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## Application of Derivatives - Test

Max. Marks: 30 | Time: 60 Minutes

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### Answer the following questions:

1. **(5 marks)** Find two positive numbers whose sum is 12 and their product is maximum.
2. **(5 marks)** Find two positive numbers whose product is 20 and their sum is minimum.
3. **(5 marks)** A garden is to be laid out in a rectangular area and protected by wire fence. What is the largest possible area of the fenced garden with 40 meters of wire?
4. **(5 marks)** A rectangular page is to contain  $24 \text{ cm}^2$  of print. The margins at the top and bottom of the page are 1.5 cm, and the margins at the other sides are 1 cm. What should be the dimensions of the page so that the area of the paper used is minimum?
5. **(5 marks)** A farmer plans to fence a rectangular pasture adjacent to a river. The pasture must contain 1,80,000 sq.m in order to provide enough grass for herds. No fencing is needed along the river. What is the length of the minimum needed fencing material?
6. **(5 marks)** The volume of a cylinder is given by the formula  $V = \pi r^2 h$ . Find the greatest and least values of  $V$  if  $r + h = 6$ .

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*End of Test*

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