

GOVERNMENT DEGREE COLLEGE GANDERBAL
Assignment for BCA 4th Semester

Regular Batch 2018, Backlog Batch 2016/2017

Design and Analysis of algorithms
Date: 19/06/2020

Course Code: BCA-16401CC
Marks: 90

Attempt any 04 Questions and each question carries equal weightage.

Q1. What is the concept of time complexity and what is its importance in designing algorithms?
Write the time, space complexity of following code snippet:

```
int a = 0, b = 0;
for (i = 0; i < N; i++) {
    a = a + rand();
}
for (j = 0; j < M; j++) {
    b = b + rand();
}
```

- Q2. i. What are differences between the experimental analysis of algorithms and asymptotic analysis? What is the advantage of using asymptotic analysis?
ii. What are the various notations used in asymptotic analysis?
- Q3. What are the various algorithm design techniques? Give some examples of algorithms based on divide and conquer, and greedy method.
- Q4. i. How are linear time complexity sorting algorithms different from other sorting techniques and are linear time complexity sorting algorithms actually better?
ii. Describe count sort algorithm using an example and discuss its time complexity.
- Q5. Write the algorithm for heap sort and describe its working using a suitable example.

Instructions:

1. The assignment is to be submitted through google class room having code **ty7lqzb**.
2. Last date of assignment submission is **26/06/20**.
3. The assignment must be **handwritten**.
4. Students must write page no., roll no., registration no. on the top right corner of each page.
5. A4 size ruled paper with not more than **10** pages converted into a single PDF file using **camscanner** will

- be only accepted.
6. Students are advised to preserve hard copy of Assignment.
 7. Do not copy answers from other students.
 8. Assignments should be scanned properly for clear visibility.

Title page of assignment must contain

Name of the candidate.....
Semester.....
Category: Fresh/Backlog.....
Batch:
Roll No.....
Regd no.....
Subject.....
Cell no.....
E-mail address.....
Date of Submission.....
Signature of Candidate.....