

55) If  $f(x) = \int_0^x e^{t^2} (t-2)(t-3) dt$  for  $x \in (0, \infty)$

$f'(x) = 0$  @  $x = 2, 3$

∴ local max and min irrespectively / respectively will exist.

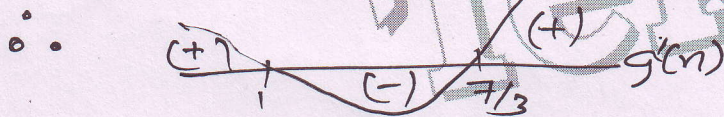
$f''(x) = e^{x^2} (2x^3 - 10x^2 + 14x - 5)$

let  $g(x)$

$g(x) = 2x^3 - 10x^2 + 14x - 5$

$g'(x) = 0$

∴  $D_{g(x)} > 0$   $D_{g(x)} = 8$



∴  $g(x)$  first  $\uparrow$  then  $\downarrow$  then  $\uparrow$

Clearly  $2 < 3$  and Coeff of  $x^3$  is grtr than 0  
∴ (A)  $\checkmark$  ∴ (D)  $\checkmark$  and (B)  $\checkmark$

∴ We check  $f(1) = e(g(1)) = (-)$ ive

$f(100) > 0$

∴ possible roots are there ∴ (C)  $\checkmark$