Unit-V

Travelling Wave

Open-Circuit Line Termination

- Open circuit at receiving $\mathbf{Z_t}$= infinite
- Boundary condition for current i=0
- Therefore $i_f=-i_b$

- $V_b=Z_c i_b=Zi_f=v_f$

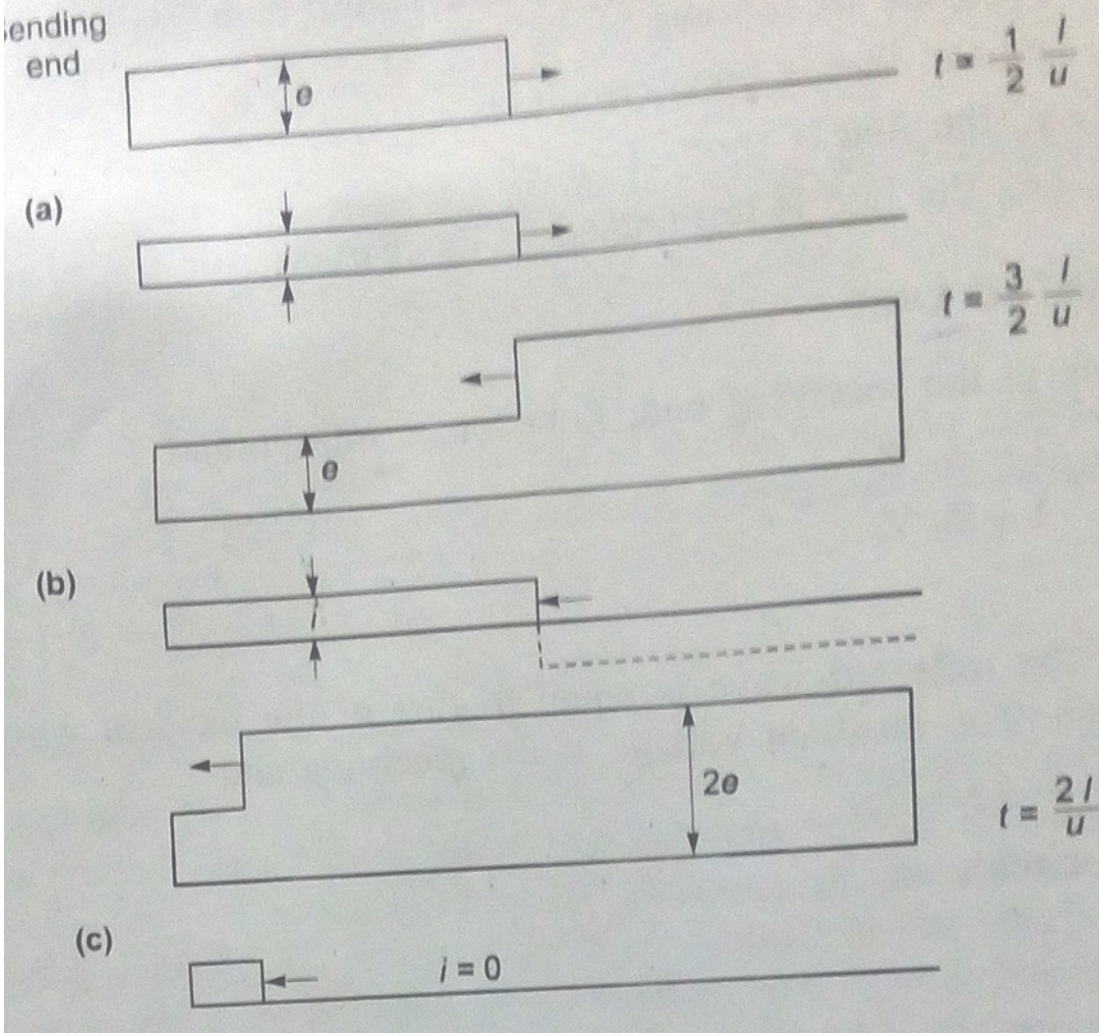
- Thus total voltage at the receiving end
  $v=v_f+v_b=2v_f$

- Voltage at the open end is twice the forward voltage wave

Systems

Receiving end

Sending end



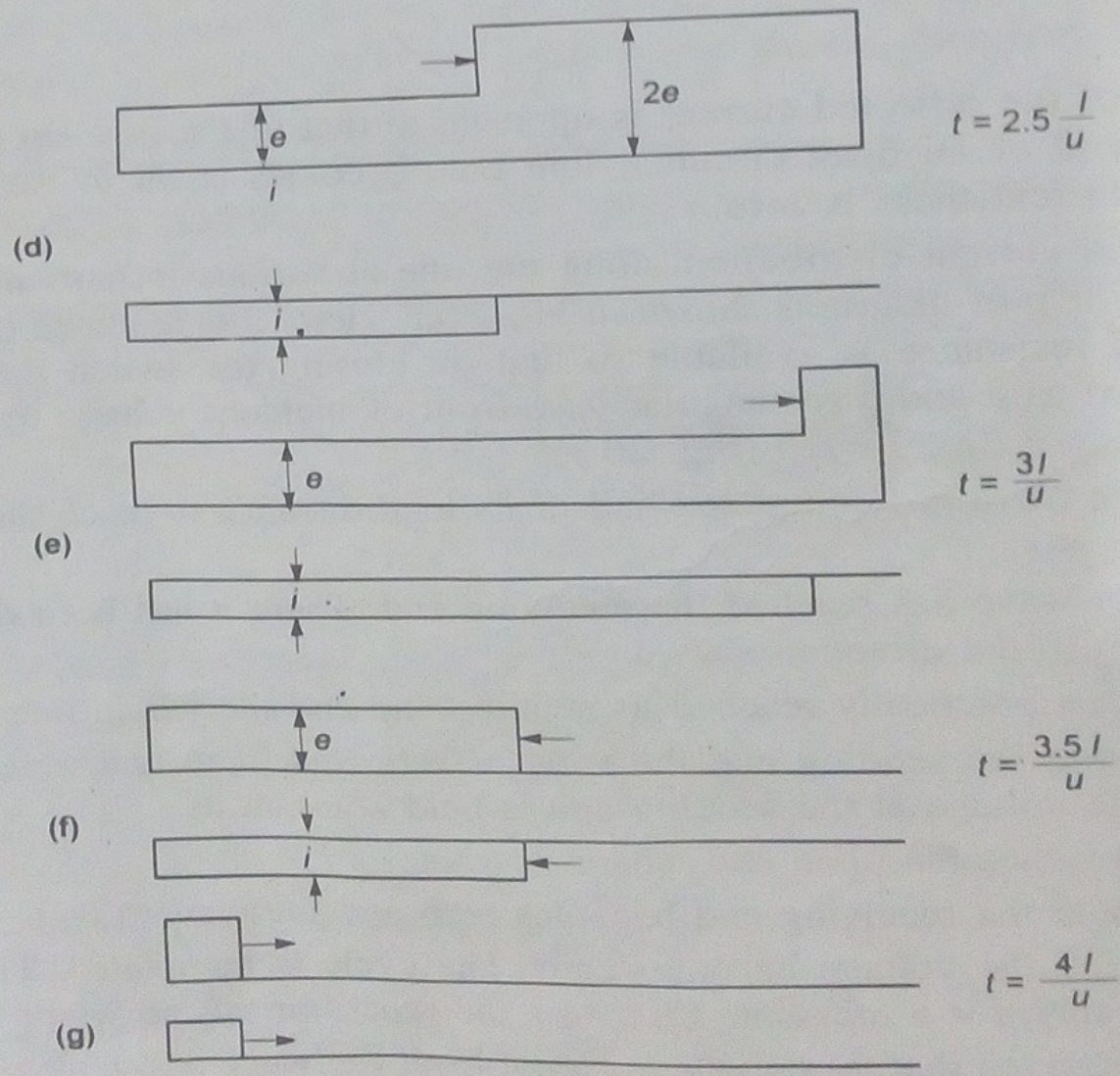
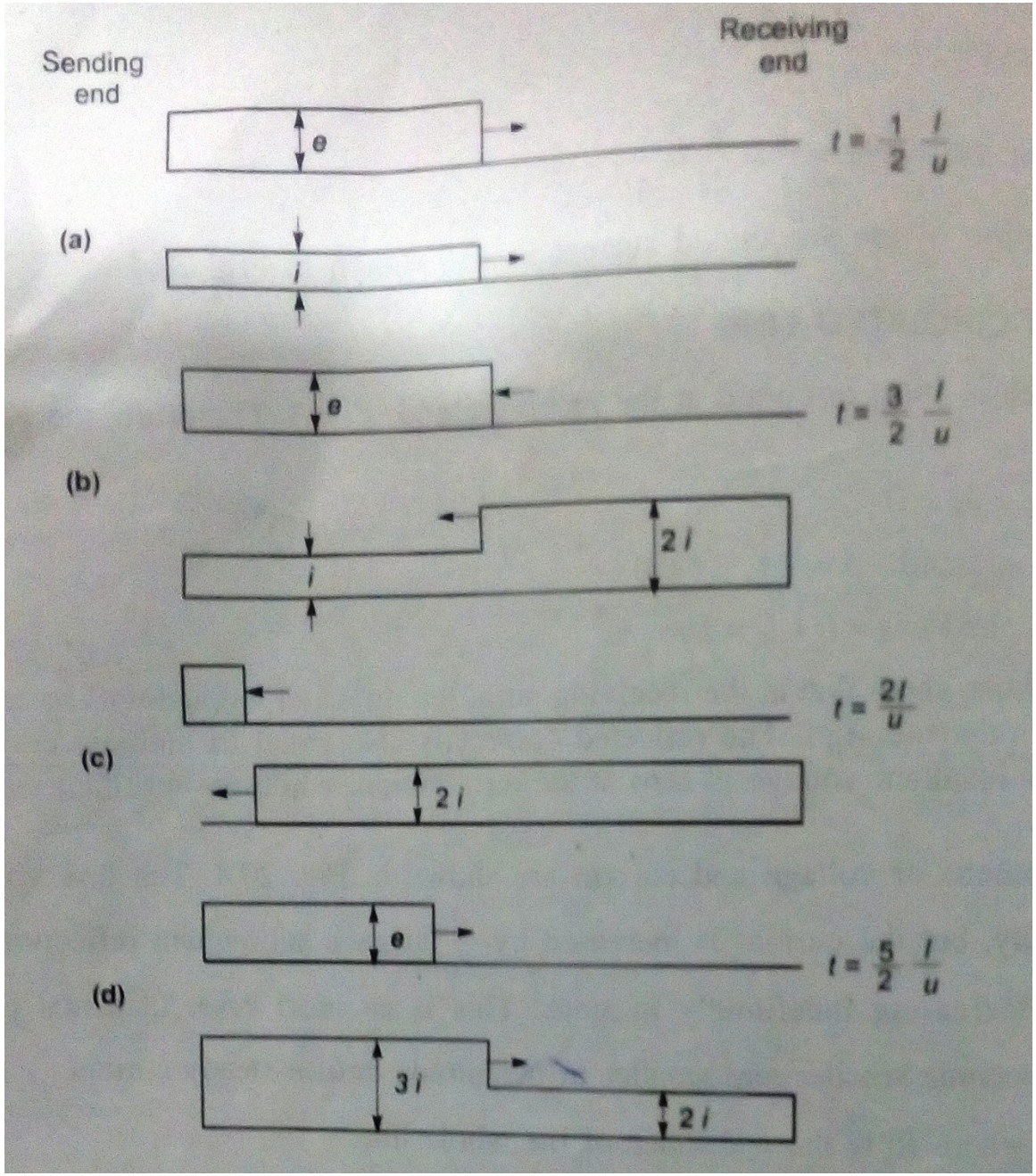


Fig. 20.3. Voltage and current distributions in an open-circuited line.

Short Circuit Line Termination

- Boundary condition for current v=0
- Therefore $v_f=-v_b$
- $I_f=v_f/Z_c=-(v_b/Z_c)=i_b$
- Thus total voltage at the receiving end $v=i_f+i_b=2i_f$
- Current at the open end is twice the forward current wave


Sending end
Receiving end
e
$t = \frac{1}{2}\frac{l}{u}$
(a)
i
e
$t = \frac{3}{2}\frac{l}{u}$
(b)
2 i
i
$t = \frac{2l}{u}$
(c)
2 i
e
$t = \frac{5}{2}\frac{l}{u}$
(d)
3 i
2 i

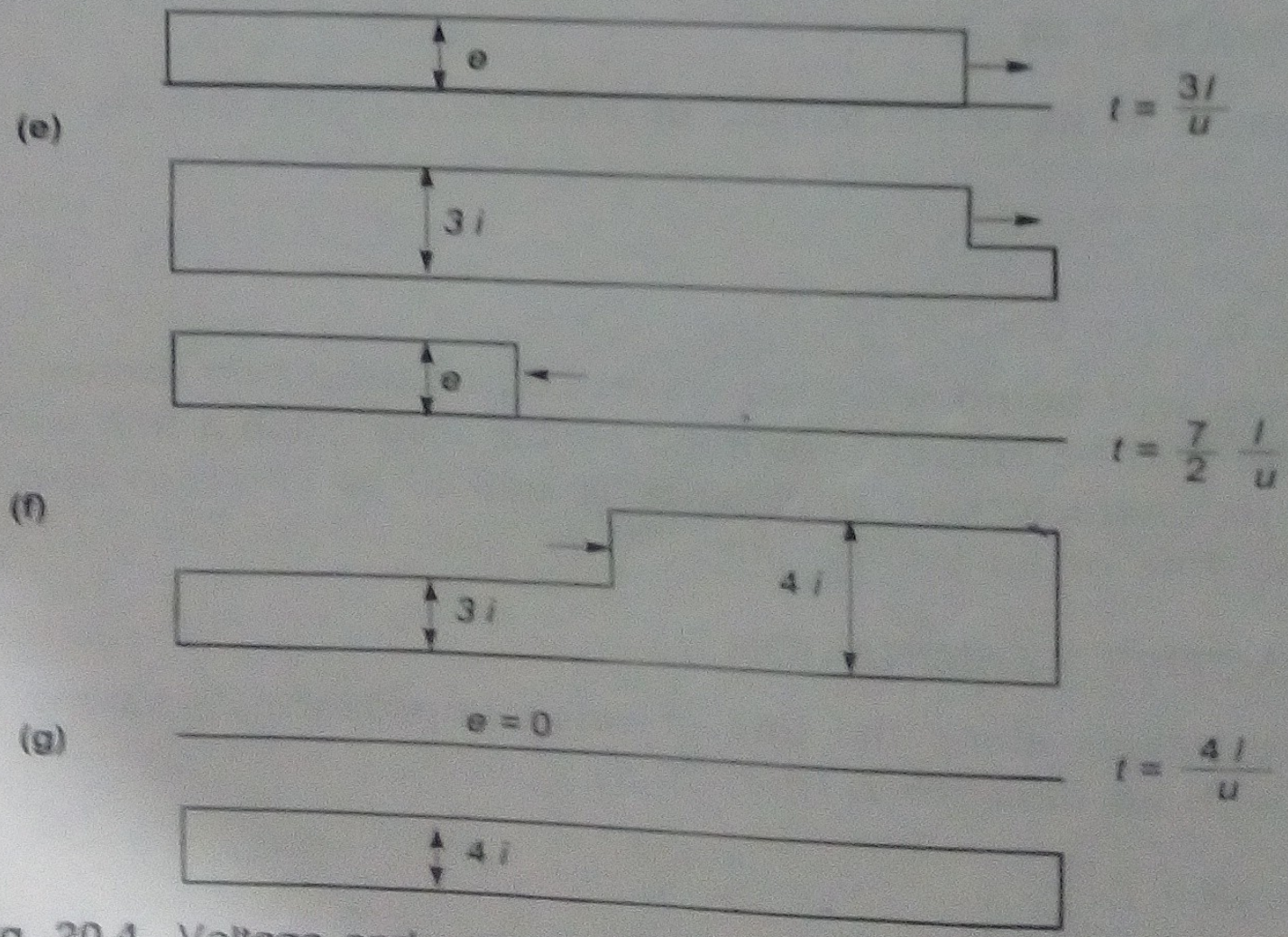


Fig. 20.4. Voltage and current distributions in a short-circuited line.

Thanks