# National University

**of Computer & Emerging Sciences Peshawar Campus**

Student Name: _____ Section: _____ Roll No: _____

Program: CS20 A & B
Semester: Spring – 2021 ***[Covid19 Online Exam]***
Time Allowed: 1 hour + 40 Minutes
Course: **Design & Analysis of Algorithms**

Examination: Sessional – I & II
Total Marks: 50 Weightage: 20 %
Date: 28th May, 2021
Instructor: Mr. Fazl-e-Basit

**NOTE:** Attempt all questions. ***NO ANSWER SHEET REQUIRED***

**Time: 20 Minutes** **Marks: 12**

**Q.9)** Given the following array [10, 5, 3, 9, 22, 24, 28, 27, **?**] and assuming that Quicksort will be used to sort this array in ascending order:

**a)** Select a value & mention all possible values for the last element of the array (indicated by "?", pivot position) such that the partitioning performed after choosing ideal value by Quicksort is most balanced. Explain why this makes Quicksort perform efficiently.
**b)** Show the results of the first two rounds of the Quicksort algorithms based on the number you have chosen. **[5 + 3]**

**Q.10)** Differentiate between **Divide & Conquer** and **Dynamic Programming** - algorithmic strategies. **[2+2]**
**Solution:**

**Divide & Conquer** **Dynamic Programming**