

Que 4: The area of a rectangle will be maximum for the given perimeter, when rectangle is a

- A) Parallelogram
- B) Trapezium
- C) Square
- D) None of these

Correct Answer: C

Solution :

We know that perimeter of a rectangle $S=2(x+y)$, where x and y are adjacent sides

$$y=(S-2x)/2.$$

Now area of rectangle,

$$A=xy=x\{(S-2x)/2\}=(Sx-2x^2)/2$$

Differentiating w.r.t. x of A , we get

$$dA/dx=1/2(S-4x)=0$$

\therefore

$$x=S/4 \text{ and } y=S/4$$

Again $d^2A/dx^2 = -ve$

Hence the area of rectangle will be maximum when rectangle is a square.