Sessional Examination 2021

BSc 5th Semester

Subject: Mathematics (M)

Paper 502

Marks: 15, Time: 1 hour

Answer the following questions:

1. Give an example to show that the intersection of infinite family of open sets need not be open in a metric space. 1
2. Give an example of a set in a metric space which both open and closed. 1
3. Define open sets, interior point in a metric space. 3
4. Let (X, ρ) be a metric space and $d(x, y) = \dfrac{\rho(x, y)}{1 + \rho(x, y)}$,then show that d is also a metric on X . 5
5. Show that an arbitrary union of open sets is open. 5

   Or

   Every closed sphere is closed set.

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