MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

SEVENTH SEMESTER B. TECH (ELECTRONICS AND INSTRUMENTATION)
PROCTORED ONLINE END SEMESTER EXAMINATION Dec. 21/Jan. 22

SUBJECT: Reliability and Safety Engineering (ICE 4069)

TIME: 2.20 - 3.35PM **DATE: 20/12/2021** **MAX MARKS 20**

Note: Answer All questions.

1	A	Describe the significance of risk estimation and risk evolution in safety engineering with an example.	4M
	B	Illustrate the different types of system modelling techniques involved in Probabilistic safety assessment	4M
	C	Differentiate reliability coefficient and validity of a product.	2M
2	A	List different types of liabilities and mention their need in safety engineering.	3M
	B	Table 2B gives a chronological sequence of the grid supply outages at a process plant. Using a probability plotting method, identify the possible distributions.	5M
	C	Draw the framework for design of safety and liabilities	2M

Table 2B. chronological sequence of the grid supply outages at a process plant

Failure number	Date/time	Time to failure (days)	Time between failure (days)
1	11.04.1998/14:35	101	101
2	17.06.1998/12:30	168	67
3	24.07.1998/09:19	205	37
4	13.08.1999/10:30	590	385
5	27.08.1999	604	14
6	21.11.1999	721	117
7	02.01.2000	763	42
8	01.05.2000/15:38	882	119
9	27.10.2000/05:56	1061	179
10	14.05.2001	1251	190
11	03.07.2001/09:45	1301	50
12	12.07.2002/18:50	1674	374
13	09.05.2003/08:43	1976	301
14	28.12.2005	2940	964
15	02.05.2006/11:02	3065	125
16	17.05.2007/11:10	3445	380
17	02.06.2007/16:30	3461	16