NCERT Solutions Alternative Communication System Disaster Management CBSE 2026-27

⚡ Quick Revision Box — Alternative Communication System

- **Why alternatives are needed:** Normal telecom networks fail during disasters due to damaged cables, towers, and power cuts.
- **NIC (National Informatics Centre):** Runs NICNET — connects all State Secretariats, Union Territory Secretariats, and District Collectorates.
- **BSNL (Bharat Sanchar Nigam Limited):** Largest public sector telecom company; 45 million telephone lines across 5,000 towns.
- **HAM Radio (Amateur Radio):** Battery-operated, no ground infrastructure needed, frequencies regulated by ITU and India's Wireless Planning and Coordination Wing.
- **HAM radio restriction:** Cannot be used for commercial purposes — only research, education, and personal use.
- **Satellite Communication:** Satellites orbit in space, unaffected by Earth's natural disasters; global links via small antennas.
- **Chapter:** Chapter 3, Disaster Management, CBSE Class 10 — updated for 2026-27 syllabus.
- **Exam pattern:** Questions from this chapter appear as 2–3 mark short answers and 5-mark long answers in CBSE papers.

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The **NCERT Solutions Alternative Communication System Disaster Management CBSE** page covers all four textbook questions from Chapter 3 of the Class 10 Disaster Management book, fully updated for the **2026-27** academic year. This chapter is critically important for CBSE students because it explains why ordinary communication networks collapse during disasters and what backup systems — like HAM radio, NICNET, BSNL, and satellite communication — keep rescue operations running. You can find more study resources at NCERT Solutions and explore all general NCERT content at NCERT Solutions General.

Chapter Overview — Alternative Communication System Disaster Management CBSE

Chapter 3 of the CBSE Class 10 Disaster Management textbook focuses on how communication infrastructure collapses during large-scale disasters and what alternative systems exist to fill that gap. Students learn about government-run networks like NIC and

BSNL, amateur radio systems (HAM radio), and satellite-based communication. This chapter is available on the official NCERT website as part of the supplementary Disaster Management curriculum.

For CBSE 2026-27 board exams, Disaster Management questions are integrated into the Social Science paper. This chapter typically contributes 2–5 marks through short-answer and long-answer questions. Students who understand *why* each alternative system works — not just its name — score full marks consistently.

Detail	Information
Chapter	Chapter 3 — Alternative Communication System
Subject	Disaster Management (Social Science)
Class	Class 10
Board	CBSE
Academic Year	2026-27
Difficulty Level	Easy to Medium
Marks Weightage	2–5 marks in board paper

Key Concepts: Why Communication Fails During Disasters

When a disaster strikes — whether an earthquake, cyclone, flood, or landslide — the first thing that breaks down is communication. Physical infrastructure like cables and transmitting towers gets damaged. Power supply is cut off. Even wireless telephones stop working because they depend on the same transmitting towers.

There is another problem beyond physical damage: **network congestion**. During a disaster, thousands of people try to call the same area at the same time. This jams the cables and the entire communication system grinds to a halt. This is why alternative communication systems are not just useful — they are essential.

The key alternative systems you must know for your exam are:

- **NIC (National Informatics Centre)** — government science and technology body running NICNET
- **BSNL (Bharat Sanchar Nigam Limited)** — largest public sector telecom provider
- **HAM Radio (Amateur Radio)** — battery-powered, no ground infrastructure, ITU-regulated frequencies
- **Satellite-based Communication** — space-based, unaffected by ground disasters, small antenna requirement

NCERT Solutions Alternative Communication System — All Questions Answered

Below are complete, exam-ready answers to all four questions from Chapter 3 of the CBSE Class 10 Disaster Management textbook. These **ncert solutions alternative communication system disaster management cbse** answers are written to match the official answer key pattern for 2026-27.

Question 1

Easy

Why should the alternative communication systems be installed?

Step 1 — Identify the core problem: Normal telecommunication networks are highly vulnerable during disasters. Earthquakes, cyclones, floods, and landslides cause severe damage to physical infrastructure — cables snap, transmitting towers collapse, and power supply is disrupted.

Step 2 — Explain the failure of wireless phones too: Even wireless telephones (mobile phones) stop functioning during disasters because they also depend on ground-based transmitting towers. When those towers are destroyed or lose power, mobile networks go down.

Step 3 — Explain network congestion: Even when the physical network survives, it often gets jammed. During a disaster, a large number of people try to call the affected area simultaneously. This overloads the cables and the communication system fails to work.

Step 4 — State the conclusion: Since communication is critically important during a disaster for coordinating rescue, relief, and evacuation operations, it is essential to have an alternative communication system that can function independently of damaged ground infrastructure.

Answer: Alternative communication systems must be installed because normal telecommunication networks get disrupted or jammed during disasters. Physical damage to cables, towers, and power supplies — combined with network congestion from high call volumes — causes the main system to fail completely. An alternative system ensures uninterrupted communication for rescue and relief operations.

Board Exam Note: This question typically appears in 2–3 mark sections of CBSE board papers. Mention at least two distinct reasons — physical damage AND network congestion — to score full marks.

Question 2

Easy

Name two prime communication networks of the Government of India and explain their functions.

Key Concept: The Government of India operates two major communication networks — NIC and BSNL — that play vital roles in both normal administration and disaster management.

(i) NIC — National Informatics Centre

What it is: NIC is a premier Science and Technology organisation of the Government of India.

How it works: It functions through a nationwide information and communication technology network called **NICNET**.

Coverage: The Secretariats of all States and Union Territories, as well as all District Collectorates, are connected through NICNET. This makes it a critical backbone for government communication, especially during emergencies when district-level coordination is needed.

NIC Function: Provides nationwide government communication via NICNET, connecting all state secretariats and district collectorates.

(ii) BSNL — Bharat Sanchar Nigam Limited

What it is: BSNL is a leading telecommunications company and the largest public sector undertaking in India.

Scale: It has a network of **45 million telephone lines** covering **5,000 towns** across India.

Function: BSNL provides comprehensive telecom services — voice, data, and broadband — forming the primary public telecom backbone of the country.

BSNL Function: India's largest public telecom provider with 45 million lines across 5,000 towns, providing essential voice and data communication services.

Board Exam Note: Always write both the full form AND the function of each network. Partial answers that only name the networks without explaining functions lose marks in 2–3 mark questions.

Question 3

Medium

How is Amateur radio (HAM) different from the common radio communication?

Step 1 — Define HAM radio: Amateur radio is also known as HAM radio. Like ordinary radio, it transmits and receives signals through radio waves. The fundamental working principle is the same as common radio communication.

Step 2 — Identify the key difference — frequency regulation: The critical difference is that HAM radio operators must follow specific frequencies as defined by the **International Telecommunication Union (ITU)**. Common radio does not have these strict frequency restrictions for general users.

Step 3 — Regulatory body in India: In India, HAM radio is controlled by the **Wireless Planning and Coordination Wing of the Ministry of Telecommunication**. Operators must obtain a licence and follow strict rules.

Step 4 — Rules for HAM radio operators:

- Frequencies can be used only for **research, education, and personal use**.
- Frequencies **cannot be used for commercial purposes**.

Step 5 — Why HAM radio is better during disasters: HAM radio does **not use ground-based infrastructure**. It requires only limited power and runs on batteries. This means it keeps working even when power grids fail and towers are destroyed — making it extremely valuable during disasters.

Answer: HAM radio works on the same principle as ordinary radio but differs in that its operators must follow ITU-regulated frequencies, it cannot be used commercially, it does not depend on ground-based infrastructure, and it runs on battery power — making it far more reliable during disasters than common radio communication.

Board Exam Note: This is a comparison question. Structure your answer clearly: first state the similarity (same working principle), then list the differences (frequency rules, no commercial use, no ground infrastructure, battery-operated). This structure earns full marks in long-answer sections.

Question 4

Medium

What makes the Satellite based communication system more reliable in case of large scale natural/manmade emergencies?

Step 1 — Location advantage: Communication satellites are placed in orbit in space. Unlike ground-based infrastructure such as cables, towers, and exchange buildings, satellites are completely beyond the reach of natural disasters occurring on Earth.

Step 2 — Not vulnerable to Earth disasters: Earthquakes, floods, cyclones, and landslides cannot damage a satellite in orbit. This means the communication link through a satellite remains intact even when entire ground networks are wiped out.

Step 3 — Easy ground access: Global communication links can be established using **very small satellite antennas**. This means even in a remote disaster-hit area where all infrastructure is destroyed, a small portable satellite antenna can restore communication quickly.

Step 4 — Wide coverage: A single satellite can cover a vast geographic area. This is particularly useful in large-scale disasters affecting multiple states or countries simultaneously.

Answer: Satellite-based communication is reliable during emergencies because satellites orbit in space and are not vulnerable to natural disasters on Earth. They provide global coverage through very small antennas, can be set up quickly in destroyed areas, and do not depend on any ground-based infrastructure that could be damaged by floods, earthquakes, or cyclones.

Board Exam Note: Give at least three reasons for reliability: (1) space-based so not affected by Earth disasters, (2) small antennas make deployment easy, (3) wide geographic coverage. Each point can earn a separate mark in 2–3 mark sections.

Key Networks and Systems Reference Table

System / Network	Full Form	Key Feature	Disaster Relevance
NIC	National Informatics Centre	Operates NICNET; connects all state secretariats and district collectorates	Government coordination during disasters
BSNL	Bharat Sanchar Nigam Limited	45 million lines; 5,000 towns; largest public sector telecom	Primary public telecom backbone
HAM Radio	Amateur Radio	Battery-operated; no ground infrastructure; ITU-regulated frequencies	Works when all other systems fail
Satellite Communication	—	Space-based; small antennas; global coverage	

System / Network	Full Form	Key Feature	Disaster Relevance
			Unaffected by ground-level disasters
ITU	International Telecommunication Union	Defines frequency bands for HAM radio globally	Regulatory framework for emergency radio
Wireless Planning Wing	Wireless Planning and Coordination Wing	Regulates HAM radio in India under Ministry of Telecommunication	Licences HAM operators for disaster use

Extra Practice Questions Beyond NCERT

Extra Question 1

Easy

What is NICNET and which institutions does it connect?

NICNET is the nationwide information and communication technology network operated by the National Informatics Centre (NIC). It connects the Secretariats of all States and Union Territories as well as all District Collectorates across India. During disasters, this network allows the central government to coordinate with state and district authorities without relying on commercial telecom networks.

Answer: NICNET connects all State and Union Territory Secretariats and all District Collectorates. It is operated by NIC and serves as a dedicated government communication backbone.

Board Exam Note: This type of question appears in short-answer sections. Always mention both the operator (NIC) and what is connected (secretariats + district collectorates).

Extra Question 2

Medium

State the rules that a HAM radio operator must follow in India.

Step 1: HAM radio in India is controlled by the Wireless Planning and Coordination Wing of the Ministry of Telecommunication.

Step 2 — Rules:

- The frequencies assigned can be used **only for research, education, and personal use**.
- The frequencies **cannot be used for any commercial purpose**.
- Operators must follow frequency bands as defined by the **International Telecommunication Union (ITU)**.
- A valid licence must be obtained before operating a HAM radio station.

Answer: HAM radio operators in India must follow ITU-defined frequencies, use them only for research, education, or personal purposes, and never for commercial use. They must hold a valid licence from the Wireless Planning and Coordination Wing.

Board Exam Note: List the rules as bullet points in your answer sheet — examiners find it easier to award marks for clearly separated points.

Extra Question 3

Medium

Why do mobile phones also fail during disasters even though they are wireless?

Many students assume mobile phones are immune to disaster-related communication failures because they are wireless. This is incorrect. Mobile phones transmit signals through ground-based transmitting towers (cell towers). When a disaster damages these towers or cuts off their power supply, mobile networks collapse just like landline networks.

Additionally, even if towers survive, the network gets congested when thousands of people try to call simultaneously, causing call failures.

Answer: Mobile phones depend on ground-based transmitting towers. When disasters damage these towers or cut power, mobile networks fail. Network congestion from high call volumes also causes failures. This is why battery-powered, infrastructure-free systems like HAM radio are needed.

Board Exam Note: This is a conceptual understanding question. Mentioning both tower damage and network congestion shows deeper understanding and earns higher marks.

Important Questions for CBSE Board Exam

1-Mark Questions

Q1 [1 Mark]: What does NIC stand for?
Answer: NIC stands for National Informatics Centre.

Q2 [1 Mark]: What does NICNET connect?
Answer: NICNET connects all State and Union Territory Secretariats and all District Collectorates of India.

Q3 [1 Mark]: Which body regulates HAM radio in India?
Answer: The Wireless Planning and Coordination Wing of the Ministry of Telecommunication regulates HAM radio in India.

3-Mark Questions

Q4 [3 Marks]: Explain why satellite communication is considered the most reliable alternative during large-scale disasters.

Answer: Satellite communication is the most reliable alternative during large-scale disasters for three key reasons. First, communication satellites orbit in space and are completely beyond the reach of Earth's natural disasters — earthquakes, floods, and cyclones cannot damage them. Second, global communication links can be established using very small, portable satellite antennas that can be quickly deployed in disaster zones. Third, satellites provide wide geographic coverage, making them ideal for disasters that affect large regions or multiple states simultaneously. These features make satellite communication the most dependable backup when all ground-based networks fail.

Q5 [3 Marks]: Compare and contrast HAM radio with ordinary radio communication.

Answer: HAM radio and ordinary radio both use radio waves to transmit and receive signals — this is their similarity. However, they differ in three important ways. HAM radio operators must follow specific frequencies defined by the International Telecommunication Union (ITU), while ordinary radio has no such strict frequency requirements for general users. HAM radio cannot be used for commercial purposes — it is restricted to research, education, and personal use. Most importantly, HAM radio does not depend on ground-based infrastructure and runs on batteries, making it operational during disasters when power grids and towers are destroyed.

5-Mark Questions

Q6 [5 Marks]: Describe in detail the alternative communication systems available in India for use during disasters. Why are these systems necessary?

Answer: During disasters, normal telecommunication systems fail due to physical damage to cables and towers, power supply disruption, and network congestion. This makes alternative communication systems essential for coordinating rescue and relief operations.

India has four key alternative communication systems. First, NIC (National Informatics Centre) operates NICNET — a dedicated government network connecting all State

Secretariats, Union Territory Secretariats, and District Collectorates. This allows government-to-government communication to continue during disasters. Second, BSNL (Bharat Sanchar Nigam Limited), India's largest public sector telecom company with 45 million lines covering 5,000 towns, provides the primary public telecom backbone. Third, HAM radio (Amateur Radio) is a battery-powered system that does not depend on ground infrastructure. Regulated by the Wireless Planning and Coordination Wing and ITU, it can only be used for research, education, and personal purposes — never commercial. Fourth, satellite-based communication is the most reliable option. Satellites orbit in space, are unaffected by Earth's disasters, and allow global links through small portable antennas.

Together, these systems ensure that communication never completely breaks down during a disaster, enabling effective disaster response and saving lives.

Common Mistakes Students Make

Mistake 1: Writing only "cables are damaged" as the reason for communication failure.
Why it's wrong: This misses the equally important cause of network congestion — when too many people call simultaneously and jam the lines.
Correct approach: Always mention both physical damage (cables, towers, power) AND network congestion as reasons for communication failure.

Mistake 2: Saying mobile phones work during disasters because they are wireless.
Why it's wrong: Mobile phones depend on ground-based cell towers. When towers are damaged or lose power, mobile networks fail too.
Correct approach: Explain that all ground-infrastructure-dependent systems — including mobile — fail during disasters. Only HAM radio and satellite systems are truly independent.

Mistake 3: Confusing NIC with NICNET.
Why it's wrong: NIC is the organisation (National Informatics Centre). NICNET is the network it operates. Mixing them up loses marks in 1-mark and 2-mark questions.
Correct approach: NIC (organisation) operates NICNET (network). Always state both clearly.

Mistake 4: Saying HAM radio can be used for any purpose.
Why it's wrong: HAM radio frequencies are strictly restricted to research, education, and personal use. Commercial use is prohibited.
Correct approach: Always state the restriction explicitly — "HAM radio cannot be used for commercial purposes" — as this is a common exam trap question.

Mistake 5: Writing that satellites can be damaged by cyclones or floods.
Why it's wrong: Satellites orbit in space, completely beyond the reach of Earth's weather and geological events.

Correct approach: Clearly state that satellites are "not vulnerable to natural disasters on Earth" — use this exact phrasing as it matches the textbook language.

Exam Tips for 2026-27 CBSE Board

Exam Tips — 2026-27 CBSE Marking Scheme

This page covers the updated 2026-27 syllabus and exam pattern for Disaster Management in CBSE Class 10 Social Science.

- **Use textbook language:** The CBSE 2026-27 marking scheme rewards answers that use exact textbook phrases. For satellite communication, write "not vulnerable to natural disasters on Earth" — this matches the official answer key.
- **Structure comparison answers:** For Question 3 (HAM vs common radio), always start with the similarity (same working principle) before listing differences. Examiners follow a point-based marking scheme — each distinct point earns one mark.
- **Write full forms:** NIC, BSNL, NICNET, ITU — always write the full form at least once in your answer. Abbreviation-only answers risk losing marks if the examiner applies strict checking.
- **Bullet points for rules:** When listing HAM radio rules or reasons for communication failure, use bullet points or numbered lists. This makes it easy for examiners to count and award marks.
- **Last-minute revision checklist:**
  - ✅ Know the full forms: NIC, BSNL, NICNET, ITU, HAM
  - ✅ Remember BSNL's scale: 45 million lines, 5,000 towns
  - ✅ Remember HAM radio: battery-powered, no ground infrastructure, no commercial use
  - ✅ Remember satellites: space-based, small antennas, unaffected by Earth disasters
  - ✅ Two reasons for communication failure: physical damage + network congestion
- **Question pattern 2026-27:** Disaster Management questions in the CBSE Social Science paper appear as short-answer (2–3 marks) and long-answer (5 marks) questions. This chapter's questions are predictable — the same four textbook questions have appeared repeatedly in past papers.

Frequently Asked Questions (FAQ)

Why should alternative communication systems be installed during disaster?

Normal telecommunication networks get disrupted during disasters because cables and transmitting towers are physically damaged and power supply is cut off. Even mobile

phones fail because they depend on ground-based towers. Additionally, network congestion occurs when too many people try to call the affected area at once. Alternative systems like HAM radio and satellite communication work independently of this damaged infrastructure, ensuring rescue and relief operations can continue without communication blackouts.

How is HAM radio different from common radio communication?

HAM radio (Amateur Radio) works on the same basic principle as ordinary radio — using radio waves to transmit and receive signals. The key differences are: HAM radio operators must follow specific frequencies defined by the International Telecommunication Union (ITU); it cannot be used for commercial purposes; and it does not depend on ground-based infrastructure. HAM radio runs on batteries, making it operational when power grids fail during disasters, unlike common radio setups that may need mains power.

What makes satellite communication reliable during natural disasters?

Communication satellites orbit in space and are completely unaffected by natural disasters on Earth. Earthquakes, floods, cyclones, and landslides cannot reach them. They allow global communication links to be established using very small, portable satellite antennas that can be quickly deployed in disaster-hit areas where all ground infrastructure is destroyed. Their wide geographic coverage also makes them ideal for large-scale disasters affecting multiple regions simultaneously.

Name two prime communication networks of the Government of India for disaster management.

The two prime communication networks are NIC (National Informatics Centre) and BSNL (Bharat Sanchar Nigam Limited). NIC operates NICNET, which connects all State Secretariats, Union Territory Secretariats, and District Collectorates — enabling government coordination during disasters. BSNL is India's largest public sector telecom company with 45 million telephone lines covering 5,000 towns, providing the primary public communication backbone across the country.

Which chapter covers alternative communication system in CBSE Class 10 Disaster Management?

Alternative Communication System is covered in Chapter 3 of the CBSE Class 10 Disaster Management supplementary textbook. This chapter is part of the Social Science curriculum and is important for the 2026-27 board exam. It covers four main topics: why normal communication fails, the role of NIC and BSNL, HAM radio as an alternative, and satellite-based communication. All four textbook questions from this chapter are answered in detail on this page.