Chapter 06 – Computer Science (Class 10)
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Extended Response Questions

Question 1.
What are the impacts of cyberbullying and online harassment, and what strategies can be implemented to prevent them?

Answers:
Cyberbullying and online harassment are serious problems that happen when people use digital tools like the internet, social media, and mobile phones to bully, threaten, or bother someone else.

Impacts of Cyberbullying and Online Harassment
These acts can have very painful effects on the person being targeted.

1. **Emotional and Mental Health Issues:**
    - **Stress and Anxiety:** The victim might constantly worry about when the next mean message will appear.
    - **Depression:** Feeling sad, hopeless, and losing interest in things they usually enjoy.
    - **Low Self-Esteem:** Mean comments can make the victim feel worthless and destroy their confidence.
    - **Fear:** They might become afraid to use their phone or go online.
2. **Physical Health Problems:**
    - **Sleep Problems:** Stress and worry can make it hard to fall asleep or stay asleep.
    - **Headaches and Stomach Aches:** The body reacts to stress, which can cause these physical symptoms.
3. **Academic/School Problems:**
    - **Poor Concentration:** Worrying about the bullying makes it hard to focus on studies.
    - **Missing School:** Victims might avoid school to escape their peers or the bully.
4. **Social Isolation:**
    - **Withdrawing from Friends:** The victim might stop hanging out with friends and family because they feel ashamed or are worried the bullying will follow them.
    - **Damage to Reputation:** If lies or embarrassing content are spread, the victim's good name can be ruined.

Prevention Strategies (How to Stop It)
Everyone, including students, parents, and schools, can take steps to prevent cyberbullying.

1. **Be Smart Online (Digital Citizenship):**
    - **Think Before You Post:** Everything you put online can be seen by others forever. Don't post anything you wouldn't want the whole world to see.
    - **Keep Personal Information Private:** Never share your passwords, home address, or phone number with strangers.

2. **Know Your Tools (Using Platform Safety Features):**
    - **Block and Report:** Learn how to use the "Block" and "Report" buttons on social media and gaming platforms. **Blocking** stops the bully from contacting you, and **Reporting** tells the platform's moderators about the bad behavior.
    - **Strong Passwords and Privacy Settings:** Use strong, unique passwords and set your social media profiles to **private** so only friends can see your content.
3. **Get Help (Support and Reporting):**
    - **Do Not Engage:** Never argue or respond to a bully's message. This is exactly what they want.
    - **Save the Evidence:** Take screenshots of the mean messages or posts. This proof is important if you need to report it.
    - **Tell a Trusted Adult:** Talk to your parents, a teacher, a school counselor, or another trusted adult right away. They can help you take the next steps.
4. **Promote a Positive Culture:**
    - **Be an Upstander, Not a Bystander:** If you see someone being bullied online, don't ignore it. Report the post or tell an adult.
    - **Be Kind Online:** Treat others with respect. Your words have power.

Question 2.
Describe the various threats that cybersecurity measures aim to defend against.

Answers:
Cybersecurity is all about protecting computer systems, networks, and data from theft, damage, or unauthorized access. It aims to defend against many different types of threats, which can be grouped into a few main categories.

Main Cybersecurity Threats

Threat Category	Explanation	Example
Malware	Short for "Malicious Software." This is any program created to harm a computer system or steal data.	**Viruses**, **Worms**, **Trojans**
Phishing	A type of social engineering where an attacker pretends to be a trusted company or person (like a bank or a friend) in an email or message to trick you into giving away personal information.	An email that looks like it's from your bank asking you to click a link and "verify your password."
Denial of Service (DoS/DDoS)	Flooding a network or server with so much fake traffic that it becomes overwhelmed and cannot handle legitimate requests, making a website or service unavailable to real users.	A website for an online store crashing on a busy shopping day because it was attacked.

Threat Category	Explanation	Example
Man-in-the-Middle (MITM)	When an attacker secretly sneaks in between two people or systems communicating. They can secretly listen to, steal, or change the information being exchanged.	Using an unprotected public Wi-Fi hotspot where an attacker can spy on your connection.
Ransomware	A type of malware that locks a victim's computer system or encrypts their files, making them unusable. The attacker then demands a **ransom** (money) to unlock or decrypt the data.	A message popping up on your computer saying "All your files are locked. Pay 1000$ in Bitcoin to get the key."
Insider Threats	Security threats that come from **inside** an organization. This could be an employee, a former employee, or a business partner who misuses their access to data.	An unhappy employee stealing a list of customer details to sell to a competitor.

Why Cybersecurity is Needed
Cybersecurity measures (like firewalls, anti-virus software, and strong passwords) are designed to defend against these threats by:

- **Protecting Data:** Ensuring that private information (like your bank details or school records) is not stolen or changed.
- **Ensuring Availability:** Making sure that systems and websites (like your school's online learning portal) are working when you need them.
- **Preventing Financial Loss:** Stopping criminals from stealing money from individuals or businesses.

Question 3.
Explain the role of cybercrime laws in addressing illegal activities conducted through digital tools.

Answers:
Cybercrime laws are a set of rules and regulations created by governments to deal with crimes committed using computers, the internet, and other digital devices. Their main role is to bring order and justice to the digital world, just like regular laws do for the physical world.

The Role of Cybercrime Laws
Cybercrime laws perform three main functions: **Define**, **Deter**, and **Punish/Protect**.

1. **Defining and Classifying Digital Crimes:**
    - **They clearly state what is illegal:** Before these laws existed, it was hard to prosecute someone for a digital crime like hacking or spreading a virus. The law now defines these acts as criminal.
    - **Examples of acts defined as crimes:** Hacking (unauthorized access), data theft, spreading malware, creating fake profiles for fraud (identity theft), and cyberstalking.

2. **Deterrence and Prevention:**
    - **Threat of Punishment:** The laws include serious punishments (like fines or jail time). This threat is meant to **deter** (discourage) people from committing these crimes.
    - **Setting Standards:** They set a standard for how people and companies must handle data, forcing them to use better security measures to prevent crime from happening in the first place.
3. **Punishment and Justice:**
    - **Legal Framework for Prosecution:** These laws give police and courts the legal authority to investigate, arrest, and prosecute cybercriminals.
    - **Collecting Digital Evidence:** The laws specify how digital evidence (like emails, chat logs, or files) must be collected so it can be used in court, ensuring a fair trial.
    - **Protecting Victims:** They provide a legal channel for victims to report crimes and seek justice, and in some cases, to get compensation for the harm caused.

Question 4.
Analyze the cultural impact of computing technologies. How do these technologies facilitate global connectivity and cultural exchange.

Answers:
Computing technologies, especially the internet and social media, have dramatically changed human culture and how people interact across the globe.

Cultural Impact of Computing Technologies

1. **The Rise of Digital Culture:**
    - **New Forms of Expression:** People now use digital tools to create art, music, videos (like on YouTube or TikTok), and even new languages (emojis, internet slang). This forms a new "digital culture."
    - **Changing Social Habits:** We communicate more through texting and video calls than face-to-face. This changes how relationships are built and maintained.
2. **Preservation and Sharing of Culture:**
    - **Digital Archives:** Technologies allow us to scan old books, historical documents, and art and put them online. This preserves cultural heritage forever and makes it available to anyone in the world. (Example: Digital libraries and museum websites).
3. **Homogenization vs. Diversity (Two Sides of the Coin):**
    - **Homogenization (Making things the same):** Global platforms can lead to some cultural ideas (often Western ones) becoming dominant worldwide, causing local traditions to fade.
    - **Diversity (Making things different):** At the same time, computing tools give small, local cultural groups a way to share their unique traditions, music, and stories with the world, keeping them alive and celebrating diversity.

Facilitating Global Connectivity and Cultural Exchange
Computing technologies have shrunk the world, making it easier than ever to connect and share ideas.

1. **Instant and Borderless Communication:**
    - **Video Calls and Messaging:** Tools like WhatsApp and Skype allow a student in Pakistan to instantly talk to a friend or family member in Canada for free. This makes the world feel smaller.
    - **Breaking Down Barriers:** News, art, and music from one country can go viral globally in minutes, bypassing traditional media control.
2. **Global Learning and Collaboration:**
    - **Online Education:** Platforms offer courses from top universities worldwide. A student can learn about Chinese history from a professor in Beijing without leaving their home.
    - **Creative Collaboration:** Musicians in three different continents can collaborate on a song, or researchers can work together on a scientific paper, all through shared online documents and video calls.
3. **Movement of Ideas (Cultural Exchange):**
    - **Exposure to Different Cultures:** Social media lets people see the daily lives, food, and celebrations of people from different countries. A person in Europe might learn how to cook a traditional Pakistani dish just by watching a YouTube video.
    - **Empowerment:** Computing technologies empower people to share their own local culture with the world, making the global cultural landscape richer and more diverse.

Question 5.
Examine the effects of the digital divide on access to information. How does this divide affect education, employment, and healthcare?

Answers:
The **Digital Divide** is the gap between people who have easy access to and the skills to use computing technologies (like the internet, smartphones, and computers) and those who do not. This divide can be based on where a person lives (rural vs. urban), their income, their education level, or their age.

Effects of the Digital Divide on Access to Information

The biggest effect of the digital divide is that it creates two groups: the **Information Rich** and the **Information Poor**.

1. **Limited Knowledge:** People without internet access miss out on the vast amount of knowledge available online (news, government services, educational videos, etc.). Their information is limited to whatever is available in their immediate location.
2. **Missing Opportunities:** Many critical services and opportunities are *only* advertised online (e.g., job openings, application forms). If you can't get online, you can't even know these opportunities exist.
3. **Poor Quality of Decisions:** Access to a wide range of information helps people make better decisions (e.g., comparing prices, researching health advice). Those without access must rely on limited, and sometimes outdated or incorrect, sources.

How the Digital Divide Affects Key Areas

The lack of access has severe consequences for fundamental aspects of life:

Area Affected	How the Digital Divide Harms It
Education	Students without internet/computers cannot access online learning resources, submit assignments, attend virtual classes, or do in-depth research. This puts them at a major disadvantage compared to connected students, leading to **lower grades** and **limited career options**.
Employment	**Job Search:** Most modern job searches, applications, and networking happen online. Unconnected people struggle to find and apply for jobs. **Skills Gap:** Modern jobs require digital literacy (using email, spreadsheets, etc.). Those without technology experience often lack the necessary skills, leading to **unemployment or low-wage jobs**.
Healthcare	**Health Information:** People without access cannot easily research symptoms, find reliable health advice, or learn about important public health announcements (like vaccination drives). **Telemedicine:** They cannot participate in **telemedicine** (virtual doctor's appointments), which is especially important for people in remote areas. This can lead to **poorer health outcomes** and delayed treatment.

The End

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