



INSTITUTE OF INFORMATION TECHNOLOGY
JAHANGIRNAGAR UNIVERSITY

2nd Year 1st Semester Final Examination-2020 [Written]

Course Title: Probability and Statistics for Engineers

Course Code: ICT-2107

Time: 45 Minutes, Plus Extra 15 Minutes for Submission

Marks: 10

Instructions:

- There are Three Questions here. Answer any TWO (02) of them.
- Marks carrying by each question are shown in the margin.
- Upload the pdf answer script in the Google Class Room.

1. a) Write down the classical definition of probability. What are its limitations? Define the following terms with suitable examples: experiment, sample space, mutually exclusive events, null events, equally likely events, event space. 2.5

- b) Following frequency distribution refers the percentage increase in their online business of 50 companies during this pandemic. 2.5

Percentage increase of online business	10-20	20-30	30-40	40-50	50-60
Number of companies	8	12	20	6	4

Compute arithmetic mean, standard deviation and coefficient of variation (CV) and comment on your results.

2. a) Define regression with suitable example. What are dependent variable and independent variable? Explain why do we have two lines of regression? Distinguish between correlation and regression. What are the usage of regression? 2.5

- b) The following data give the ages and blood pressure of 7 women. 2.5

Age (in years)	56	42	36	47	49	42	60
Blood pressure	147	125	118	128	145	140	155

Fit the two lines of regression and hence compute the coefficient of correlation and comment on your results.

3. a) Define parameter and statistic with an example. Write down the merits and demerits of using geometric mean as a measure of central tendency. 1.5

- b) When does binomial distribution tend to Poisson distribution? Write down the probability density function of Poisson distribution with an example. 2.0

- c) The waiting time of customers at Chillox follows normal distribution with mean of 10 minutes and a standard deviation of 3 minutes. At Uttara Chillox, the quality assurance department sampled 50 customers and found that the mean waiting time was 16 minutes. At the 0.05 significance level, can we conclude that the mean waiting time is more than 10 minutes? [Given that, $\phi(1.645) = 0.95$ and $\phi(1.96) = 0.975$] 1.5