COMSATS University Islamabad

Attock Campus

Department of Mathematics

Assignment # 01 (Extension)

Class: BSM-IV
Subject: Set Topology
Instructor: Dr. Atiq ur Rehman

Due Date: 25-02-2024
Course Code: MTH251
Marks: 10

Question # 1: Define limit point. If $\tau = \{X, \varphi, \{a\}, \{c, d\}, \{a, c, d\}, \{b, c, d, e\}\}$ be topological space on $X = \{a, b, c, d, e\}$. If $A = \{a, e\}$, then show that

(i) b is limit point of A.

(ii) a is not the limit point of A.

Question # 2: Let $X = \{a, b, c, d, e, f\}$ be a set, and let

$$\tau = \{X, \varphi, \{a\}, \{b, c\}, \{a, b, c\}, \{d, e, f\}, \{a, d, e, f\}\}$$

be a topology on X. If $B = \{a, d, f\}$, then

(i) list all the open sets containing a.

(ii) show that a is not the limit point of B.

(iii) list all the open sets containing e.

(iv) show that e is limit point of B.

(v) list all the closed sets of (X, τ).

Question # 3: Let $(\mathbb{R}, \mathcal{U})$ be a usual topological space. If $C = \{1,2,3\}$, then show that

(i) 0 is not the limit point of C.

(ii) 1 is not the limit point of C.

(iii) Write one or two lines to show that there is none of the real number is limit point of C.