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ES-3715

M. A./M. Sc. (Fourth Semester) Special Examination, 2020
MATHEMATICS
Paper : Tenth
(Sobolev Spaces)
Maximum Marks : 35

Note: *Attempt all questions. Each question carries equal marks.*

1. Let Ω be an open subset of R^n show that the $T \in D'(\Omega)$ and define convolution of function.

2. State and prove Planchorel theorem.

3. Prove that $C_0(\Omega)$ is dense in $L^P(\Omega)$ if $1 \le P < \infty$.

4. Let $U \subseteq R^n$ be bounded set, ∂U admits a locally continuously differentiable parametrization and $u \in w^{K,P}(U)$, for $1 \le P < \infty$. Then show that there exist a sequence $\{u_n\}$, $u_m \in C^\infty(U)$ such that $\left\| u_m - u \right\|_{w^{K,P}(U)} \to 0$.

5. Let Ω be a half space in R^n. Then prove that there exist a total extension operator E for Ω.