Course Code: 3MSCM1
Course: Functional Analysis-I
Credit: 4
Last Submission Date: April 30 (for January Session)
October 31, (for July session)

Max. Marks:-70
Min. Marks:-25

Note:-attempt all questions.

Que.1 Let X & Y be Banach spaces & T a continuous linear transformation of X onto Y thent is an open mapping.

Que.2 State & prove Holder's & Minkowshki's inequality.

Que.3 Let H be a separable infinite–dimensional complex Hilbert space. Then H is isometrically isomorphic to l_2.

Que.4 If x(t) , y (t) ϵ $L_P(0,1)$ then x(t) $\neq$ y (t) $\in$ L_P (0,1)

Que.5 State & prove Hahn Banach theorem.

Que.6 State & prove Uniform Boundedness theorem.

Que.7 State & prove Riesz–lemma.

Que.8 State & prove Convexity theorem.

Que.9 Let $\{x_n\}$ be a weakly convergent sequence in a normal space X ; i.e. $x_n \overset{w}{\rightarrow}$ x. Then

(1) Weak limit of the sequence $\{x_n\}$ is unique.
(2) Every subsequence of $\{x_n\}$ converges weakly to x.
(3) The sequence II x_n II is bounded.

Que.10 State & prove Uniform boundedness theorem.