National University of Computer and Emerging Sciences, Lahore Campus

Course:	Data Warehousing and Data Mining	Course Code:	CS409
Program:	BS(Computer Science)	Semester:	Fall 2018
Out Date:	6-Nov-2018	Total Marks:	
Due Date:	Tue 13-Nov-2018 (Start of class)	Weight:	
Section	CS	Page(s):	1
Assignment:	4 (Indexing Techniques)		

Note:

- Plagiarism will result in zero credit in all assignments
- Read the assignment statement carefully
- If you have any confusion, try posting it on Piazza
- You can also make suitable assumptions
- Mention any assumptions before solving the question

Consider the following table and statistics which are part of a leaning management system:

Student (RollNo, Name, DegreeID, BatchID, DeptID, GPA .....);

Block Size (B)	32 KB
Available Memory (K)	100 Blocks
Rows (r)	10,000,000
Row Width (R)	512 bytes
Index Row Width (R_i)	64 bytes

Assume batch 2015 students are 15%, CS department students are 60%, students having GPA>2.8 are 55% and students having GPA>3.5 are 5%.

Question:

Find the I/O cost for the two given queries for all the indexes specified:

Query 1: Students of the batch 2015 who are from CS dept. and have GPA > 2.8
Query 2: Students of the batch 2015 who are from CS dept. and have GPA > 3.5

1) FULL TABLE SCAN
2) SINGLE INDEXING
3) COMBINING MULTIPLE INDEXES
4) DYNAMIC BITMAP INDEX
5) STATIC BITMAP INDEX
6) COMPOSITE INDEX

7) CLUSTERED INDEX