Multiple choice – tick the correct answer

a. What is the full form of USB?
   Answer: **ii. Universal Serial Bus**
b. Which was the first artificial satellite to be launched into the space?
   Answer: **i. Sputnik I**
c. What is the frequency range of an FM radio?
   Answer: **iii. 88 MHz to 108 MHz**
d. Which of the following can be a means of cyberbullying?
   Answer: **iv. All of these** (SMS, text message, social sites)
e. What is the act of sending multiple unsolicited messages to large numbers of recipients called?
   Answer: **ii. Spamming**

Differences

Difference between Modulation and Demodulation

Modulation	Demodulation
The process of superimposing an information signal onto a high-frequency carrier wave.	The process of extracting the original information signal from the modulated carrier.
Performed at the transmitter side.	Performed at the receiver side.
Used to transmit information over long distances.	Used to recover information for use by the end device.
Example: Converting voice into radio signals.	Example: Radio receiver extracting audio from FM signals.

Difference between Firewall and Antivirus

Firewall	Antivirus
A security system that monitors and controls network traffic.	A software program that detects and removes malicious software.
Prevents unauthorized access to or from a network.	Protects files and programs from being infected by viruses.
Works at the network level.	Works at the file and system level.
Example: Windows Firewall.	Example: Avast, Norton, Kaspersky.

Difference between Amplitude Modulation and Frequency Modulation

Amplitude Modulation (AM)	Frequency Modulation (FM)
The amplitude of the carrier wave is varied according to the information signal.	The frequency of the carrier wave is varied according to the information signal.
Frequency remains constant.	Amplitude remains constant.
More affected by noise and interference.	Less affected by noise, provides better sound quality.
Used in medium-wave and short-wave radio.	Used in FM broadcasting (88–108 MHz).

Give Reasons

1. Waves are sent to the communication satellites for the long-range transmission.

Waves are sent to communication satellites for long-range transmission because satellites can receive signals from one place on Earth and retransmit them to another distant place. This overcomes the curvature of the Earth and physical obstacles, enabling global communication.

2. Several countries of the world have launched satellites in the geo-stationary orbit.

Several countries have launched satellites in geostationary orbit because such satellites appear fixed at one point in the sky. This allows continuous communication and broadcasting without changing the direction of the antenna on the ground.

Answer the questions in brief

1. The waves are sent to communication satellites for long range transmission. Why?

The waves are sent to communication satellites for long-range transmission because satellites act as repeaters in space. They receive signals from the ground, amplify them and transmit them back to another location, thus allowing communication across continents and oceans.

2. What is meant by information and communication technology?

Information and Communication Technology (ICT) means the use of computers, software, networks, satellites and telecommunication systems to collect, process, store and share information effectively.

3. How do artificial satellites revolve around the earth without using fuel?

Artificial satellites revolve around the earth without using fuel because they are launched at very high velocity. The gravitational pull of the earth and the centrifugal force due to orbital motion balance each other, keeping the satellite in orbit.

4. What name was given to the first satellite of Nepal?

The first satellite of Nepal was named **NepaliSat-1**. It was launched in 2019 under the BIRDS project to promote space research in Nepal.

5. What is cyber security? Enlist some important online security measures.

Cyber security is the practice of protecting computers, networks and data from unauthorized access, theft and damage. Some important measures are using strong passwords, keeping software updated, installing antivirus software, enabling firewalls, avoiding suspicious links, using secure Wi-Fi and regularly backing up data.

6. Explain the working principle of tele-communication technology with examples.

The working principle of telecommunication technology is the transmission of information in the form of electrical or electromagnetic signals from one place to another. At the transmitter, information is converted into signals and sent through a medium such as wire, fiber optic cable or radio waves. At the receiver, the signals are decoded and converted back into the original information. Examples include mobile phones, satellite TV and the Internet.

7. For what purposes do you use tele-communication technology?

Telecommunication technology is used for making telephone and mobile calls, transmitting data through the Internet, broadcasting radio and television, conducting video conferencing, online education, online banking, telemedicine, e-commerce, and emergency communication.