MAHARISHI VEDVYAS GOVT P.G. COLLEGE, BHAKHARA (C.G.)
MATHEMATICS
ASSIGNMENT -2020
PAPER THIRD
(VECTOR ANALYSIS AND GEOMETRY)
B.Sc. I Year (REGULAR)

TIME: 3 Hours   **M.M.: 50**

Note: Answer any five questions. Each question carries equal marks.

1. a) Define gradient.   (4 + 6=10)

    b) If a, b, c are three non-coplanar vectors,then show that $[a \times b, b \times c, ca] = [a\ b\ c]^2$

2. a) State Green's theorem .   (4 + 6=10)

    b) Use Green's theorem in plane to evaluate $I = \oint_C [(x + 2y)dx + (y + 3x)dy]$,

    where C is the circle $x^2 + y^2 = 1$.

3. a) Define confocal conics.   (4 + 6=10)

    b) Prove that confocal conics cut at right angles.

4. a) State Gous divergence theorem.   (4 + 6=10)

    b) Find the equation of the cone whose vertex is (α, β, γ) and base $ax^2 + by^2 = 1, z = 0$.

5. Find the condition that the plane $lx + my - nz = p$ may touch the paraboloid   (10)

    $ax^2 + by^2 = 2cz.$

6. Trace the conic : $21x^2 - 6xy + 29y^2 + 6x - 58y - 151 = 0.$ (10)

********************All THE BEST****************