Gate 2023_nm_33

Karyampudi Meghana Sai
EE23BTECH11031

For a regular sinusoidal wave propagating in deep water having wave height of 3.5 m and wave period of 9 s, the wave steepness is _____ (round off to three decimal places).

Solution:

Symbol	Value	Description
H	$3.5m$	wave height
T	$9s$	wave period
L	?	wave steepness

TABLE I
INPUT PARAMETERS

$$(S) = \frac{H}{L} \tag{1}$$

$$wavelength\,(L) = \frac{g \cdot T^2}{2\pi} \tag{2}$$

$$= \frac{9.81\,(9)^2}{2\pi} \tag{3}$$

$$= 126.53m \tag{4}$$

Substituting the value of L in equation(1).

$$S = \frac{3.5}{126.53} \tag{5}$$

$$= 0.028 \tag{6}$$