NTUST Circuit Theory: Midterm-2 (CH11) 100 points total

Note	1. Allowed Tools: Calculators 2. Leaving the classroom during the exam period will be considered as submitting the exam. 3. Every calculation process yields a score. 4. The answer ought to be presented in decimal format, not as a fraction.

Name : _____ SID : _____ 9. May. 2024

1. (40%) After deriving $Z_{in}(s)$ in Fig. 1, find (a) ω_o; (b) ω_1, ω_2; (c) Q; (d) BW.
2. (50%) Find the **magnitude characteristic** of the Bode plot for the transfer functions as follows: (a) $H_a(s)=\frac{s+1}{s-1}$, (b) $H_b(s)=\frac{s-1}{s+1}$, (c) $H_c(s)=\frac{s(s+100)}{(s+1)(s^2+30s+200)}$.
3. (10%) Explain the differences of **magnitude and phase plots** between $H_a(s)$ and $H_b(s)$ in problem 2.

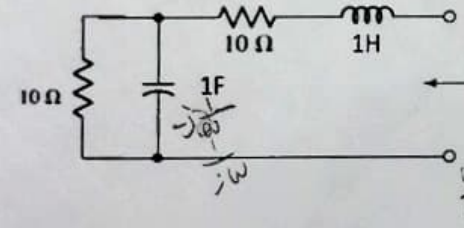

Fig. 1