



OR

14	Solve by the method of variation of parameters $(D^2 + a^2)y = \tan ax$ . [10M]	2	L2
15	Using Laplace transform evaluate, $\int_0^{\infty} \frac{\cos at - \cos bt}{t} dt$ . [10M]	3	L2

	OR		
16	Solve the D.E $\frac{d^2 y}{dt^2} - 4 \frac{dy}{dt} + 12y = e^{3t}$ given that $y(0) = 0$ and $y'(0) = 0$ . [10M]	3	L2
17	Prove that $\text{curl} (\bar{a} \times \bar{b}) = \bar{a} \text{div} \bar{b} - \bar{b} \text{div} \bar{a} + (\bar{b} \cdot \nabla) \bar{a} - (\bar{a} \cdot \nabla) \bar{b}$ [10M]	4	L2
	OR		
18	Find the directional derivative of the function $xy^2 + yz^2 + zx^2$ along the tangent to the curve $x = t, y = t^2, z = t^3$ at the point (1,1,1). [10M]	4	L2
19	Verify stokes theorem for $F = y^2 \bar{i} + y \bar{j} - 3x \bar{k}$ and S is the upper half of the sphere $x^2 + y^2 + z^2 = a^2$ and $z \geq 0$ . [10M]	5	L2
	OR		
20	Find the work done by $\bar{f} = 3x^2 \bar{i} + \bar{j} + 2z \bar{k}$ along the straight line from (0,0,0) to (2,1,3). [10M]	5	L2