

Roll No. ....

**Y – 3177**  
**M.A./M.Sc. (Second Semester)**  
**EXAMINATION, May/June 2021**  
**MATHEMATICS**  
**Paper – 203**  
**(Topology)**  
*Time : Three Hours*

*Maximum Marks : 85*

*Minimum Pass Marks : 29*

**Note :** Attempt *all* questions.

**Unit-I**

1. Prove that the intersection of all topologies of a set  $X$  is again a topology for  $X$ . 17

**Unit-II**

2. Prove that every separable topological space is not second countable. 17

**Unit-III**

3. Let  $X$  be a Hausdroff space. If  $X$  has open base whose sets are also closed. Then prove that  $X$  is totally disconnected. 17

**Unit-IV**

4. Prove that any continuous mapping of a compact metric space into a metric space is uniformly continuous. 17

**Unit-V**

5. Show that every metric space is a normal space. 17