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

FIFTH SEMESTER B. TECH (ELECTRONICS AND INSTRUMENTATION) PROCTORED ONLINE MAKE-UP EXAMINATION - Feb/March. 2022
SUBJECT: Control System Components (ICE 3151)

TIME: 9.20-10:35 AM   **DATE: 22/02/2022**   **MAX MARKS 20**

Note: Answer All questions

1	A	Derive the speed torque characteristic of a DC motor. Hence describe the methods by which a DC motor may be controlled with suitable speed torque characteristic. Which one would you use for an application which requires low speed hoist.	4M
	B	How would you fix the operating point of a DC machine? What are the various components of load torque? Explain ant two with a suitable example each.	3M
	C	Derive the torque equation of gear train referred to load shaft.	3M
2	A	Illustrate the concept of half stepping in a variable reluctance stepper motor. Can you use a VR stepper motor as a servo motor; justify your answer. With a neat block diagram, explain the closed loop control of a stepper motor	4M
	B	List the applications of vane pump and explain working of centrifugal pump	4M
	C	Differentiate between quick exhaust valve and time delay valve	2M