VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
Fall Semester 2023-24
Continuous Assessment Test – 1

SLOT: B1+TB1 **Course Name & code: MDI3002 – Foundations of Data Science**
Programme Name &Branch: M.Tech (Integrated) & Data Science
Exam Duration: 90 Min. **Maximum Marks: 50**

Answer all questions

Q.No.	Question	Max Marks
1.	What is data science? Briefly discuss the applications of data science	10
2.	Discuss the use cases and pros, cons for structured and unstructured data. Justify your answer on how data science can be applied in e commerce.	10
3.	a) Find the mean, median and mode of the following data: 23, 18, 24, 23, 31, 37, 28, 30, 25, 40, 35, 35, 27, 25 (5 Marks) b) The mileage (km per litre) of 50 cars of the same model was tested by a manufacturer, and details are tabulated as given below: Mileage (km/*l*): 10 – 12 | 12 – 14 | 14 – 16 | 16 – 18 Number of cars: 7 | 12 | 18 | 13 Find the mean mileage. (5 Marks)	10
4.	Find the eigenvalues and eigenvectors of matrix A $A=\begin{pmatrix} 1 & -1 & 4 \\ 3 & 2 & -1 \\ 2 & 1 & -1 \end{pmatrix}$	10
5.	A login register is maintained in the library of VIT in which, the register number of students are recorded when they enter the library. Sometimes it happens that the students visit the library more than once in a day and hence duplicate entries occur so frequently in the register. The librarian wants to have a report of all students who have visited on a particular day, 'x'. Given the list of students who visited the library on the day 'x', write an algorithm and the subsequent Python program to prepare a report with unique register number of students. Also read a register number 'r' and search for it in the list. Print 'Found' if 'r' is in the list and print 'Not found' otherwise.	10