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| **Question Number** | **I** | **II** | **III** | **Total** |
| **Mark** |  |  |  |  |

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| ***Question I:* [4 Marks]**  **A. If , where and**  **(i)Show that**  **(ii) Find** |
| **B. Find if is determined implicitly by the equation** |
| ***Question II:*[8 Marks]**  **A. Find the extrema of on the triangular region bounded by the lines and**  **B. Use Lagarange Multipliers to find the extrema of subject to the constraint** |
| **C. Determine whether the following sequences converge or diverge**  **(i)**  **(i)** |
| ***Question III:*[8 Marks]**  **A. Evaluate**  **B. Use the polar coordinates to evaluate**  **C. Use double integral to find the volume of the solid in the first octant bounded by the coordinate planes, the cylinder and the plane** |
| **D. Use triple integral to represent the volume of the region bounded by the graphs of**  **and** |

Good Luck☺