Islamic University of Technology
Organisation of Islamic Cooperation (OIC)
Department of Computer Science and Engineering (CSE)

ONLINE EXAMINATION   **WINTER SEMESTER, 2019-2020**
Duration: 45 Minutes   **Full Marks: 30**
CSE 4307: Database Management Systems

This is an open book exam. You are allowed to surf the net but not allowed to talk or communicate with any human person. 10 Minutes time is allocated for processing and uploading your file. After the exam is over, scan and convert to a single pdf to upload in the classroom. Figures in the right margin indicate marks.

1. Consider the following entities for a typical result processing system (Note: pk and fk stand for primary key and foreign key respectively:

Students
SID (pk)
Name
Address
Dept
Prog

Courses
CID (pk)
Name
Credit

Grades
SID (fk)
CID (fk)
LetterGrade

Here only allowable values for Dept attribute are CSE, EEE, MPE, CEE. Valid values for Prog attribute are Undergrad and Graduate. Notice Grades entity has no primary key (think on it in the next DDL question).

(a) Create the DDL for the above description.   [5]

(b) Write a function in PL/SQL as follows: [10]
   Input: Student ID
   Output: CGPA (numeric value)
   Algorithm: $CGPA = \frac{\sum Ci \times \sum Ni}{\sum Ci}$
   where N_i can be obtained from the following mapping:

LetterGrade	Value (Ni)
A+	4
A	3.5
B	3
C	2
D	1.5
F	0

   (Note: You can use decode() to extract value from the letter grade)

(c) Write a java program to show the results of CSE Department of undergrad program in the   [08]
   following format:

ID	Name	Result
103	a	3.6
107	d	3.7

   Note:Write only the relevant part in java, assume the database connection is already made.

(d) Write a **single SQL** to show a combined list of top 3 students Name and CGPA and bottom   [07]
   2 students Name and CGPA (in terms of CGPA).
   (Note: You can use Rank() in this regard)