



	Y= Distance	10.63	13.03	15.04	16.81	18.42	19.90	21.27			
	Find the value of Y when (i) x = 218 ft (ii) x = 410 ft										
OR											
5	Using Lagrange's interpolation formula find the value of y(10) from the following table								2	L3	
	x	5	6	9	11						
	y	12	13	14	16						
	[10M]										
6	Given that X: 1.0 1.1 1.2 1.3 1.4 1.5 1.6 Y: 7.989 8.403 8.781 9.129 9.451 9.750 10.031 Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at (i) x = 1.1 (ii) x = 1.6								3	L3	
	[10M]										
OR											
7	Evaluate $\int_0^1 \frac{dx}{1+x}$ using (i) Trapezoidal rule (ii) Simpsons 3/8 <sup>th</sup> rule								[10M]	3	L3
8	Given $\frac{dy}{dx} = 2e^x y$ , y(0) = 2. Find the value of y(0.1), y(0.2) using Modified Eulers method.								[10M]	4	L3
OR											
9	Find y(0.1) and y(0.2) by Runge-Kutta method of 4 <sup>th</sup> order for the differential equation $y' = x+y^2$ given that y = 1 where x = 0.								[10M]	4	L3
10	Solve the elliptic equation $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$ (Laplace equation) for the following square mesh with boundary values as shown								[10M]		
	0	700	1100	700	0						
			C								
	900								900		
		u <sub>1</sub>	u <sub>2</sub>	u <sub>3</sub>							
	1900								1900		
	A	u <sub>4</sub>	u <sub>5</sub>	u <sub>6</sub>	B						
	900								900		
		u <sub>7</sub>	u <sub>8</sub>	u <sub>9</sub>							
			D								
	0	700	1100	700	0						
OR											
11	Using crank -Nicholson's method, solve $u_{xx} = 16u_t$ , $0 < x < 5, t > 0$ , given $u(x,0) = 0, u(0,t) = 0$ $u(1,t) = 50t$ . Compute u for two steps in t direction taking $h = \frac{1}{4}$								[10M]	5	L4