

- (b) A tidal basin in Canada has an area of  $240 \text{ km}^2$  with a mean tidal range of  $12.4 \text{ m}$ . Estimate the average power output assuming that the tidal period is  $12.5$  hours explaining your calculation.
- (c) An ocean wave, with amplitude  $a = 1 \text{ m}$  and wavelength  $\lambda = 100 \text{ m}$ , has a phase velocity  $c_p = [g\lambda/2\pi]^{1/2}$ . The energy per unit width and unit length in the direction of motion is  $E = \frac{1}{2} \rho g a^2$  where the density  $\rho = 1000 \text{ kg m}^{-3}$ . Calculate the group velocity of the wave and the power per unit width. Mention two of the different approaches for utilising this power to generate electricity.