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| **National University of Computer and Emerging Sciences, Lahore Campus** | | | | |
| C:\Users\saif\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\final design.jpg | **Course:** | **Design and Analysis of Algorithms** | **Course Code:** | **CS302** |
| **Program:** | **BS(Computer Science)** | **Semester:** | **Spring 2018** |
| **Duration:** | **10 Minutes** | **Total Marks:** | **10** |
| **Paper Date:** | **8-May-18** | **Weight** | **3** |
| **Section:** | **E** | **Page(s):** | **1** |
| **Exam:** | **Quiz 6(b)** | **Roll No:** |  |
| **Section:** |  |
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Professor Gaedel has written a program that he claims implements Dijkstra’s algorithm. The program produces values of *d* and π for each vertex v in V. Give an O(V +E) time algorithm to check the output of the professor’s program. Given the graph G, d and π, it should determine whether the d and π attributes match those of some shortest-paths tree of G (i.e whether they are correct or not). You may assume that all edge weights are nonnegative. Explain your algorithm in 2-3 lines.