

Q.4. If  $A, B$  are square matrices of same order and  $B$  is a skew-symmetric matrix, show that  $A'BA$  is skew symmetric.

Soln. We have square matrix  $A$  and  $B$  such that  $B$  is a skew symmetric matrix. i.e.  $B' = -B$ .

We have to prove that  $A'BA$  is a skew symmetric matrix.

i.e.  $B' = -B$ .

~~we have to prove~~

$$\begin{aligned} \therefore (A'BA)' &= A'B'(A')' \quad (\text{as } (AB)' = B'A') \\ &= A'(-B)A \\ &= -A'BA \end{aligned}$$

Hence  $A'BA$  is a skew symmetric matrix.