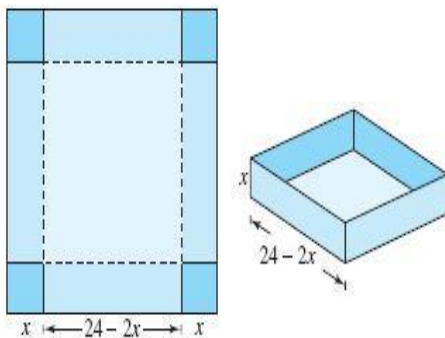


	BCM SCHOOL BASANT AVENUE DUGRI ROAD LUDHIANA ASSIGNMENT XII SC(MATHS) Application of derivative	
1	The function $f(x) = 2x^3 - 3x^2 - 12x + 4$, has (A) two points of local maximum (B) two points of local minimum (C) one maxima and one minima (D) no maxima or minima	
2	The smallest value of the polynomial $x^3 - 18x^2 + 96x$ in $[0, 9]$ is (A)0 (B)126 (C)135 (D)160	
3	The sides of an equilateral triangle are increasing at the rate of 2 cm/sec. The rate at which the area increases, when side is 10 cm is: (A) $10\sqrt{3} \text{ cm}^2/\text{s}$ (B) $\sqrt{3}\text{cm}^2/\text{s}$ (C) $10\sqrt{3} \text{ cm}^2/\text{s}$ (D)no change in area	
4	A man 2 m tall, walks at the rate of $1\frac{2}{3} \text{ m/sec}$ towards a street light which is $5\frac{1}{3} \text{ m}$ above the ground. At what rate is tip of his shadow moving? At what rate is the length of the shadow changing when he is $3\frac{1}{3} \text{ m}$ from the base of the light?	
5	Determine the intervals in which function $f(x) = x^4 - 8x^3 + 22x^2 - 24x + 21$ is increasing or decreasing	
6	A kite is moving horizontally at a height of 151.5 meters. If the speed of kite is 10 m/s, how fast is the string being let out; when the kite is 250 m away from the boy who is flying the kite? The height of boy is 1.5 m.	
7	Separate the interval $[0, \pi/2]$ into sub-intervals in which $f(x) = \sin^4 x + \cos^4 x$ is increasing or decreasing.	
8	An open box with a square base is to be made out of a given quantity of cardboard of area c^2. Show that the	



	maximum volume of box is $\frac{C^3}{6\sqrt{3}}$ cubic units.	
9	A telephone company in a town has 500 subscribers on its list and collects fixed charges of ₹ 300/- per subscriber per year. The company proposes to increase the annual subscription and it is believed that for every increase of ₹ 1/- one subscriber will discontinue the service. Find what increase will bring maximum profit?	
10	A man has an expensive square shape piece of golden board of size 24 cm is to be made into a box without top by cutting from each corner and folding the flaps to form a box.  (i) What is the volume of box? (ii) What should be the side of the square piece to be cut from each corner of the board to behold the maximum volume? (iii) What should be the maximum volume of open box?	

