Time : 3 Hours]   *[Max. Marks : 100*

Note. *Attempt any five questions. Each questions carry equal marks.*

Q.1 Obtain the analytic function $f(z) = u + iv$, whose real part u is ex(x cos y – y sin y).

Q.2 Discuss the convergence of geometric series.

Q.3 Prove that every monotonic function f is R-integrable.

Q.4 Prove that every Cauchy sequence is bounded.

Q.5 Solve the following equation by matrix method
$2x - 3y = -1$
$3x + 5y = 5$

Q.6 Find the area bounded by the curve $y = 3x$, x axis and the ordinate $x = 1$, $x = 3$.

Q.7 Evaluate $\int \sec x \, dx$.

Q.8 If A and B are two square matrices of same order, then $\det(AB) = (\det A)(\det B)$.