Total No. of Questions : 4]

SEAT No. : 2347075

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## B.E. (Artificial Intelligence & Data Science) (Insem.)

## DATA MODELING & VISUALIZATION

## (2019 Pattern) (Semester - VII) (417522)

*Time : 1 Hour]* *[Max. Marks : 30*

*Instructions to the candidates:*

1) *Answer Q.1 or Q.2, Q.3 or Q.4.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right side indicate full marks.*
4) *Assume Suitable data if necessary.*

*Q1)* a) Explain in detail Positive, negative and zero covariance with appropriate graphs. [5]

b) Differentiate between Discrete and Continuous random variables with the help of an example. [5]

c) Explain following discrete distributions : [5]

i) Geometric distribution

ii) Binomial distribution

OR

*Q2)* a) Define and explain maximum likelihood estimation. [5]

b) Explain Chebyshev Inequality with the help of an example. [5]

c) Define Descriptive Statistics and Graphical Statistics. Explain different Estimation Methods. [5]

*Q3)* a) Define Poisson process. Poisson process is a suitable stochastic model in rare events. Justify? [5]

b) Calculate Pi Using Monte Carlo method. [5]

c) How does a queuing system work? What happens with a job when it goes through a queuing system? [5]

*P.T.O.*

OR

*Q4)* a) Explain the steps of Hypothesis Testing. [5]

b) Draw a neat diagram of Right-tail, Left-tail and Two sided Z-test and locate Acceptance and rejection regions. [5]

c) Explain Transition State Diagram and Emission State Diagram of Hidden Markov Model with the help of example. [5]