Reg. No.:

Name :

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Mid-Term Examinations, April 2021

Programme	:	**B.Tech**	Semester	:	**Winter 2020-2021**
Course	:	**Probability, Statistics And Reliability**	Code	:	**MAT3003**
Faculty	:	**Dr. Sayed Mohammed Zeeshan**	Slot/Class No.	:	**E11+E12+E13/0077**
Time	:	**1½ hours**	Max. Marks	:	**50**

Answer all the Questions

Q. No.	Question Description	Marks
1	A. If 10 cards are dealt from a standard deck of 52 cards, what is the probability of getting 3 spades, 2 hearts, 4 diamond and 1 club? B. Bag A contains 9 white balls and Bag B contains 18 balls, of which 8 are white. They all turn out to be white. What is the probability that the bag with all the white ball was chosen.	**10**
2	If the PDF often random variable is given by $f(x) = \begin{cases} \frac{1}{2}\cos x, & -\frac{\pi}{2} < x < \frac{\pi}{2} \\ 0, & elsewhere \end{cases}$ Find the DF.	**10**
3	The number of accidents in a certain locale on any given day is known to have Poisson distribution. It is also known from past experience that the probability of no accidents is 0.1353. Find the probability that there will be at least three accidents on the given day. (*ln 0.1353= -2.0003*)	**10**
4	In each of the following cases, X has a continuous distribution with the given pdf. Find E(X) and V(X) whenever they exists (a)$f(x) = \begin{cases} \frac{3}{8}x^2, & 0 < x < 2 \\ 0, & elsewhere \end{cases}$ (b) $f(x) = \begin{cases} \frac{2}{5}\lvert x\rvert, & -1 < x < 2 \\ 0, & elsewhere \end{cases}$	**10**
5	The amount of rainfall in a certain region is known to be normally distributed random variable with mean 50 inches and standard deviation 4 inches. Find the probability that the annual rainfall will exceed 58 inches. If the rainfall exceeds 58 inches during a year, it leads to floods. What is the probability that during a fifteen year period there will be no floods?	**10**

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