U. V. Patel College of Engineering

B. Tech. Semester - I (All Branches)

Subject: 2BS101 Mathematics-I

TUTORIAL - 1 (Unit-3)

Example:

Evaluate following integrals in terms of Gamma function.

(1) $\int_0^\infty e^{-x^3}\,dx$ $\left[\frac{1}{3}\cdot\Gamma\left(\frac{1}{3}\right)\right]$

(2) $\int_0^\infty e^{-\sqrt{x}}\,x^{1/4}\,dx$ $\left[\frac{3}{2}\cdot\sqrt{\pi}\right]$

(3) $\int_0^\infty e^{-\sqrt{ax}}\,x^n\,dx$ $\left[\frac{2}{a^{n+1}}\cdot\Gamma\left(2n+2\right)\right]$

(4) $\int_0^1 (\log x)^5\,dx$ $[-120]$

(5) $\int_0^1 x^3\,\log\left(\frac{1}{x}\right)^4\,dx$ $\left[\frac{1}{4}\right]$

(6) $\int_0^\infty 3^{-4x^2}\,dx$ $\left[\frac{\sqrt{\pi}}{4\sqrt{\log 3}}\right]$