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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:** | **15-March-18** | **Weight** | **3** |
| **Section:** | **D** | **Page(s):** | **1** |
| **Exam:** | **Quiz 3** | **Roll No:** |  |
| **Section:** |  |
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Suppose you want to implement B-trees for indexing in a database. The block size of the disk is 1024 bytes, each data value and pointer pair is of 16 bytes, child pointer is of 4 bytes. Each node in the B-tree has a 4 byte integer to store the number of data items in the node and a 1 byte Boolean variable for isLeaf attribute. Given this information what should be the best suitable value of t? Show complete working for your answer.

As node size of B-tree must not exceed the block size, following relation must hold

16(2t-1)+4(2t)+4+1<=1024

32t-16+8t+4+1<=1024

40t<=1035

So t = 25