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NCERT Class 9 Geography Solutions: Climate (Contemporary India -I) Chapter 4 – Part 1

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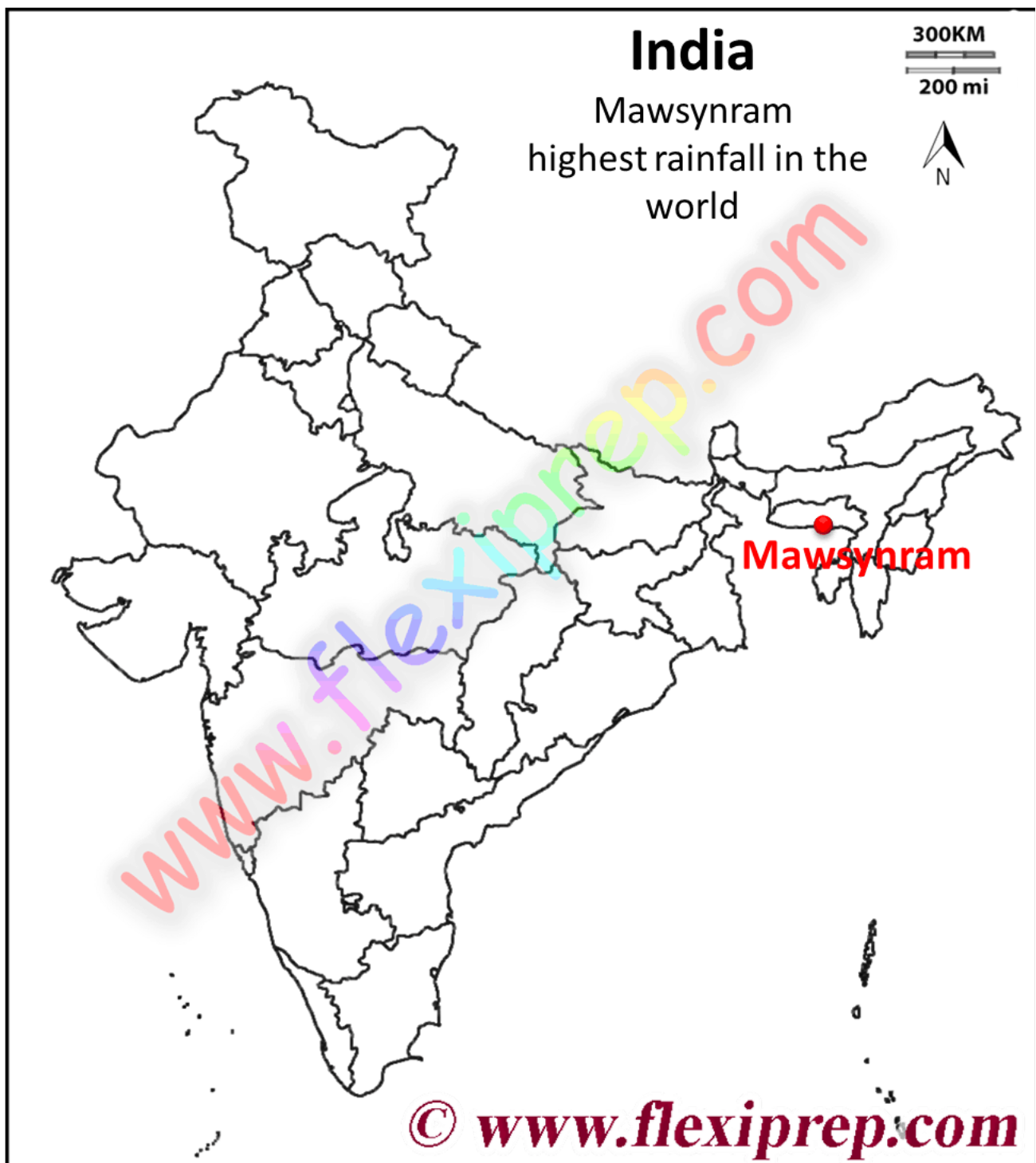
Q-1. Choose the correct answer from the four alternatives given below.

(i) Which one of the following places receives the highest rainfall in the world?

1. Silchar
2. Cherrapunji
3. Mawsynram
4. Guwahati

Answer: (c)

- Mawsynram village is situated in East Khasi Hills district of Meghalaya. It is the wettest place on Earth, getting an average rainfall of 1187 cm per annum.
- Koppen climate classification puts, Mawsynram in subtropical highland climate. It has an extraordinarily strong and extended monsoon.
- Previously the record for wettest place was held by Cherrapunji. Cherrapunji is a nearby divisional town. Cherrapunji still holds the record for the most rainfall in a month and a year: it received 930 cm in July 1861 and 2646 cm between 1 August 1860 and 31 July 1861.
- Following are three primary reasons for high rainfall at Mawsynram (and Cherrapunji)
- During monsoon the warm moist winds move northward from the Bay of Bengal and are forced to converge by the Khasi hills into a very narrow area around this region causing heavy precipitation.
- Khasi Hills are oriented east to west directly along the airflow from the Bay of Bengal. These hills produce significant uplift, which causes cooling and then precipitation.
- The streams in upper atmosphere further this uplift and push the moisture laden winds even more, hence the rainfall is more or less continuous.



(ii) The wind blowing in the northern plains in summers is known as:

1. Kaal Baisakhi
2. Trade Winds
3. Loo
4. None of the above

Answer: (c)

Explanation:

- The Loo is a strong, hot and dry summer afternoon wind which usually flows from west over the western Indo-Gangetic Plain region of North India and Pakistan.
- It is very strong in the months of May and June.
- Prolonged exposure to Loo without proper precautions, causes fatal heatstroke because of its very high temperatures (45 °C – 50 °C or 115°F-120°F) .

(iii) Which one of the following causes rainfall during winters in north-western part of India?

1. Cyclonic depression
2. Western disturbances
3. Retreating monsoon
4. Southwest monsoon

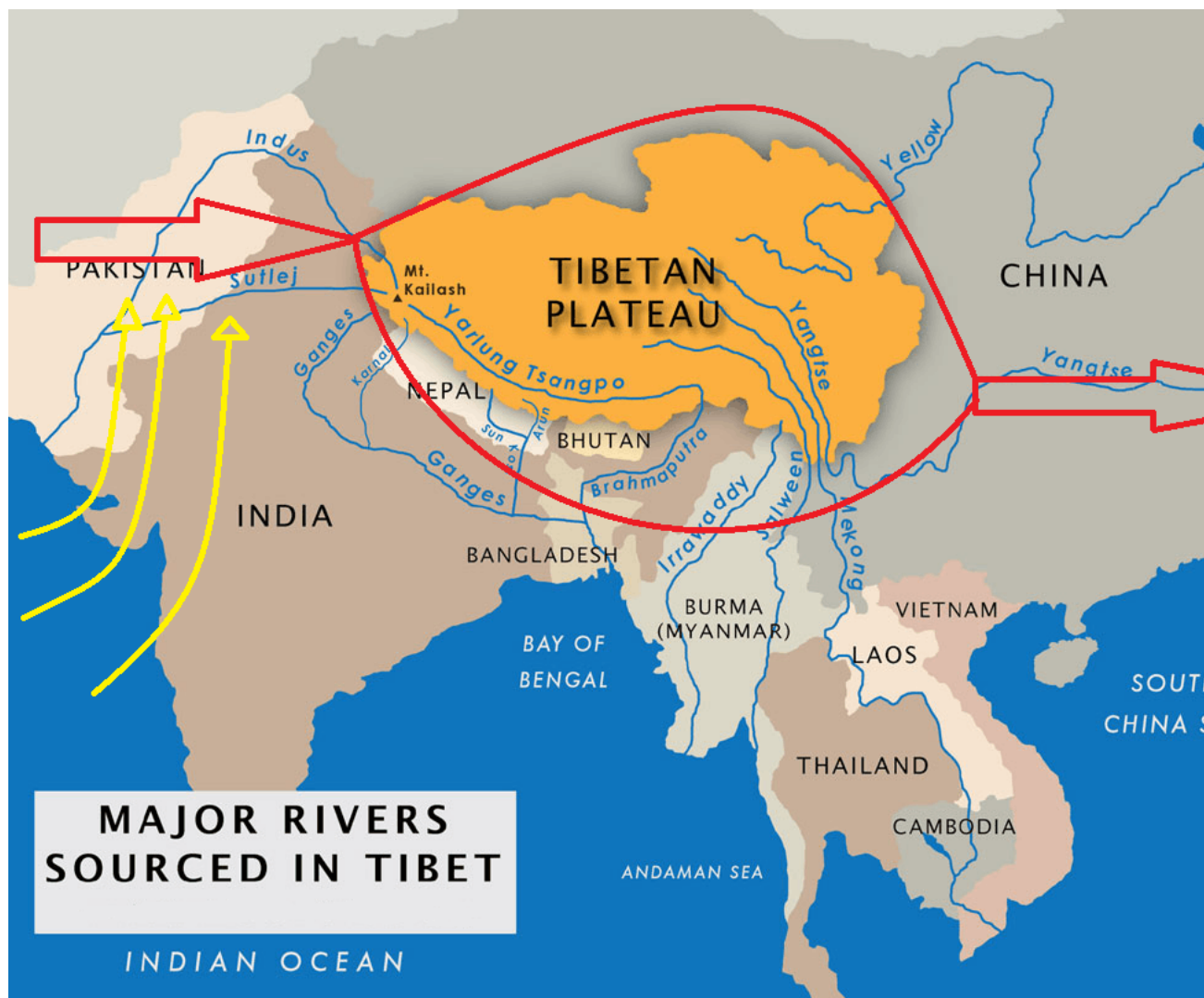
Answer: (b)

Explanation:

Definition of 'Western Disturbance'

The Jet Streams

- Jet Streams run in a narrow belt at high altitude (above 12,000 m) . They are predominantly westerly winds.
- They speeds range from about 110 km/h in summer to about 184 km/h in winter.
- In winter, the jet stream which flows west from Mediterranean and Caspian region, along 25° N latitude towards south of Himalayas is responsible for bringing the Western Disturbances.
- These winds flow parallel to the Himalayas and due to their great height they divide the stream into two, one flowing to north and other flowing south of Himalayas.



- In summer the western jet streams shift to the north of the Himalayas creating a low pressure region over Indian Peninsula which forces the monsoon (moisture laden) winds from the south to cause rainfall. The western disturbances don't cause much impact during this monsoon.

Origin or Western Disturbances

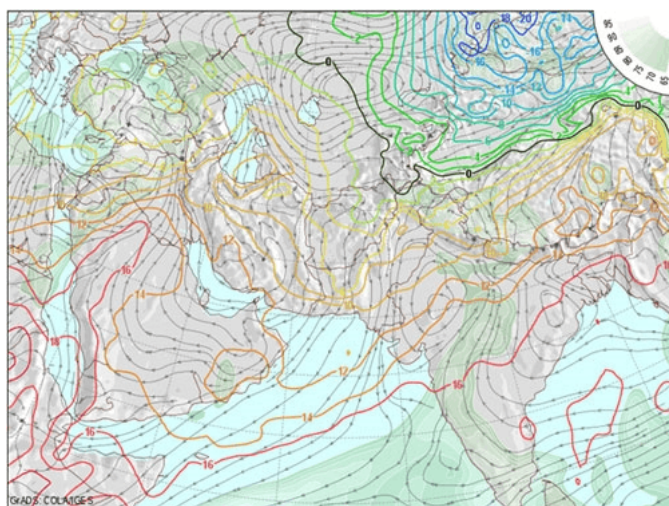
Western Disturbance (WD) originate in the Caspian Sea or the Mediterranean Sea as extra-tropical cyclones. They are carried by the jet streams (travelling east) and travel across the middle-east from Iran, Afghanistan and Pakistan to enter the Indian sub-continent (north-western India) . These Western Disturbances are a low pressure areas in the region of the streams. It causes non-monsoonal precipitation in Indian subcontinent. On average 4 - 6 such disturbances reach north-western India between October and April each year. Since in winter the jet streams are flowing north of Himalayas, they bring the Western Disturbances into the north eastern India.

Extra-Tropical Storms?

Note that these disturbances are known as “extratropical storms” which means that they are formed and carried outside the tropics. In such storms the moisture is carried in the upper atmosphere, unlike their tropical counterparts where the moisture is carried in the lower atmosphere.

Mechanism of Precipitation Due to Western Disturbance

This low pressure system as it moves towards India (with the jet stream) forces moisture laden winds from Arabian Sea to flow towards the land mass of Indian continent. For example, in the map below, near Rajasthan, winds are blowing anti-clockwise. In the northern hemisphere, such an anti-clockwise flow of air indicates a low pressure region. This low pressure is associated with the Western Disturbances. To normalize the reduced air pressure over Rajasthan, moist winds from the Arabian Sea seem to be blowing towards Rajasthan. Now when these moisture hits Himalayas it rises and causes precipitation. As a result, cloudy weather and rains will be witnessed in the green-shaded areas of central and northern India.



Western Disturbances Are at Their Peak in Winter Months

These disturbances move across the Indian region all year round, however, during winter months of January and February they are at their peak with minimal effect during the monsoon months.

Other Weather Impacts: Fog and Snow

- The precipitation due to western disturbances, leads to an abrupt decrease in air temperature over North-West India. The presence of moisture with the temperature drop causes heavy fog

- The weather becomes clear after the western disturbances passes away.
- Western Disturbances also bring heavy snowfall in the Himalayan Region and a cold wave to north Indian plains.

Western Disturbances and Rabi Crop of Wheat

Indian agriculture is still unfortunately greatly dependent on rain. Western Disturbances are the principle source of rain during non-monsoonal months especially over Northwest India including Punjab, Haryana, Uttar Pradesh and Delhi. Their effect sometime extends up to Gangetic plains and Northeast India. They are also responsible for bringing snowfall in the higher reaches of Jammu & Kashmir, Himachal Pradesh and Uttarakhand.

During this time of winter most of the farmers are growing the Rabi crop of wheat. Western Disturbance and associated rain is very important for the development of the Rabi crop in the Northern subcontinent. Note also that wheat is the most important crop for Indian and forms staple diet of millions of its people.

Detrimental Effects

In recent years western disturbances have been linked to disasters. The cloud burst in Leh in 2010, the floods and landslide in Uttarakhand in 2013 and the excessive rain in Jammu and Kashmir in 2014 were all linked to these disturbances.

Frequently Asked Questions (FAQs)

- **Climate - nine geography**

(- ak...@ on 21-Apr-2023)

1 Answer

Climate of India - Class 9 geography is available at [\[Learn more at youtube \[https://www.youtube.com/watch?v=qJmg7qzUVGM\]\]](https://www.youtube.com/watch?v=qJmg7qzUVGM)

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