IME625: Introduction to Stochastic Processes
Quiz-4 Part-2, March 30, 2022

Duration: 5:45 to 6:00 pm **Maximum marks: 5**

Join zoom meeting (same as that of the class) with camera on.

Instructions: *Write your answer on white paper, take its photo at the end of this part of the exam (6:00 pm), create a pdf and submit it via mookit, which would accept submissions till 6:10 pm. In case you have difficulty accessing mookit, you shall email or whatsapp me the pdf. Don't use multiple channels for answer submission. Answers received after 6:10 pm will attract heavy penalty, and those received after 6:15 pm will not be considered for grading. Hand-written answers on digital writing pad will be accepted*.

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2. Let $\{N(t): t \geq 0\}$ denote a Poisson process with rate λ. Find i) $Cov\big(N(s), N(t) - N(r)\big)$, ii) $P(N(r) = 1, N(s) = 2, N(t) = 3)$, iii) $P(N(s) = 1 | N(r) = 1, N(t) = 3)$ for $r < s < t$. Given that $N(t) = n$, find the expected time since the last event. [Marks: 3+2]