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MAHATMA GANDHI MISSION

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APPLIED MATHEMATICS II

UNIT TEST II F.E.(All divisions)MAX MARKS 20 DURATION 50 min.

ANSWER ANY **TWO** QUESTIONS FROM **Q1 and Q2.**

Q1. (a)prove that $\beta(m+1,n) = \frac{m}{m+n}\beta(m,n)$[04]

(b) Evaluate $\int_0^\infty e^{-\frac{x^4}{2}}\,dx$[04] (c) Find perimeter of the curve r = a(1-cosθ)[04]

Q2 Prove that $\int_0^\infty \sqrt{y}\, e^{-y^2} dy \int_0^\infty \frac{e^{-y^2}}{\sqrt{y}} dy = \frac{\pi}{2\sqrt{2}}$[06]

(b)Evaluate $\int_5^9 \sqrt{(9-x)(x-5)}dx$ [06]

(c) For the curve $y^2 = x(1-x/3)^2$ S.T $s^2 = y^2 + \frac{4}{3}x^2$ where s is the arc length measured from origin to any point (x , y) on it. [06]