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Land Transport

Transport and communication are essential for moving goods, commodities, and ideas from their place of availability to the place of use. India has the second largest road network in the world, spanning 42.6 lakh km. Road transport is most suitable for short-distance travel and is classified into National Highways, State Highways, Major District Roads, and Rural Roads based on construction and maintenance responsibility.

National Highways, maintained by the Central Government, facilitate interstate transport and connect state capitals, major cities, ports, and railway junctions. The National Highways Authority of India (NHAI), an autonomous body under the Ministry of Road Transport and Highways, was established in 1995 to oversee these roads.

State Highways, maintained by state governments, connect state capitals with district headquarters and important towns, constituting 4% of the total road length. District Roads link district headquarters with other important locations and account for 14% of the total road length. Other roads include Border Roads and International Highways, with the Border

Roads Organisation constructing roads in high-altitude mountainous terrain, such as the road connecting Chandigarh with Manali and Leh at an average altitude of 4270 meters.

Road density varies across states, being higher in northern and major southern states and lower in the Himalayan region, northeastern states, Madhya Pradesh, and Rajasthan. Construction is easier and cheaper in plains compared to hilly and plateau areas, affecting both density and quality of roads.

Indian Railways, one of the longest networks globally, began in 1853 with a 34 km track from Bombay to Thane. It is the largest government undertaking, with a network length of 67,368 km as of March 2017. Post-independence, railway routes expanded, including the significant Konkan Railway along the western coast linking Mumbai and Mangaluru. Railways remain the primary transport mode for the masses.

Pipelines are efficient for transporting liquids and gases over long distances. Oil India Limited (OIL), under the Ministry of Petroleum and Natural Gas, manages exploration, production, and transportation of crude oil and natural gas. OIL is constructing a 660 km pipeline from Numaligarh to Siliguri.

Exam Questions

Q1: What are the main classifications of roads in India based on construction and maintenance?

A1: Roads in India are classified as National Highways, State Highways, Major District Roads, and Rural Roads.

Q2: Why is road density higher in plains compared to hilly areas?

A2: Construction is easier and cheaper in plains, making road density and quality better compared to difficult and costly construction in hilly and plateau areas.

Q3: What is the significance of the Konkan Railway?

A3: The Konkan Railway provides a direct link between Mumbai and Mangaluru along the western coast, enhancing connectivity.

Water Transport

Waterways are an important mode of transport for passengers and cargo in India, being the cheapest and most suitable for heavy and bulky goods. Water transport is divided into inland waterways and oceanic waterways.

Inland waterways were the chief mode of transport before the advent of railways. India has 14,500 km of navigable waterways, contributing about 1% to the country's transportation. The Inland Waterways Authority, established in 1986, manages the development and regulation of national waterways. Kerala's backwaters are significant for inland waterways, providing cheap transport and attracting tourism.

India has a vast coastline of approximately 7517 km, including islands. Oceanic routes are vital for the economy, handling about 95% of foreign trade by volume and 70% by value. These routes also facilitate transportation between islands and the mainland.

Exam Questions

Q1: What are the two types of water transport in India?

A1: Inland waterways and oceanic waterways.

Q2: Why are oceanic routes important for India?

A2: They handle the majority of India's foreign trade by volume and value and connect islands with the mainland.

Q3: What role do Kerala's backwaters play in inland water transport?

A3: They provide cheap transport and attract tourists, enhancing the local economy.

Air Transportation

Air transport is the fastest mode of movement, essential for a vast and diverse country like India. It began in 1911 and is managed by the Airports Authority of India, which provides safe air traffic and aeronautical communication services. Air India manages air transport, with many private companies also operating passenger services.

Air India provides international air services for passengers and cargo. Mumbai and Delhi airports handle about 52% of total air traffic. Pawan Hans Limited offers helicopter services mainly for the petroleum sector and tourism, especially in hilly areas.

Exam Questions

Q1: When did air transport begin in India?

A1: Air transport began in India in 1911.

Q2: What is the role of the Airports Authority of India?

A2: It provides safe, efficient air traffic and aeronautical communication services in Indian airspace.

Q3: What services does Pawan Hans Limited provide?

A3: Helicopter services for the petroleum sector and tourism, especially in hilly areas.

Communication Networks

Communication has evolved from traditional methods like drum beating and smoke signals to modern postal services, telegraph, telephone, satellite, and internet. Communication modes are divided into personal and mass communication.

The internet is the most effective personal communication system, widely used in urban areas, providing vast data and enabling direct communication. Mass communication includes radio and television broadcasting. Radio broadcasting started in India in 1923 and has greatly influenced socio-cultural life. All India Radio broadcasts information, education, and entertainment, including special news bulletins during parliamentary sessions.

Television is a powerful audio-visual medium for information and education. Satellites regulate communication means and are grouped into the Indian National Satellite System (INSAT) and Indian Remote Sensing Satellite System (IRS). India has developed its own Polar Satellite Launch Vehicle (PSLV). The National Remote Sensing Agency (NRSA) in Hyderabad processes data useful for natural resource management.

Exam Questions

Q1: What are the two main types of communication?

A1: Personal communication and mass communication.

Q2: What is the significance of All India Radio?

A2: It broadcasts a variety of programs related to information, education, and entertainment, influencing socio-cultural life.

Q3: What are INSAT and IRS?

A3: INSAT is the Indian National Satellite System for communication, and IRS is the Indian Remote Sensing Satellite System for earth observation.

International Trade

India's contribution to world trade is about 1% by volume but plays a significant role in the global economy. External trade grew from Rs. 1214 crore in 1950-51 to Rs. 44,29,762 crore in 2016-17. Imports have consistently been higher than exports. The composition of trade has shifted from agriculture products to petroleum and other commodities due to international competition, especially from China and East Asian countries.

India trades with most countries and major trading blocks. Most foreign trade is carried by sea and air, with some land routes to neighboring countries. India has 12 major ports and 200 minor ports. Port capacity increased from 20 million tonnes in 1951 to over 837 million tonnes in 2016.

Kandla Port serves western and northwestern India, handling petroleum and fertilizers. Mumbai Port, a natural harbour, is the largest port with the biggest oil terminal, serving hinterlands including MP, Maharashtra, Gujarat, UP, and parts of Rajasthan. Jawaharlal Nehru Port at Nhava Sheva is the largest container port, developed to relieve Mumbai Port. Kochi Port, known as the 'Queen of the Arabian Sea,' is a natural harbour. Kolkata Port, located inland on the Hooghli river, has declined in significance due to diversion of exports.

Air transport plays a role in international trade by handling high-value or perishable goods quickly, though it accounts for a smaller share compared to oceanic routes. India has 25 major airports.

Exam Questions

Q1: How has the composition of India's international trade changed over time?

A1: The share of agricultural products has declined, while petroleum and other commodities have increased.

Q2: What is the significance of Mumbai Port?

A2: It is the largest port and natural harbour in India, with the biggest oil terminal serving several states.

Q3: Why is air transport important in international trade?

A3: It is the fastest mode for transporting high-value or perishable goods over long distances.

Solved Examples

Example 1: Explain the role of National Highways in India's transport system.

Solution: National Highways are constructed and maintained by the Central Government to facilitate interstate transport, connect state capitals, major cities, ports, and railway junctions, and support movement of defence personnel and materials. They are crucial for economic integration and strategic connectivity.

Example 2: Describe the importance of inland waterways in India.

Solution: Inland waterways provide a cheap mode of transport for passengers and cargo, especially heavy and bulky goods. They were the main transport mode before railways and continue to be important in regions like Kerala with its backwaters, supporting tourism and local transport.

Practice Set

Easy

- What are the main types of roads in India?
- Define pipelines and their use.

Moderate

- Explain the role of the Border Roads Organisation.
- What are the two types of water transport in India?

Challenging

- Discuss the impact of physical environment on road density in India.
- Describe the significance of the Indian National Satellite System.

Answer Key

- National Highways, State Highways, Major District Roads, Rural Roads.
- Pipelines are systems used to transport liquids and gases over long distances.
- The Border Roads Organisation constructs roads in difficult mountainous terrain to improve connectivity.
- Inland waterways and oceanic waterways.
- Physical environment affects road construction cost and feasibility, leading to variations in road density.

- INSAT is a satellite system for communication and broadcasting, supporting various services across India.

Quick Reference

- India has the second largest road network globally.
- National Highways connect major cities and states, maintained by the Central Government.
- Indian Railways is one of the longest networks, vital for mass transport.
- Water transport includes inland and oceanic waterways; oceanic routes handle most foreign trade.
- Air transport is fastest, managed by Airports Authority of India and Air India.
- Communication evolved from traditional to modern satellite and internet systems.
- India's international trade is mostly via sea and air, with major ports like Mumbai and Kandla.

Glossary

- **Autonomous body:** A government organisation operating independently under a ministry.
- **Backwaters:** Parts of a river with stagnant water, not reached by the current.
- **Hinterlands:** Areas away from the coast served by a port.
- **Interstate transport:** Movement of goods, services, and people across state boundaries.
- **Natural harbour:** A landform where water is deep and protected for anchorage.
- **Pipelines:** Systems for transporting liquids and gases over long distances.
- **Advent:** The arrival or invention of something new.
- **Aeronautical communication services:** Systems transmitting voice, data, and signals between aircraft and ground stations.
- **PSLV:** Polar Satellite Launch Vehicle, India's satellite launching vehicle.

Chronology of Transport Development in India

| Year | Event | Significance |
|------|-------|--------------|
|------|-------|--------------|

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|------|--|--|
| 1853 | First railway track from Bombay to Thane | Beginning of Indian Railways |
| 1923 | Start of radio broadcasting by Radio Club of Bombay | Beginning of mass communication in India |
| 1986 | Establishment of Inland Waterways Authority | Development and regulation of national waterways |
| 1995 | Operationalisation of National Highways Authority of India | Improved management of National Highways |
| 2017 | Indian Railways network length 67,368 km | Expansion of rail connectivity |

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