1154-92-181 **Olusegun Michael Otunuga*** (`otunuga@marshall.edu`), Department of Mathematics, Marshall University, SH 523, One John Marshall Dr, Huntington, WV 25755. *Closed form probability distribution of number of infections at a given time in a stochastic SIS epidemic model.*

The objective of this work is to derive and analyze the closed form probability distribution of the number of infections at a given time in a stochastic SIS epidemic model. We study the effects of external fluctuations in the transmission rate of certain diseases and how these affect the distribution of the number of infections over time. The properties of the distribution of the number of infections, together with the effect of noise intensity, are analyzed. The distribution is demonstrated using parameter values relevant to the transmission dynamics of influenza in the United States. (Received September 12, 2019)