ANURAG GROUP OF INSTITUTIONS
(AUTONOMUS)
I-B.TECH-II-SEMESTER-2017-18
I-ASSIGNMENT TEST QUESTIONS
SUBJECT: MATHEMATICS-II

1. Evaluate (a) $\int_0^1 x^5 (1-x)^3 dx$ (b) $\int_0^1 \frac{dx}{(1-x^3)^{\frac{1}{3}}}$ (c) $\int_0^\infty 3^{-4x^2} dx$

2. Evaluate $\int_0^\infty \frac{x^4(1+x^5)}{(1+x)^{15}} dx$ using $B-\Gamma$ functions

3. Prove that $\int_0^1 \frac{x^2}{\sqrt{1-x^4}} dx \times \int_0^1 \frac{1}{\sqrt{1-x^4}} dx = \frac{\pi}{4\sqrt{2}}$

4. Evaluate $\int_0^{\frac{\pi}{2}} \sin^6 x \cos^7 x \, dx$

5. Show that $B(m,n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$ where $m > 0, n > 0$

6. Find $L\left\{\frac{\cos 2t - \cos 3t}{t}\right\}$

7. Find $L\left\{e^{-3t} \int_o^t \frac{\sin t}{t} dt\right\}$

8. Evaluate the improper integral $\int_o^\infty e^{-4t} \sin 3t \, dt$ using Laplace transform

9. Find the Laplace transform of $L\left\{\int_o^t t e^{-4t} \sin 3t \, dt\right\}$