KUMASI TECHNICAL UNIVERSITY

FACULTY OF APPLIED SCIENCES AND TECHNOLOGY

DEPARTMENT OF MATHEMATICS AND STATISTICS

Bachelor of Technology(BTECH) in Data Science

Mid-Semester Examination - 2020/2021

Second Year

BDS 228: ALGORITHMS

INSTRUCTIONS: Use Python Software to Solve the questions below and submit the codes on the portal

STUDENT NAME: .....

STUDENT INDEX No.: .....

1. Given the following grading system;
   85 and above $\rightarrow A+$
   between 80 and 84 $\rightarrow A$
   between 75 and 79 $\rightarrow B+$
   between 70 and 74 $\rightarrow B$
   between 65 and 69 $\rightarrow C+$
   between 60 and 64 $\rightarrow C$
   between 55 and 59 $\rightarrow D+$
   below 50 $\rightarrow D$

   Write a function that allows the user to enter the number of courses he/she offered and also to enter all the marks for the courses he/she offered.

2. Write a function that collects both exams score and the midsem scores, and calculate the weight average for each course such that:
$$\frac{(ExamScore \times 0.60)(midsem\ score \times 0.40)}{0.60 + 0.40} \tag{1}$$
   and collect them into a list and pass it through the function in (1) to grade the marks.

3. Write a function that calculates the surface area of an sphere, $A1 = 4\pi r^2$, surface area of a cylinder, $A2 = 2\pi rh + 2\pi r^2$, surface area of a rectangular pyramid, $A3 = lw + l\sqrt{(\frac{w}{2})^2 + h^2} + w\sqrt{(\frac{l}{2})^2 + h^2}$, volume of a cylinder, $V1 = \pi r^2 h$, volume of an sphere, $V2 = \frac{4}{3}\pi r^3$ and volume of a rectangular pyramid, $V3 = \frac{lwh}{3}$ where $l \rightarrow length, w \rightarrow width, h \rightarrow height, r \rightarrow radius$.

GOOD LUCK