Roll No. ....

Y – 3181 (A)

M.Sc. (Mathematics) (Fourth Semester) (SPECIAL)

EXAMINATION, August 2021

(SECOND CHANCE)

Paper – 402

ADVANCED FUNCTIONAL ANALYSIS

Time : Three Hours

Maximum Marks : 85 (For Regular Students)   *Minimum Pass Marks : 29*

Maximum Marks : 100 (For Private Students)   *Minimum Pass Marks : 34*

Note—Attempt *all* questions.

1. If X is a Banach space and T, $X \to X$ is such that T^r is a contraction for some integer $r > 0$, then prove that T has a unique fixed point.   17/20

2. Write short notes on the following—   17/20

   (i) Convex set

   (ii) Absorbing set.

3. Show that any two norms on a finite dimensional vector space over K are equivalents.   17/20

4. State and prove Banach Steinhaus theorem.   17/20

5. State and prove Lions-stampacchia theorem.   17/20