

Assignment #1

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Answer # 01

Saturation Deficit :-

An index of humidity typically characterized by the difference between the saturation vapour pressure and the actual vapour pressure of a volume of air. The index has the particular utility of being proportional to the evaporation capability of the air.

The saturation deficit can be expressed as

$$e_w - e = e_w \left(1 - \frac{U}{100} \right)$$

Where the actual vapour pressure for a given volume of air and e_w is the saturation vapour pressure of the volume at a given temperature -

Answer #02

Ans

Monsoon :-

A monsoon is traditionally a seasonal reversing wind accompanied by corresponding changes in precipitation but is now used to describe seasonal changes in atmospheric circulation and precipitation associated with the asymmetric heating of land and sea. Usually the term monsoon is used to refer to the rainy phase of a seasonally changing pattern although technically there is also a dry phase.

The major monsoon system of the world consist of the west African and Asia-Australian monsoon. The inclusion

of the North and South American monsoon with incomplete wind reversal has been debated.

• Types of monsoon :-

- (1) Summer Monsoon.
- (2) Dry Monsoon.
- (3) Embryo Monsoon.

• Monsoon in Pakistan :-

Pakistan has four seasons: a cool, dry ~~a hot, dry~~ December through February a hot, dry Spring from March through May; the Summer Damp Season or Southwest monsoon period; from June through September; and the retreating monsoon period of October and November.

• Causes of monsoon in Pakistan :-

The establishment of low pressure over the Indo-Pakistan sub-continent in May and June attracts winds from the Indian ocean, which burst blowing over the land about the middle of June as the South-West monsoons.

• Variability of rainfall due to monsoon in Pak:-

During the active period of the JJAS season, Pakistan receives 82-1% of its rainfall in 74 days. Daily average rainfall is between 2 and 5 mm during this active period from 1980 to 2014. Regional rainfall varies from 67 to 88% during the active-period of the JJAS season.

• Effect of monsoon:-

Monsoon in Pakistan contributes almost 65-75% of the total annual rainfall. Due to bad governance and poor drainage system widespread monsoon rains casts a negative impact on crops and affects the yield of cotton, chilli, banana and tomato in Mirpurkhas, Tharparkar, Sanjhar, Badin, Degree and Hyderabad in Sindh.

Assignment #2Problem #1

Rain gauge Station	Area A (km ²)	Precipitation P (mm)	A x P km ² .mm
A	45	30.8	1386
B	38	34.6	1314.8
C	30	32.6	978
D	40	24.6	984
			<u>4662.8</u>

Using Arithmetic Average Method :

$$P_{av} = \frac{P_1 + P_2 + P_3 + \dots + P_n}{n}$$


$$= \frac{30.8 + 34.6 + 32.6 + 24.6}{4}$$

$$P_{av} = 30.65 \text{ mm}$$

Using Thiessen Polygon Method :

$$P = \frac{\sum (P \times A)}{\sum A} = \frac{4662.8 \text{ km}^2 \cdot \text{mm}}{153 \text{ km}^2}$$

$$P_{av} = 30.47 \text{ mm}$$

Checked By: Parents: Excellent Good 

Problem # 2

Isohyets cm	Area b/w Isohyets (km ²)	Average Precipitation (P ₁ +P ₂)/2	Product A x P ₁ P ₂ / ₂
9	22	9.5	209
10	80	10.5	840
11	105	11.5	1207.5
12	98	12.5	1225
13	78	13.5	1053
14	16	14.5	232
15			
Σ	399		4766.5

$$P = \frac{\sum A \times (P_1 + P_2)}{2 \sum A}$$

$$= \frac{4766.5}{399}$$

$$P = 11.94 \text{ mm} \text{ --- Ans}$$