El-Shorouk Academy	The Higher Institute of Engineering
Computer and control engineering	
Third year 2023	Electromagnetic waves

Sheet Revision Questions on Transmission Lines (T.L.)

1.Define transmission line? Mention some examples of transmission lines. List its applications.

2.Compare among the following transmission lines: twisted copper pairs cable, coaxial cable, wave guide and optical fiber.

3. Draw the equivalent circuit diagram of transmission line in the following cases: (i) General case. (ii)Lossless T.L.
Mention what each element represents and its unit.

4. Define the T.L. parameters. Mention unit of each.

5. Write T.L. parameter formulas and mention its units in table form for the following parameters: The propagation coefficient (γ), the attenuation coefficient (α), the phase shift constant (β) and the phase propagation velocity (V_p) in the following cases: (i)Lossy T.L. (ii)Lossless T.L.

6. Define the following concepts: (i) Voltage reflection coefficient (Γ).
(ii)Voltage standing wave ratio (VSWR). Mention its limits and its units.

7. Mention the relation between voltage reflection coefficient (Γ) and Voltage standing wave ratio (VSWR).

8. What are the values of Voltage reflection coefficient (Γ) and Voltage standing wave ratio (VSWR) at the extreme cases (short circuit (S.C.), open circuit (O.C.) and matched load.

9. Define the following: traveling wave and voltage standing wave.

10. Write the formula for input impedance of transmission line at a distance L from the load in the following T.L.: (i)Lossy T.L. (ii)Lossless T.L. in the following cases: general case, short circuit (S.C.) and open circuit (O.C.).

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Best wishes