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: Robust Control (ICE-4053)

TIME: 9.20-10.35PM **DATE: 27 DEC 2021** **MAX MARKS 20**

Note: Answer All questions.

1	A	An open loop plant transfer function is given by $G(s)=\frac{1}{(s-2)(s-3)}$, using Bezout's identity find the parameters needed for the controller design.	5
	B	For the given plant $G(s)=\frac{1}{s^2-1}$ and controller $C(s)=\frac{s-1}{s+1}$, compute the sensitivity and complementary sensitivity function transfer function.	3
	C	List the properties of the norms. Also give the expressions for two and Infinity norms.	2
2	A	Using the solution for modified problem, for the given system $G(s)=\frac{1}{s+1}; W_1(s)=\frac{a}{s+5}; W_2(s)=\frac{0.03s}{0.04s+1}$; a=65 a) Find $U_3(s)$ b) Compute $R_1(s)$, $R_2(s)$, $S_1(s)$, $S_2(s)$ b) Give the condition for obtaining $T_1(s)$, $T_2(s)$ and Controller C	5
	B	Find the controllability grammian Lc for given $A=\begin{bmatrix}1 & 0\\ 2 & 5\end{bmatrix}; b=\begin{bmatrix}-5/8\\ 80/51\end{bmatrix}; c=[1\ 1]$	3
	C	Give the graphical representation for the robust performance with disk analysis. List few important condition to satisfy the robust performance.	2