

(Mid Term: CC - 8)

Full Marks: 15.

Time : $1\frac{1}{2}$ hrs.

Answer any three questions.

1. Define transcendental equation and derive the formula in the Newton-Raphson process to solve the transcendental equation. 5.
2. Define transcendental equation and derive the formula in the Regula-Falsi process to solve the transcendental equation. 5.
3. Derive Newton's forward Interpolation formula 5.
4. Derive the formula in the Simpson's Rule for numerical integration. 5.
5. Derive the formula in the Runge-Kutta process to solve first order differential equation. 5.

Maths. (Hons)

(Mid Term: CC - 10)

Full Marks: 15.

Time : $1\frac{1}{2}$ hrs.

Answer any three questions.

2. Define ring and subring and prove that intersection of two subrings is a subring 5.
2. Prove that finite integral domain is a field 5.
3. Define Vector space and its basis. 5.
4. Define linear independence of vectors and check whether the vectors $(1, 1, 0)$, $(0, 1, 1)$ and $(0, 0, 1)$ are linearly independent. 5.
5. Define linear transformation and its null & nullity. 5.

(Mid Term: CC - 9)

Full Marks: 15.

Time : $1\frac{1}{2}$ hrs.

Answer any three questions.

1. Define Riemann Integrability of a bounded real valued function. 5.
2. Define $\beta(m, n)$ & $\gamma(n)$ and prove that $\gamma(n+1) = n\gamma(n)$ 5.
3. Define uniform convergence of a sequence of function and state Cauchy Criterion for uniform convergence. 5.
4. Define limit superior and limit inferior as well as power series. 5.
5. State Cauchy Hadamard theorem. 5.

General Elective (Maths.)

(Mid Term: GE - 4)

Full Marks: 15.

Time : $1\frac{1}{2}$ hrs.

Answer any three questions.

1. Define abelian group with an example with finite elements 5.
2. Define addition modulo m and multiplication modulo p of integers 5.
3. Define subgroup, coset and index of a subgroup. 5.
4. State and prove Lagrange's theorem. 5.
5. Define Normal subgroup and Quotient group. 5.