

**INSTRUCTIONS: ATTEMPT ALL THE QUESTIONS.**

1. A 12-hour storm rainfall with the following depths in cm occurred over a basin: 2.0, 2.5, 7.6, 3.8, 10.6, 5.0, 7.0, 10.0, 6.4, 3.8, 1.4 and 1.4. The surface runoff resulting from the above storm is equivalent to 25.5 cm of depth over the basin. Determine the average infiltration index ( $\Phi$ -index) for the basin.

**Solution:**

2. The rainfall intensities for the successive 1-hour period for 8-hrs storm is given as 20, 24, 30, 15, 35, 20, 10, 12 mm/hr, if the total runoff is 80mm, determine the value of  $\Phi$ -index.

**Solution:**

3. In a catchment area of  $5\text{km}^2$ , the intensity of rainfall per hour for a 5hr duration storm are 10, 15, 20, 22.5 mm. The volume of direct runoff is measured as 0.5 cumec-day. Determine the  $\Phi$ -index. For the catchment.

**Solution:**