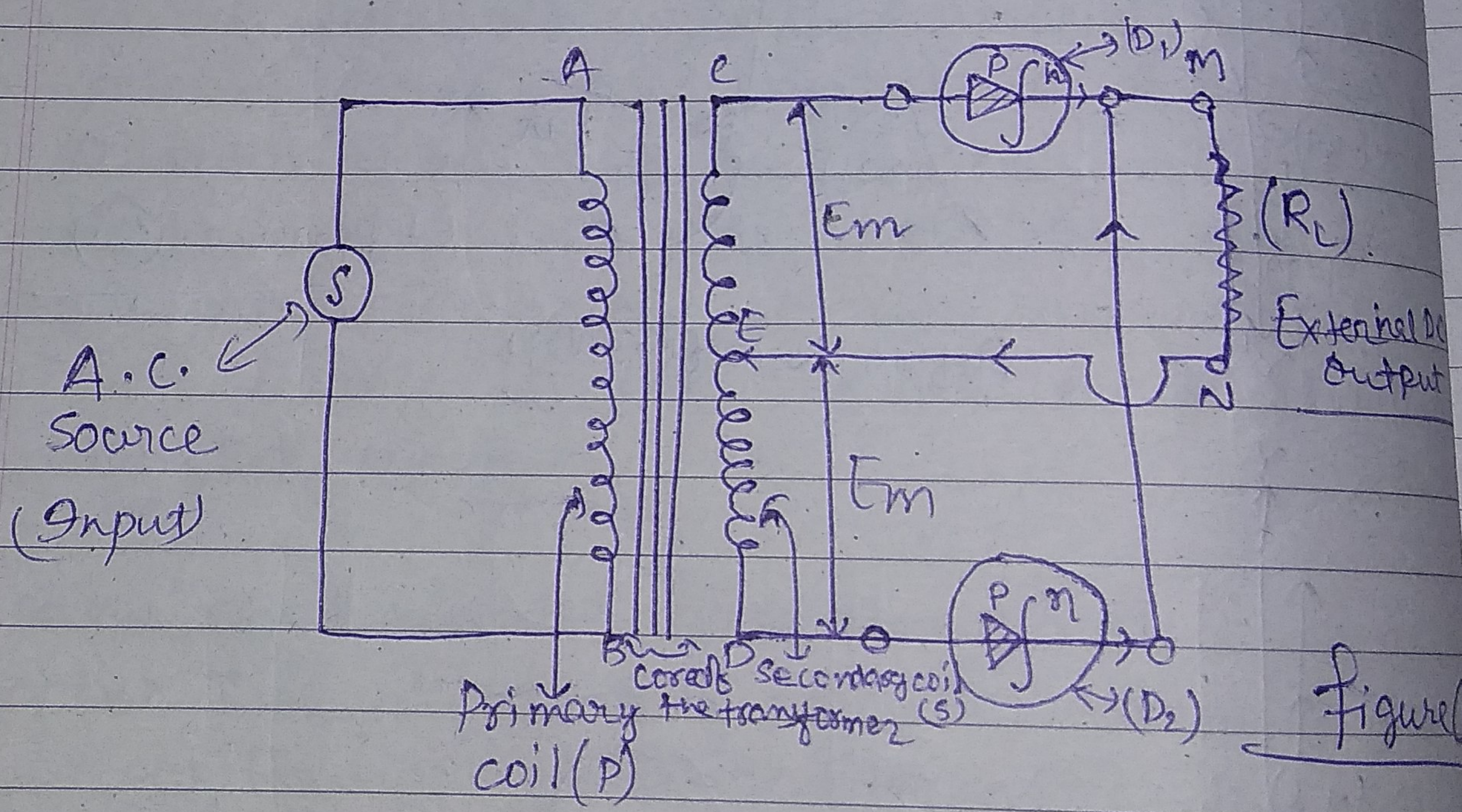


Figure (1)



The given A.C. source is connected between points A and B of the primary coil (P). of the transformer. C and D points of its secondary coil (S) are connected to P-type semi-conductors of  $D_1$  &  $D_2$  respectively. Their N-type semi-conductors are commonly connected. There is a point E on the secondary coil (S) whose electric potential is 0 (zero). It is called the reference zero potential point. Point E is connected to N-type semi-conductor of  $D_1$  through the external D.C. supply MN (i.e.  $R_L$ ) as in the figure (1).

### (B) Action (working) :—

In the first half cycle of A.C. point C is at positive potential and point D is at Negative potential with respect to point E. Due to which  $D_1$  acts in the forward biasing and  $D_2$  acts in the reverse biasing. which causes a D.C. supply in the external electrical MN (i.e.  $R_L$ ) through  $D_1$ .

while (on the other hand) In the second half cycle of A.C. point C is at negative potential and point D is at positive potential with respect to point E. Due to which  $D_1$  acts in the reverse biasing and  $D_2$  acts in the forward biasing which causes in D.C. supply in the external electrical circuit MN (i.e.  $R_L$ ) through  $D_2$ .



As a result of which, There is a continuous D.C. supply in the external electric circuit (M.N) (i.e.  $R_L$ ) and the action of the P-n junction diodes or the semi-conductor diodes  $D_1$  &  $D_2$  are like a full wave rectifier as in the following figures (2) & (3).

(C) wave forms :-

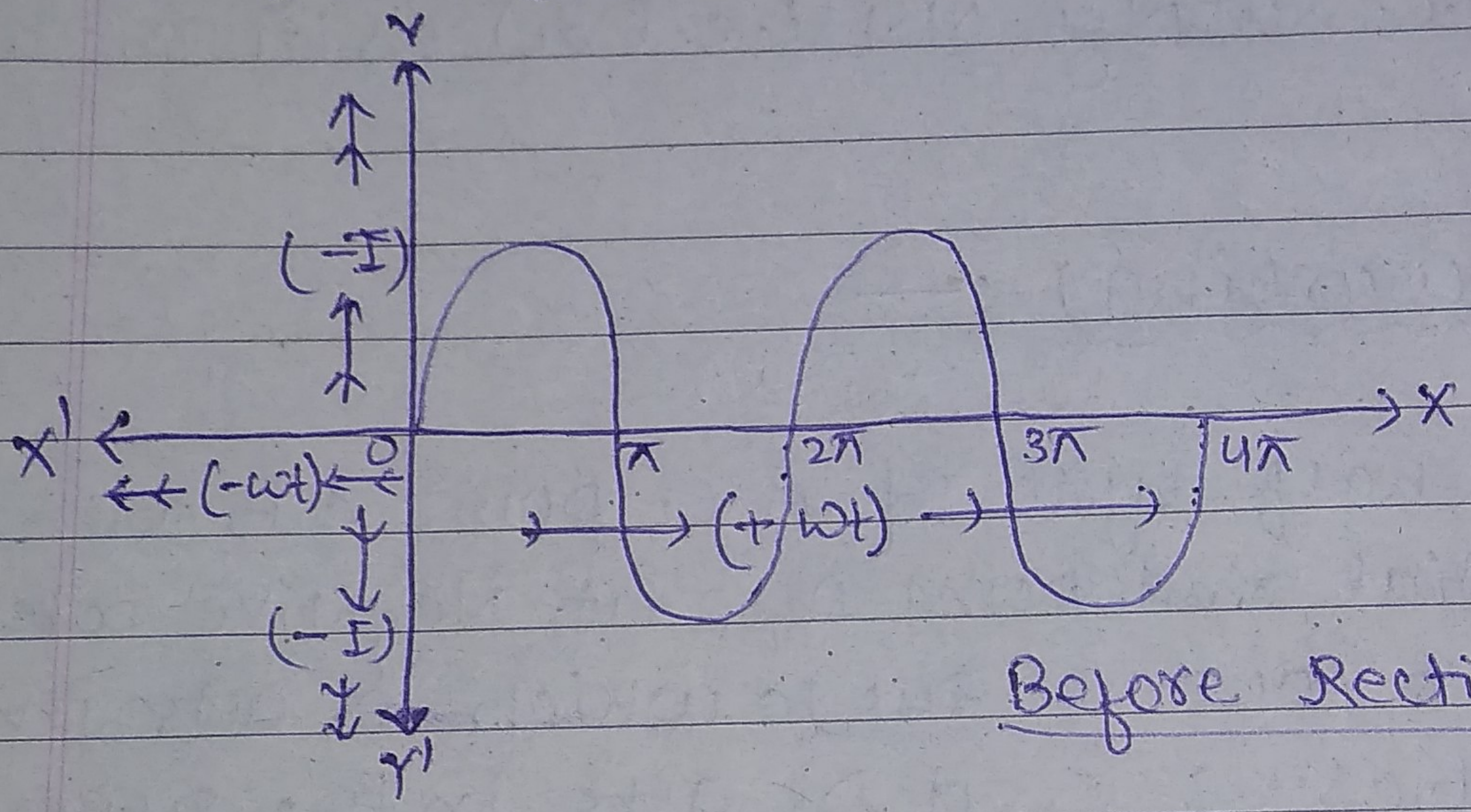


Figure (2)

Before Rectification.

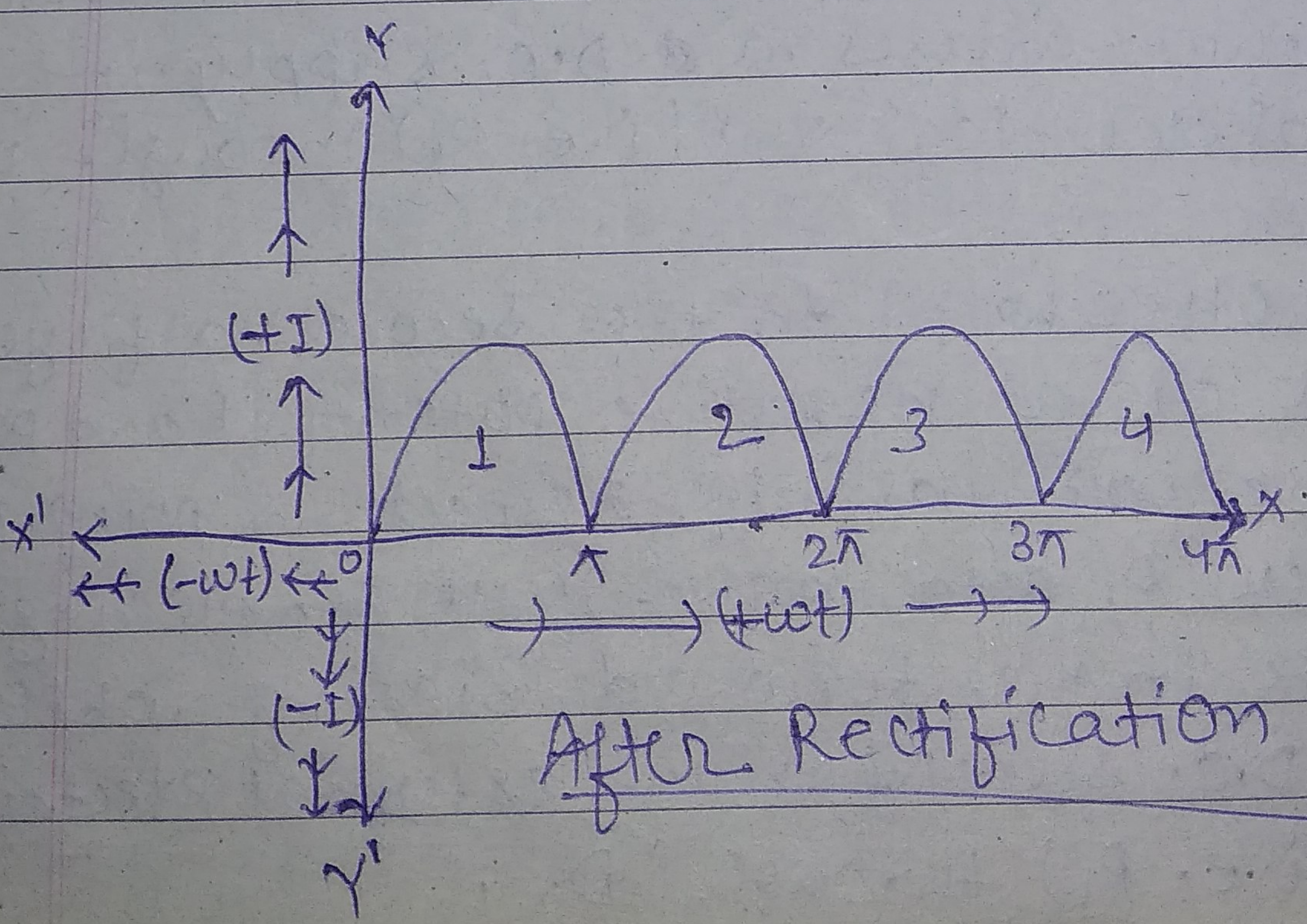


Figure (3)

After Rectification