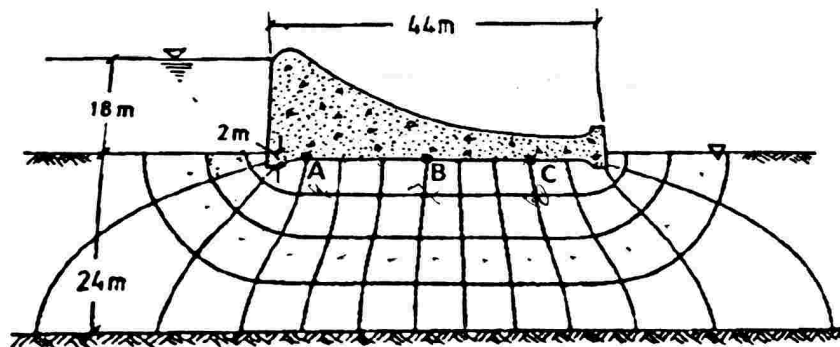| Q. No.	Question	Marks
1.	Figure 1 shows the flow net for a concrete weir which retains water up to 18m above ground level. The foundation soil consists of a 24m thick sand stratum. With reference to Figure 1 determine: a) Determine the seepage beneath the weir, if the co-efficient of permeability is 6.5 $\times 10^{-3}$ cm/s. b) Piezometric heads at the points A, B and C.	10

Figure 1

2.	A soil sample of height 60mm and area of cross section of 10000mm² was subjected to falling head permeability test. In a time interval of 5minutes, the head dropped from 600mm to 200mm. If the cross sectional area of the stand pipe is 200mm² i) Compute the coefficient of permeability of the soil sample. ii) If the same sample is subjected to a constant head of 180mm, calculate the quantity of water collected in one hour after flowing through the sample.	10
3.	Find the vertical stress increase below point A at a depth of 4m due to the loaded area as shown in Figure 2.	10

VIT

SLOT: C1+TC1

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF CIVIL ENGINEERING
CONTINUOUS ASSESSMENT TEST – II
WINTER SEMESTER 2023-2024
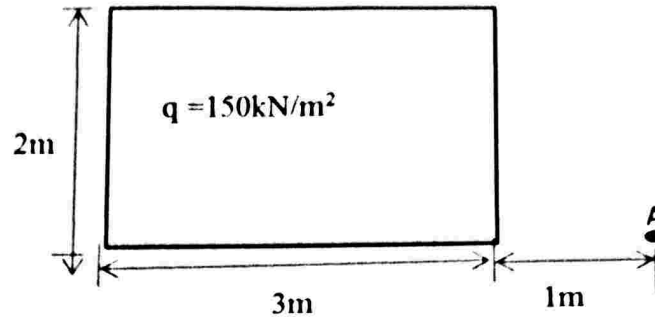

$q = 150kN/m^2$

2m

3m   1m

A

Figure 2

4. Point loads of magnitude 9 kN, 18 kN and 27 kN act at A, B and C respectively as   10
    shown in Figure 3. Determine the increase in vertical stress at a depth of 3m below
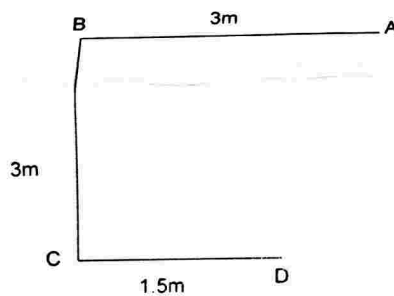   point D.

B   3m   A

3m

C   D
1.5m

Figure 3

5. A saturated soil has a compression index of 0.36 and coefficient of permeability of   10
    4×10^{-7} mm/s. If its voids ratio at an effective pressure of 100kPa is 1.7, find its voids
    ratio when the pressure is increased to 200kPa. Also find the settlement of the stratum
    if it is 5m thick and coefficient of consolidation for this pressure range