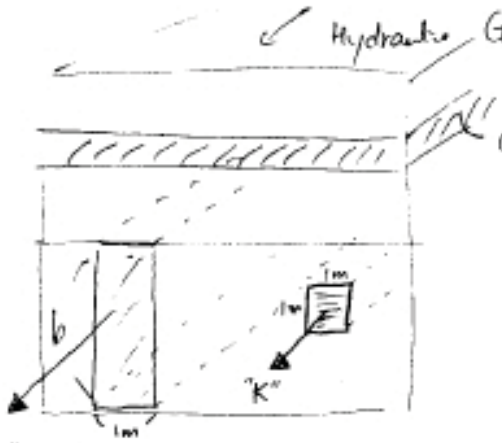
Pb 2.

nc



"K" hydraulic conductivity

: the volume of water flowing through a 1m × 1m cross-sectional area of an aquifer under the hydraulic gradient of 1m/1m in a given amount of time

- the volume of water flowing through a cross sectional area of an aquifer that is 1m × aquifer thickness (b), under a hydraulic gradient of 1m/1m in a given amount of time

$Q = KA\left(\frac{dh}{dl}\right)$

$T = Kb$

Q : discharge (volume of water per unit time)

K : hydraulic conductivity

A : Cross-sectional area

dh/dl : hydraulic gradient = 7m/1km

T : Transmissivity = $0.002\ m^2/sec$

Following picture's definition, $A = b \times (1m) = b\ (m)$

$$Q = KA\left(\frac{dh}{dl}\right) = \left(\frac{T}{b}\right)(b)\left(\frac{dh}{dl}\right) = (0.002\ m^2/sec)\ (7m/1000\ m)\left(\frac{1m}{1}\right)$$

$$= 0.000014\ m^2/sec$$

Pb 3. $\Phi = gz + P/\rho$

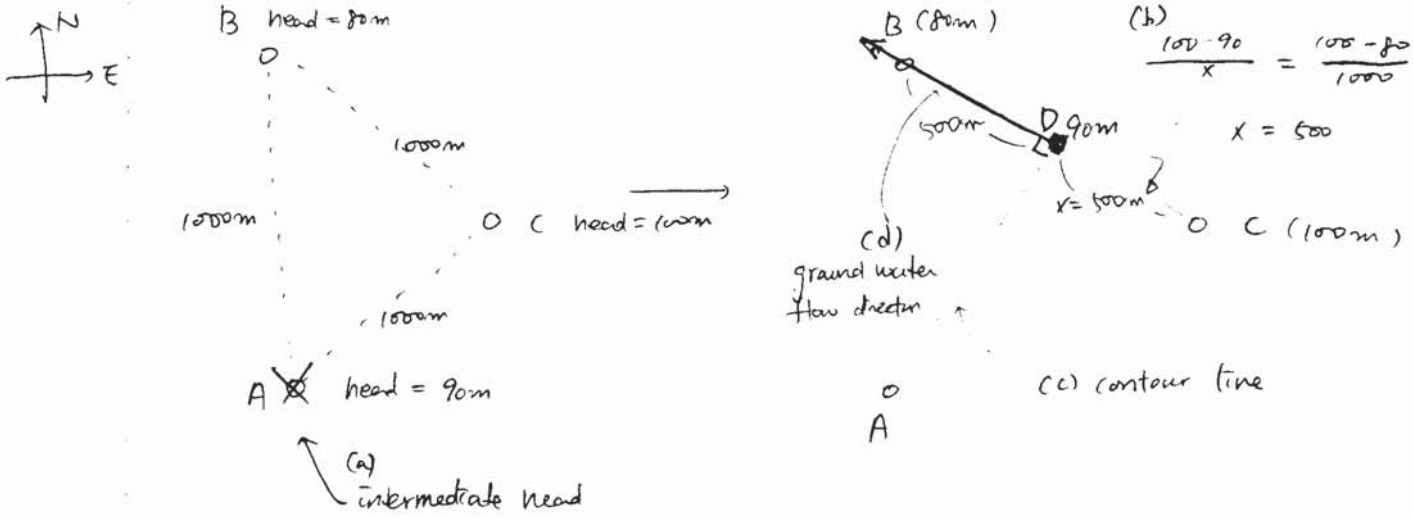
3D

$$[\Phi] = \left[\frac{L}{T^2}\right][L] + \left[\frac{ML}{T^2 L^2}\right] \Big/ \left[\frac{M}{L^3}\right]$$

$$= \left[\frac{L^2}{T^2}\right]$$

Pb2.

	Surface elevation	Depth to water	Water level
A	95 m	5m	90m
B	110m	30m	80 m
C	135m	35 m	100 m



Solution outline

(a) Identify intermediate water level → Piezometer A

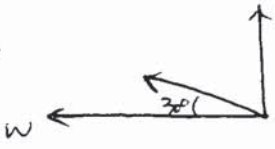
(b) Calculate where the elevation of intermediate piezometer falls between the Pieromeler having the highest and lowest head. → Point D

(c) Draw a straight line from the piezometer with intermediate head to its elevation equivalent plotted along the straight line ~~between~~ (Point D) This line represents a segment of the water-level contour whereby the total head is the same as the intermediate piezometer

(d) Draw a line perpendicular to the water-level contour line just plotted with the piezometer of highest or lowest head. This line is the line that parallels ground water direction

(e) Now, calalate the difference b/n the head of the pieromeler and that of the intermediate head contour by the distance b/n the piezometer and the contour to reveal the hydraulic gradient → $\frac{100m - 90m}{500m} = 0.02\ m/m$

Direction :



Northwest , 30°