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INTERNAL EXAMINATION-2022 SUBJECT-MATHEMATICS (G) DSE-01 (2)
SEMESTER-05 FULL MARKS-14

TIME-45 MINUTES

Answer all the questions. 1X6=6

1. a. Form partial differential equation by eliminating arbitrary constants a and b from equation $z = ax + by + ab$

   b. Find the order and degree of the partial differential equation $x\frac{\partial z}{\partial x} + y\frac{\partial z}{\partial y} = (\frac{\partial z}{\partial x})^2$

   c. Write a non-linear partial differential equation.

   d.Define simple harmonic equation.

   e. Define power.

   f. Write the pedal equation of central orbit.

2. Solve $z = px + qy + p^2 + q^2$ by charpit's method. 2X4 =8

3. A particle describes a parabola $x^2 = 8y$ under a force always perpendicular to the Y-axis. Find the law of force and the velocity at any point on its orbit.