Course Code: 1MSCM3
Course: Topology-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 Prove that intersection of two topologies is also topology but union of two topologies is not necessary a topology.

Que.2 If $\{ f_{\lambda} : \lambda \in \Lambda\}$ is anycollection of closed subsets of a topological space $\times$, then $\wedge \{ f_{\lambda} : \lambda \in \Lambda\}$ is a closed set.

Que.3 Let $\times$ be a topology space and let A be a subset of $\times$ Then A is closed if and only if $D(A) \subset A$.

Que.4 Let $(x, \mathcal{I})$ be a topological space and let A&B be any subset of x. then

(1) $X^\circ = X$, $\emptyset^\circ = \emptyset$
(2) $A^\circ \subset A$
(3) $A \subset B \Rightarrow A^\circ \subset B^\circ$
(4) $(A \cap B)^\circ = A^\circ \cap B^\circ$
(5) $A^\circ \cup B^\circ C\ (A \cup B)^\circ$
(6) $A^\circ = A$

Que.5 A mapping f from a space X into another space Y is continuous if and only if $f(\hat{A})\ \overline{F(A)}$ for every $A \subset X$.

Que.6 Let $(X,\mathcal{I})$ and (Y,V) be topological spaces and let f be a bijective mapping of X to Y. Then the following statement are equivalent then the following statement are equivalent:

(1) f is a homeomorphism.
(2) f is a continuous and open.
(3) f is continuous and closed.

Que.7 Let E be a connected subset of a space X. If F is a subset of X such that $E \subset F \subset \hat{E}$. Then F is connected. In particular, $\hat{E}$ is connected.

Que.8 Every subspace of T_2–space is a T_2–space .

Que.9 Every compact subset A of a hausdorff space X is closed.

Que.10 If A is an infinite subset of a compact space Y then A has limit point in X. In other words compact space have Bolzano weierstrass property.