

XII – IP – SOCIETAL IMPACTS (10 Marks)

2024.25 Syllabus

Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act.

E-waste: hazards and management. Awareness about health concerns related to the usage of technology.

SOCIETAL IMPACTS CONCEPT - NCERT

6.2 Digital Footprint

Whenever we surf the Internet using smartphones, tablets, computers, etc., we leave a trail of data reflecting the activities performed by us online, which is our digital footprint.

Our digital footprint can be created and used with or without our knowledge. It includes websites we visit, emails we send, and any information we submit online, etc., along with the computer's IP address, location, and other device specific details.

Such data could be used for targeted advertisement or could also be misused or exploited. Thus, it is good to be aware of the data trail we might be leaving behind. This awareness should make us cautious about what we write, upload or download or even browse online.

Types of Digital footprints:

There are two kinds of digital footprints we leave behind. **Active digital footprints** which includes data that we intentionally submit online. This would include emails we write, or responses or posts we make on different websites or mobile Apps, etc.

The digital data trail we leave online unintentionally is called **passive digital footprints**. This includes the data generated when we visit a website, use a mobile App, browse Internet, etc.

Everyone who is connected to the Internet may have a digital footprint. With more usage, the trail grows. On examining the browser settings, we can find out how it stores our browsing history, cookies, passwords, auto fills, and many other types of data.

Besides browser, most of our digital footprints are stored in servers where the applications are hosted. We may not have access to remove or erase that data, neither do we have any control on how that data will be used. Therefore, once a data trail is generated, even if we later try to erase data about our online activities, the digital footprints still remain. There is no guarantee that digital footprints will be fully eliminated from the Internet. Therefore, we need

to be more cautious while being online! All our online activities leave a data trace on the Internet as well as on the computing device that we use. This can be used to trace the user, their location, device and other usage details.

6.3 Digital Society and Netizen

Digital society reflects the growing trend of using digital technologies in all spheres of human activities. But while online, all of us need to be aware of how to conduct ourselves, how best to relate with others and what ethics, morals and values to maintain.

Anyone who uses digital technology along with Internet is a **digital citizen** or a **netizen**. Being a good netizen means practicing safe, ethical and legal use of digital technology. **A responsible netizen must abide by net etiquettes, communication etiquettes and social media etiquettes.**

Net Etiquettes

We follow certain etiquettes during our social interactions. Similarly, we need to exhibit proper manners and etiquettes while being online, called net Etiquettes.

Following are Net Etiquettes:

Ethical, respectful and responsible while surfing the Internet.



(A) Be Ethical :

- **No copyright violation:** we should not use copyrighted materials without the permission of the creator or owner. As an ethical digital citizen, we need to be careful while streaming audio or video or downloading images and files from the Internet.
- **Share the expertise:** it is good to share information and knowledge on Internet so that others can access it. However, prior to sharing information, we need to be sure that we have sufficient knowledge on that topic. The information shared should be true and unambiguous. Also, in order to avoid redundant information, we should verify that the information is not available already on Internet.

(B) Be Respectful:

• **Respect privacy:** as good digital citizens we have the right to privacy and the freedom of personal expression. At the same time, we have to understand that other digital citizens also have the same rights and freedoms. Our personal communication with a digital citizen may include images, documents, files, etc., that are private to both. We should respect this privacy and should not share those images, documents, files, etc., with any other digital citizen without each others' consent.

• **Respect diversity:** in a group or public forum, we should respect the diversity of the people in terms of knowledge, experience, culture and other aspects.

(C) Be Responsible:

• **Avoid cyber bullying:** any insulting, degrading or intimidating online behaviour like repeated posting of rumours, giving threats online, posting the victim's personal information, sexual harassment or comments aimed to publicly ridicule a victim is termed as **cyber bullying**.

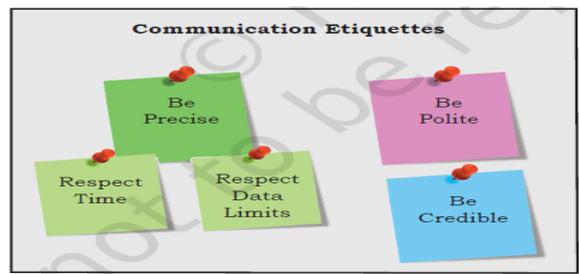
It implies repeatedly targeting someone with intentions to hurt or embarrass. Perhaps new or non-frequent users of the Internet feel that things done online have no effect in the real world. We need to realise that bullying online can have very serious implications on the other person (victim). Also, remember our actions can be traced back using our digital footprints.

• **Don't feed the troll:** an Internet troll is a person who deliberately sows discord on the Internet by starting quarrels or upsetting people, by posting inflammatory or off topic messages in an online community, just for amusement. Since trolls thrive on attention, the best way to discourage trolls is not to pay any attention to their comments..

Communication Etiquettes

Digital communication includes email, texting, instant messaging, talking on the cell phone, audio or video conferencing, posting on forums, social networking sites, etc. All these are great ways to connect with people in order to exchange ideas, share data and knowledge.

Good communication over email, chat room and other such forums require a digital citizen to abide by the communication etiquettes.



(A) Be Precise:

• **Respect time:** we should not waste precious time in responding to unnecessary emails or comments unless they have some relevance for us. Also, we should not always expect an instant response as the recipient may have other priorities.

• **Respect data limits:** For concerns related to data and bandwidth, very large attachments may be avoided. Rather send compressed files or link of the files through cloud shared storage like Google Drive, Microsoft OneDrive, Yahoo Dropbox, etc.

(B) Be Polite:

Whether the communication is synchronous (happening in real time like chat, audio/video calls) or asynchronous (like email, forum post or comments), we should be polite and non-aggressive in our communication. We should avoid being abusive even if we don't agree with others' point of view.

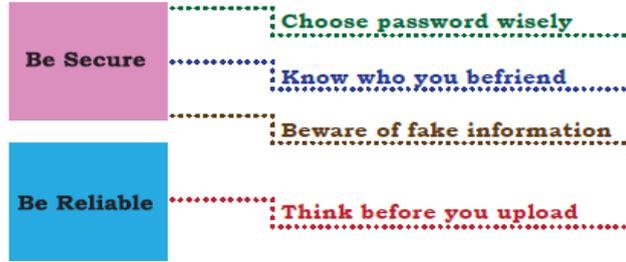
(C) Be Credible:

We should be cautious while making a comment, replying or writing an email or forum post as such acts decide our credibility over a period of time. That is how we decide to follow some particular person's forum posts while ignoring posts of other members of the forum. On various discussion forums, we usually try to go through the previous comments of a person and judge their credibility before relying on that person's comments.

Social Media Etiquettes

In the current digital era, we are familiar with different kinds of social media and we may have an account on Facebook, Google+, Twitter, Instagram, Pinterest, or YouTube channel. Social media are websites or applications that enable their users to participate in social networking by creating and sharing content with others in the community. These platforms encourage users to share their thoughts and experiences through posts or pictures. In this way users can interact with other online users of those social media apps or channels. This is why the impact and outreach of social media has grown exponentially. It has begun to shape the outcome of politics, business, culture, education and more. In social media too,

there are certain etiquettes we need to follow as shown in Figure 6.4.



(A) Be Secure:

- **Choose password wisely:** it is vital for social network users. News of breaching or leakage of user data from social network often attracts headlines.

Users should be wary of such possibilities and must know how to safeguard themselves and their accounts. The minimum one can do is to have strong and frequently changed password. Never share personal credentials like username and password with others.

- **Know who you befriend:** social networks usually encourage connecting with users (making friends), sometime even those whom we don't know or have not met. However, we need to be careful while befriending unknown people as their intentions possibly could be malicious and unsafe.

- **Beware of fake information:** fake news, messages and posts are common in social networks. As a user, we should be aware of them. With experience, we should be able to figure out whether a news, message or post is genuine or fake. Thus, we should not blindly believe in everything that we come across on such platforms, we should apply our knowledge and experience to validate such news, message or post.

(B) Be Reliable:

- **Think before uploading:** we can upload almost anything on social network. However, remember that once uploaded, it is always there in the remote server even if we delete the files. Hence we need to be cautious while uploading or sending sensitive or confidential files which have a bearing on our privacy.

6.4 Data Protection

In this digital age, data or information protection is mainly about the privacy of data stored digitally.

Elements of data that can cause substantial harm, embarrassment, inconvenience and unfairness to an individual, if breached or compromised, is called **sensitive data**.

Examples of sensitive data include biometric information, health information,

financial information, or other personal documents, images or audios or videos.

Privacy of sensitive data can be implemented by encryption, authentication, and other secure methods to ensure that such data is accessible only to the authorised user and is for a legitimate purpose.

All over the world, each country has its own data protection policies (laws). These policies are legal documents that provide guidelines to the user on processing, storage and transmission of sensitive information. The motive behind implementation of these policies is to ensure that sensitive information is appropriately protected from modification or disclosure.

6.4.1 Intellectual Property Right (IPR) :

If someone comes out with a new idea, this original idea is that person's intellectual property. Intellectual Property refers to the inventions, literary and artistic expressions, designs and symbols, names and logos.

The ownership of such concepts lies with the creator, or the holder of the intellectual property. This enables the creator or copyright owner to earn recognition or financial benefit by using their creation or invention.

Intellectual Property is legally protected through copyrights, patents, trademarks, etc.

(A) Copyright:

Copyright grants legal rights to creators for their original works like writing, photograph, audio recordings, video, sculptures, architectural works, computer software, and other creative works like literary and artistic work.

Copyrights are automatically granted to creators and authors. Copyright law gives the copyright holder a set of rights that they alone can avail legally. The rights include right to copy (reproduce) a work, right to create derivative works based upon it, right to distribute copies of the work to the public, and right to publicly display or perform the work. It prevents others from copying, using or selling the work. **For example**, writer Rudyard Kipling holds the copyright to his novel, 'The Jungle Book', which tells the story of Mowgli, the jungle boy. It would be an infringement of the writer's copyright if someone used parts of the novel without permission. To use other's copyrighted material, one needs to obtain a license from them.

(B) Patent:

A patent is usually granted for inventions. Unlike copyright, the inventor needs to apply (file) for patenting the invention. When a patent is granted, the owner gets an exclusive right to

prevent others from using, selling, or distributing the protected invention. Patent gives full control to the patentee to decide whether or how the invention can be used by others. Thus it encourages inventors to share their scientific or technological findings with others. A patent protects an invention for 20 years, after which it can be freely used. Recognition and/or financial benefit foster the right environment, and provide motivation for more creativity and innovation.

(C) Trademark:

Trademark includes any visual symbol, word, name, design, slogan, label, etc., that distinguishes the brand or commercial enterprise, from other brands or commercial enterprises. **For example**, no company other than Nike can use the Nike brand to sell shoes or clothes. It also prevents others from using a confusingly similar mark, including words or phrases. For example, confusing brands like “Nikke” cannot be used. However, it may be possible to apply for the Nike trademark for unrelated goods like notebooks.

6.4.2 Licensing:

A **license** is a type of contract or a permission agreement between the creator of an original work permitting someone to use their work, generally for some price; whereas **copyright** is the legal rights of the creator for the protection of original work of different types.

Licensing is the legal term used to describe the terms under which people are allowed to use the copyrighted material.

A software license is an agreement that provides legally binding guidelines pertaining to the authorised use of digital material. The digital material may include any software or any form of art, literature, photos, etc., in digital form. Any such resource posted on the Internet constitutes intellectual property and must be downloaded, used or distributed according to the guidelines given in the license agreement. Failure to follow such guidelines is considered as an infringement of Intellectual Property Rights (IPR), and is a criminal offence.

6.4.3 Violation of IPR:

Violation of intellectual property right may happen in one of the following ways:

(A) Plagiarism:

With the availability of Internet, we can instantly copy or share text, pictures and videos. Presenting someone else’s idea or work as one’s own idea or work is called **plagiarism**.

If we copy some contents from Internet, but do not mention the source or the original

creator, then it is considered as an act of **plagiarism**.

Further, if someone derives an idea or a product from an already existing idea or product, but instead presents it as a new idea, then also it is **plagiarism**.

It is a serious ethical offense and sometimes considered as an act of fraud. Even if we take contents that are open for public use, we should cite the author or source to avoid plagiarism.

(B) Copyright Infringement:

Copyright infringement is when we use other person’s work without obtaining their permission to use or we have not paid for it, if it is being sold.

Suppose we download an image from the Internet and use it in our project. But if the owner of the copyright of the image does not permit its free usage, then using such an image even after giving reference of the image in our project is a violation of copyright.

Just because it is on the Internet, does not mean that it is free for use. Hence, check the copyright status of writer’s work before using it to avoid copyright infringement.

(C) Trademark Infringement:

Trademark Infringement means unauthorised use of other’s trademark on products and services. An owner of a trademark may commence legal proceedings against someone who infringes its registered trademark.

6.4.4 Public Access and Open Source Software

Copyright sometimes put restriction on the usage of the copyrighted works by anyone else. If others are allowed to use and built upon the existing work, it will encourage collaboration and would result in new innovations in the same direction.

Licenses provide rules and guidelines for others to use the existing work. When authors share their copyrighted works with others under public license, it allows others to use and even modify the content.

Open source licenses help others to contribute to existing work or project without seeking special individual permission to do so.

The GNU General Public License (GPL) and the Creative Commons (CC) are two popular categories of public licenses.

CC is used for all kind of creative works like websites, music, film, literature, etc. CC enables the free distribution of an otherwise copyrighted work. It is used when an author wants

to give people the right to share, use and build upon a work that they have created.

GPL is primarily designed for providing public licence to a software. GNU GPL is another free software license, which provides end users the freedom to run, study, share and modify the software, besides getting regular updates.

Users or companies who distribute GPL licensed works may charge a fee for copies or give them free of charge. This distinguishes the GPL license from freeware software licenses like Skype, Adobe Acrobat reader, etc. that allow copying for personal use but prohibit commercial distribution, or proprietary licenses where copying is prohibited by copyright law.

Many of the **proprietary software** that we use are sold commercially and their program code (source code) are not shared or distributed.

Free and open source software (FOSS) :

Software available freely for anyone and their source code is also open for anyone to access, modify, correct and improve.

Free and open source software (FOSS) has a large community of users and developers who are contributing continuously towards adding new features or improving the existing features. For example, Linux kernel-based operating systems like Ubuntu and Fedora come under FOSS.

Some of the popular FOSS tools are office packages, like Libre Office, browser like Mozilla Firefox, etc.

Software piracy is the unauthorised use or distribution of software. Those who purchase a license for a copy of the software do not have the rights to make additional copies without the permission of the copyright owner. It amounts to copyright infringement regardless of whether it is done for sale, for free distribution or for copier’s own use. One should avoid software piracy. Using a pirated software not only degrades the performance of a computer system, but also affects the software industry which in turn affects the economy of a country.

6.5 Creative Commons :

Creative Commons is a non-profit organisation (<https://creativecommons.org/>) that aims to build a publically accessible global platform where a range of creative and academic works are shared freely. Any one across the globe can access them, share them, and even use them for creating their own work out of it without infringing the copyright or Intellectual Property rights of the owners. In fact, it gives proper attribution to the owners.

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Attribution-NoDerivs (CC BY-ND)		This license lets others reuse the work for any purpose, including commercially; however, it cannot be shared with others in adapted form, and credit must be provided to you.
Attribution-NonCommercial (CC BY-NC)		This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial.
Attribution-NonCommercial-ShareAlike (CC BY-NC-SA)		This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms.
Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)		This license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they

6.6 Cyber Crime

Criminal activities or offences carried out in a digital environment can be considered as **cyber crime**.

In such crimes, either the computer itself is the target or the computer is used as a tool to commit a crime.

Cyber crimes are carried out against either an individual, or a group, or an organisation or even against a country, with the intent to directly or indirectly cause physical harm, financial loss or mental harassment.

A cyber criminal attacks a computer or a network to reach other computers in order to disable or damage data or services. Apart from this, a cyber criminal may spread viruses and other malwares in order to steal private and confidential data for blackmailing and extortion.

A computer virus is some lines of malicious code that can copy itself and can have detrimental effect on the computers, by destroying data or corrupting the system.

Similarly, malware is a software designed to specifically gain unauthorised access to computer systems. The nature of criminal activities are alarmingly increasing day-by-day, with frequent reports of hacking, ransomware attacks, denial-of-service, phishing, email fraud, banking fraud and identity theft.

Hacking:

Hacking is the act of unauthorised access to a computer, computer network or any digital system. Hackers usually have technical expertise of the hardware and software. They look for bugs to exploit and break into the system.

Hacking, when done with a positive intent, is called **ethical hacking**. Such ethical hackers are known as white hat hackers. They are specialists in exploring any vulnerability or loophole by during testing of the software. Thus, they help in improving the security of a software. An ethical hacker may exploit a website in order to discover its security loopholes or vulnerabilities. He then reports his findings to the website owner. Thus, ethical hacking is actually preparing the owner against any cyber attack.

A **non-ethical hacker** is the one who tries to gain unauthorised access to computers or networks in order to steal sensitive data with the intent to damage or bring down systems. They are called black hat hackers or crackers. Their primary focus is on security cracking and data stealing. They use their skill for illegal or malicious purposes. Such hackers try to break

through system securities for identity theft, monetary gain, to bring a competitor or rival site down, to leak sensitive information, etc.

Phishing and Fraud Emails:

Phishing is an unlawful activity where fake websites or emails that look original or authentic are presented to the user to fraudulently collect sensitive and personal details, particularly usernames, passwords, banking and credit card details.

The most common phishing method is through email spoofing where a fake or forged email address is used and the user presumes it to be from an authentic source. So you might get an email from an address that looks similar to your bank or educational institution, asking for your information, but if you look carefully you will see their URL address is fake. They will often use logo's of the original, making them difficult to detect from the real! Phishing attempts through phone calls or text messages are also common these days.

(A) Identity Theft :Identity thieves increasingly use personal information stolen from computers or computer networks, to commit fraud by using the data gained unlawfully. A user's identifiable personal data like demographic details, email ID, banking credentials, passport, PAN, Aadhaar number and various such personal data are stolen and misused by the hacker on behalf of the victim. **This is one type of phishing attack** where the intention is largely for monetary gain. There can be many ways in which the criminal takes advantage of an individual's stolen identity.

Given below are a few examples:

- **Financial identity theft:** when the stolen identity is used for financial gain.
- **Criminal identity theft:** criminals use a victim's stolen identity to avoid detection of their true identity.
- **Medical identity theft:** criminals can seek medical drugs or treatment using a stolen identity.

Ransomware:

This is another kind of cyber crime where the attacker gains access to the computer and blocks the user from accessing, usually by encrypting the data. The attacker blackmails the victim to pay for getting access to the data, or sometimes threatens to publish personal and sensitive information or photographs unless a ransom is paid.

Ransomware can get downloaded when the users visit any malicious or unsecure websites or download software from doubtful repositories.

Some ransomware are sent as email attachments in spam mails. It can also reach our system when we click on a malicious advertisement on the Internet.

Combatting and Preventing Cyber Crime :

The challenges of cyber crime can be mitigated with the twin approach of being alert and taking legal help.

Following points can be considered as safety measures to reduce the risk of cyber crime:

- Take regular backup of important data.
- Use an antivirus software and keep it updated always.
- Avoid installing pirated software. Always download software from known and secure (HTTPS) sites.
- Always update the system software which include the Internet browser and other application software
- Do not visit or download anything from untrusted websites.
- Usually the browser alerts users about doubtful websites whose security certificate could not be verified; avoid visiting such sites.
- Use strong password for web login, and change it periodically. Do not use same password for all the websites. Use different combinations of alphanumeric characters including special characters. Ignore common words or names in password.
- While using someone else's computer, don't allow browser to save password or auto fill data, and try to browse in your private browser window.
- For an unknown site, do not agree to use cookies when asked for through a Yes/No option.
- Perform online transaction like shopping, ticketing, and other such services only through well-known and secure sites.
- Always secure wireless network at home with strong password and regularly change it.

6.7 Indian Information Technology Act (IT Act): With the growth of Internet, many cases of cyber crimes, frauds, cyber attacks and cyber bullying are reported.

The nature of fraudulent activities and crimes keeps changing. To deal with such menaces, many countries have come up with legal measures for protection of sensitive personal data and to safeguard the rights of Internet users.

The Government of India's The Information Technology Act, 2000 (also known as IT Act), amended in 2008, provides guidelines to the user on the processing, storage and transmission of sensitive information. In many Indian states, there are cyber cells in police stations where one can report any cyber crime.

The act provides legal framework for electronic governance by giving recognition to electronic records and digital signatures.

The act outlines cyber crimes and penalties for them. Cyber Appellate Tribunal has been established to resolve disputes arising from cyber crime, such as tampering with computer source documents, hacking the computer system, using password of another person, publishing sensitive personal data of others without their consent, etc. The act is needed so that people can perform transactions over the Internet through credit cards without fear of misuse. Not only people, the act empowers government departments also to accept filing, creation and storage of official documents in the digital format.

6.8 E-waste: Hazards and Management

E-waste or Electronic waste includes electric or electronic gadgets and devices that are no longer in use. Hence, discarded computers, laptops, mobile phones, televisions, tablets, music systems, speakers, printers, scanners etc. constitute e-waste when they are near or end of their useful life.

E-waste is becoming one of the fastest growing environmental hazards in the world today. The increased use of electronic equipment has also caused an exponential increase in the number of discarded products. Lack of awareness and appropriate skill to manage it has further worsened the problem.

So, Waste Electrical and Electronic Equipment (WEEE) is becoming a major concern for all countries across the world. Globally, e-waste constitutes more than 5 per cent of the municipal solid waste. Therefore, it is very important that e-waste is disposed of in such a manner that it causes minimum damage to the environment and society.

Impact of e-waste on environment:

To some extent, e-waste is responsible for the degradation of our environment. Whether it is emission of gases and fumes into the atmosphere, discharge of liquid waste into drains or disposal of solid e-waste materials, all of this contributes to environmental pollution in some way or the other.

When e-waste is carelessly thrown or dumped in landfills or dumping grounds, certain elements or metals used in production of electronic products cause air, water and soil pollution. This is because when these products come in contact with air and moisture, they tend to leach. As a result, the harmful chemicals seep into the soil, causing soil pollution. Further, when these chemicals reach and contaminate the natural ground water, it causes water pollution as the water becomes unfit for humans, animals and even for agricultural use. When dust particles loaded with heavy metals enters the atmosphere, it causes air pollution as well.

Impact of e-waste on humans:

The electrical or electronic devices are manufactured using certain metals and elements like lead, beryllium, cadmium, plastics, etc. Most of these

materials are difficult to recycle and are considered to be toxic and carcinogenic. If e-waste is not disposed of in proper manner, it can be extremely harmful to humans, plants, animals and the environment as discussed **below**:

- One of the most widely used metals in electronic devices (such as monitors and batteries) is lead. When lead enters the human body through contaminated food, water, air or soil, it causes lead poisoning which affects the kidneys, brain and central nervous system. Children are particularly vulnerable to lead poisoning.
- When e-waste such as electronic circuit boards are burnt for disposal, the elements contained in them create a harmful chemical called beryllium which causes skin diseases, allergies and an increased risk of lung cancer. Burning of insulated wires to extract copper can cause neurological disorders.
- Some of the electronic devices contain mercury which causes respiratory disorders and brain damage.
- The cadmium found in semiconductors and resistors can damage kidneys, liver and bones.
- None of the electronic devices are manufactured without using plastics. When this plastic reacts with air and moisture, it passes harmful chemicals into the soil and water resources. When consumed, it damages the immune system of the body and also causes various psychological problems like stress and anxiety.

Management of e-waste:

E-waste management is the efficient disposal of e-waste. Although we cannot completely destroy e-waste, still certain steps and measures have to be taken to reduce harm to the humans and environment. Some of the feasible methods of e-waste management are reduce, reuse and recycle.

- **Reduce:** We should try to reduce the generation of e-waste by purchasing the electronic or electrical devices only according to our need. Also, they should be used to their maximum capacity and discarded only after their useful life has ended. Good maintenance of electronics devices also increases the life of the devices.
- **Reuse:** It is the process of re-using the electronic or electric waste after slight modification. The electronic equipment that is still functioning should be donated or sold to someone who is still willing to use it. The process of re-selling old electronic goods at lower prices is called refurbishing.
- **Recycle:** Recycling is the process of conversion of electronic devices into something that can be used again and again in some or the other manner. Only those products should be recycled that cannot be repaired, refurbished or re-used. To promote recycling of e-waste many companies and NGOs are providing door-to-door pick up facilities for collecting the e-waste from homes and offices.

E-waste Management in India:

In India, the Environmental Protection Act, 1986, has been enacted to punish people responsible

for causing any form of pollution by paying for the damage done to the natural environment. According to this act, “Polluter pays Principle”, any one causing any form of pollution will pay for the damage caused. Any violation of the provisions of this act is liable for punishment.

The Central Pollution Control Board (**CPCB**) has issued a formal set of guidelines for proper handling and disposal of e-waste. According to these guidelines, the manufacturer of any electronic equipment will be “personally” responsible for the final safe disposal of the product when it becomes an e-waste.

The Department of Information Technology (**DIT**), Ministry of Communication and Information Technology, has also issued a comprehensive technical guide on “Environmental Management for Information Technology Industry in India.” The industries have to follow these guidelines for recycling and reuse of e-waste.

In order to make the consumers aware of the recycling of e-waste, prominent smartphone and computer manufacturing companies have started various recycling programs.

6.9 Impact on Health

As digital technologies have penetrated into different fields, we are spending more time in front of screens, be it mobile, laptop, desktop, television, gaming console, music or sound device. But interacting in an improper posture can be bad for us — both physically, and mentally.

Besides, spending too much time on Internet can be addictive and can have a negative impact on our physical and psychological well being.

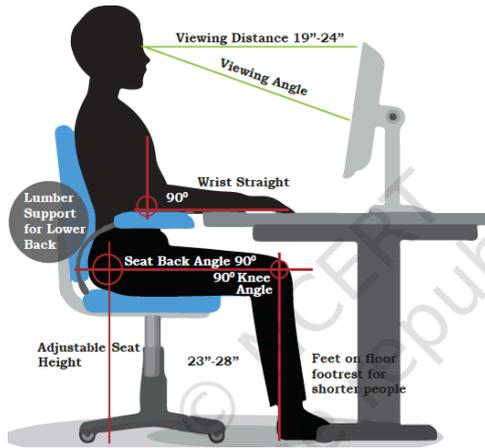
However, these health concerns can be addressed to some extent by taking care of the way we position such devices and the way we position our posture.

Ergonomics is a branch of science that deals with designing or arranging workplaces including the furniture, equipment and systems so that it becomes safe and comfortable for the user.

Ergonomics helps us in reducing the strain on our bodies — including the fatigue and injuries due to prolonged use. When we continuously look at the screen for watching, typing, chatting or playing games, our eyes are continuously exposed to the glare coming from the screens. Looking at small handheld devices makes it worse.

Eye strain is a symptom commonly complained by users of digital devices. Ergonomically maintaining the viewing distance and angle, along with the position can be of some help. Figure shows the posture to be maintained in order to avoid fatigue caused due to prolonged use of computer system and other digital devices.

However, to get rid of dry, watering, or itchy eyes, it is better to periodically focus on distant objects, and take a break for outdoor activities.



Correct posture while sitting in front of a computer

Bad posture, backaches, neck and shoulder pains can be prevented by arranging the workspace as recommended by ergonomics.

Overuse of keyboards (be it physical keyboard or touchscreen-based virtual keyboard) not aligned ergonomically, can give rise to a painful condition of wrists and fingers, and may require medical help in the long run.

Stress, physical fatigue and obesity are the other related impacts the body may face if one spends too much time using digital devices.

Summary: • **Digital footprint** is the trail of data we leave behind when we visit any website (or use any online application or portal) to fill-in data or perform any transaction.

- A user of digital technology needs to follow certain **etiquettes** like net-etiquettes, communication etiquettes and social media-etiquettes.
- **Net-etiquette** includes avoiding copyright violations, respecting privacy and diversity of users, and avoiding cyber bullies and cyber trolls, besides sharing of expertise.
- **Communication-etiquette** requires us to be precise and polite in our conversation so that we remain credible through our remarks and comments.
- While using social media, one needs to take care of security through password, be aware of fake information and be careful while befriending unknowns. Care must be taken while sharing anything on social media as it may create havoc if being mishandled, particularly our personal, sensitive information.
- **Intellectual Property Rights (IPR)** help in data protection through copyrights, patents and trademarks. There are both ethical and legal aspects of violating IPR. A good digital citizen should avoid plagiarism, copyright infringement and trademark infringement.
- Certain software are made available for free public access. Free and Open Source Software (**FOSS**) allow

users to not only access but also to modify (or improve) them.

- **Cyber crimes** include various criminal activities carried out to steal data or to break down important services. These include hacking, spreading viruses or malware, sending phishing or fraudulent emails, ransomware, etc.

- **Excessive usage of digital devices** has a negative impact on our physical as well as psychological well-being. Ergonomic positioning of devices as well as our posture are important. *****

NCERT Exercise

1. After practical's, Atharv left the computer laboratory but forgot to sign off from his email account. Later, his classmate Revaan started using the same computer. He is now logged in as Atharv. He sends inflammatory email messages to few of his classmates using Atharv's email account. Revaan's activity is an example of which of the following cyber crime? Justify your answer.

- a) Hacking
- b) Identity theft
- c) Cyber bullying
- d) Plagiarism

2. Rishika found a crumpled paper under her desk. She picked it up and opened it. It contained some text which was struck off thrice. But she could still figure out easily that the struck off text was the email ID and password of Garvit, her classmate. What is ethically correct for Rishika to do?

- a) Inform Garvit so that he may change his password.
- b) Give the password of Garvit's email ID to all other classmates.
- c) Use Garvit's password to access his account.

3. Suhana is down with fever. So, she decided not to go to school tomorrow. Next day, in the evening she called up her classmate, Shaurya and enquired about the computer class. She also requested him to explain the concept. Shaurya said, "Mam taught us how to use tuples in python". Further, he generously said, "Give me some time, I will email you the material which will help you to understand tuples in python".

Shaurya quickly downloaded a 2-minute clip from the Internet explaining the concept of tuples in python. Using video editor, he added the text "Prepared by Shaurya" in the downloaded video clip. Then, he emailed the modified video clip to Suhana.

This act of Shaurya is an example of —

- a) Fair use
- b) Hacking
- c) Copyright infringement
- d) Cyber crime

4. After a fight with your friend, you did the following activities. Which of these activities is not an example of cyber bullying?

- a) You sent an email to your friend with a message saying that "I am sorry".
- b) You sent a threatening message to your friend saying "Do not try to call or talk to me".
- c) You created an embarrassing picture of your friend and uploaded on your account on a social networking site.

5. Sourabh has to prepare a project on “Digital India Initiatives”. He decides to get information from the Internet. He downloads three web pages (webpage 1, webpage 2, webpage 3) containing information on Digital India Initiatives. Which of the following steps taken by Sourabh is an example of plagiarism or copyright infringement? Give justification in support of your answer.

- a) He read a paragraph on “Digital India Initiatives” from webpage 1 and rephrased it in his own words. He finally pasted the rephrased paragraph in his project.
- b) He downloaded three images of “ Digital India Initiatives” from webpage 2. He made a collage for his project using these images.
- c) He downloaded “Digital India Initiative” icon from web page 3 and pasted it on the front page of his project report.

6. Match the following:

Column A	Column B
Plagiarism	Fakers, by offering special rewards or money prize asked for personal information, such as bank account information
Hacking	Copy and paste information from the Internet into your report and then organise it
Credit card fraud	The trail that is created when a person uses the Internet.
Digital Foot Print	Breaking into computers to read private emails and other files

7. You got the below shown SMS from your bank querying a recent transaction. Answer the following —

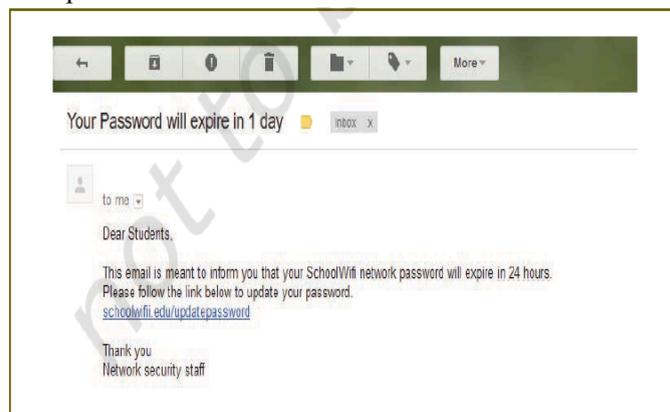
- a) Will you SMS your pin number to the given contact number?
- b) Will you call the bank helpline number to recheck the validity of the SMS received?

8. Preeti celebrated her birthday with her family. She was excited to share the moments with her friend Himanshu. She uploaded selected images of her birthday party on a social networking site so that Himanshu can see them. After few days, Preeti had a fight with Himanshu. Next morning, she deleted her birthday photographs from that social networking site, so that Himanshu cannot access them. Later in the evening, to her surprise, she saw that one of the images which she had already deleted from the social networking site was available with their common friend Gayatri. She hurriedly enquired Gayatri “Where did you get this picture from?”. Gayatri replied “Himanshu forwarded this image few minutes back”. Help Preeti to get answers for the following questions. Give justification for your answers so that Preeti can understand it clearly.

- a) How could Himanshu access an image which I had already deleted?
- b) Can anybody else also access these deleted images?
- c) Had these images not been deleted from my digital footprint?

9. The school offers wireless facility (wifi) to the Computer Science students of Class XI. For communication, the network security staff of the school have a registered URL schoolwifi.edu. On 17 September

2017, the following email was mass distributed to all the Computer Science students of Class XI. The email claimed that the password of the students was about to expire. Instructions were given to go to URL to renew their password within 24 hours.



- a) Do you find any discrepancy in this email?
- b) What will happen if the student will click on the given URL?
- c) Is the email an example of cyber crime? If yes, then specify which type of cyber crime is it. Justify your answer.

10. You are planning to go for a vacation. You surfed the Internet to get answers for the following queries —

- a) Weather conditions
 - b) Availability of air tickets and fares
 - c) Places to visit
 - d) Best hotel deals
- Which of your above mentioned actions might have created a digital footprint?

11. How would you recognise if one of your friends is being cyber bullied?

- a) Cite the online activities which would help you detect that your friend is being cyber bullied?
- b) What provisions are in IT Act 2000, (amended in 2008) to combact such situations.

12. Write the differences between the following —

- a) Copyrights and Patents
- b) Plagiarism and Copyright infringement
- c) Non-ethical hacking and Ethical hacking
- d) Active and Passive footprints
- e) Free software and Free and open source software

13. If you plan to use a short text from an article on the web, what steps must you take in order to credit the sources used?

14. When you search online for pictures, how will you find pictures that are available in the free public domain. How can those pictures be used in your project without copyright violations?

15. Describe why it is important to secure your wireless router at home. Search the Internet to find the rules to create a reasonably secure password. Create an imaginary password for your home router. Will you

share your password for home router with following people. Justify your answer.

- a) Parents
- b) Friends
- c) Neighbours
- d) Home tutors

16. List down the steps you need to take in order to ensure —

- a) your computer is in good working condition for a longer time.
- b) smart and safe Internet surfing.

17. What is data privacy? Websites that you visit collect what type of information about you?

18. In the computer science class, Sunil and Jagdish were assigned the following task by their teacher.

a) Sunil was asked to find information about “India, a Nuclear power”. He was asked to use Google Chrome browser and prepare his report using Google Docs.

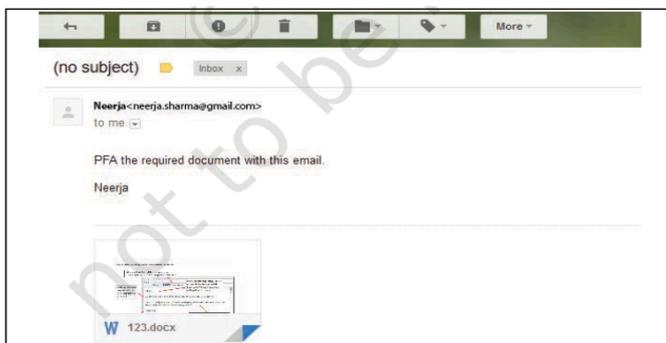
b) Jagdish was asked to find information about “Digital India”. He was asked to use Mozilla Firefox browser and prepare his report using Libre Office Writer.

What is the difference between technologies used by Sunil and Jagdish?

19. Cite examples depicting that you were a victim of following cyber crime. Also, cite provisions in IT Act to deal with such a cyber crime.

- a) Identity theft
- b) Credit card account theft

20. Neerja is a student of Class XI. She has opted for Computer Science. Neerja prepared the project assigned to her. She mailed it to her teacher. The snapshot of that email is shown below.



Find out which of the following email etiquettes are missing in it. Justify your answer.

- a) Subject of the mail
- b) Formal greeting
- c) Self-explanatory terms
- d) Identity of the sender
- e) Regards

21. Sumit got good marks in all the subjects. His father gifted him a laptop. He would like to make Sumit aware of health hazards associated with inappropriate and excessive use of laptop. Help his father to list the points which he should discuss with Sumit.

Other Important Points from NCERT Text Book

Can your digital footprints be used to judge your attitude and work ethics?

As a digital citizen, list various services that you avail online.

While surfing the Internet, we should be cautious about our personal and confidential data.

- Think before sharing credentials with others on an online platform.
- Keep personal information safe and protected through passwords.

Find out how to report about an abusive or inappropriate post or about a sender in a social network.

Avoid Spam!! : On receiving junk email (called Spam), neither reply nor open any attachment in such email.

No Permanent Deletion!! : We can post or comment anything on Internet, and delete it later.

- But remember, it cannot be permanently deleted. It is recorded in our Digital Footprint.
- This is how many culprits who spread hate, bully others or engage in criminal activities are traced and apprehended.

Don't Meet Up!! :

- Never arrange to meet an online friend because it may not be safe.
- No matter how genuine someone is appearing online, they might be pretending and hiding their real identity.

Think and Reflect: Is having the same password for all your accounts on different websites safe?

Play Safe!! : Think carefully before sharing personal photos.

*Suppose someone's email password is 'technology', which is weak. Can you suggest a stronger password?

*Why should we always mention the source from which we got an idea or used resources (text, image, audio, video, etc.) to prepare a project or a writeup?

Executing IPR: say for a software

- Code of the software will be protected by a copyright
- Functional expression of the idea will be protected by a patent
- The name and logo of the software will come under a registered trademark

Activity: Explore the following websites to know about open/public licensing:

- (i) creativecommons.org for CC, and
- (ii) gnu.org for GNU GPL.

Only the copyright owner of a work can enter into a license agreement.

End User License Agreement (**EULA**) contains the dos and don'ts with respect to the software being purchased. It covers all clauses of software purchase, viz., how many copies can be installed, whether source is available, whether it can be modified and redistributed and so on.

Beware!!

- Plagiarism means using other's work and not giving adequate citation for use.
- Copyright infringement means using another person's work, without permission or without paying for it, if it is being sold.
- Remember CC licenses are a set of copyright licenses that give the recipients, rights to copy, modify and redistribute the creative material, but giving the authors, the liberty to decide the conditions of licensing.
- GPL is the mostwidely used free software license which grants the recipients, rights to copy, modify and redistribute the software and that the same rights are preserved in all derivative works.

Remember!! Cyber crime is defined as a crime in which computer is the medium of crime (hacking, phishing,

spamming), or the computer is used as a tool to commit crimes (extortion, data breaches, theft).

Beware !! Accepting links from untrusted emails can be hazardous, as they may potentially contain a virus or link to malicious website.

We should ensure to open any email link or attachment only when it is from a trusted source and doesn't look doubtful. Explore and find out how to file a complaint with the cyber cell in your area.

Digital signatures are the digital equivalent of a paper certificate. Digital signatures work on a unique digital ID issued by an Certificate Authority (CA) to the user. Signing a document digitally means attaching that user's identify, which can be used to authenticate.

A licensed Certifying Authority (CA) who has been granted a license to issue it under Section 24 of the Indian IT-Act 2000, can issue the digital signature.

California Law University has identified non-functioning cathode ray tubes (CRTs) from televisions and computer monitors as hazardous.

Leaching is the process of removing a substance from another substance by passing water through it.

Carcinogenic: May cause cancer

Think and Reflect : Do you follow precautions to stay healthy - physically, mentally as well as emotionally while using digital technologies?

Device Safety: Ensures Good Health of a Computer System

- Regularly clean it to keep the dust off. Use a liquid solution specifically formulated for the cleaning of electronic screens.
- Wipe monitor's screen often using the regular microfibre soft cloth (the one used for spectacles).
- Keep it away from direct heat, sunlight and put it in a room with enough ventilation for air circulation.
- Do not eat food or drink over the keyboard. Food crumbs that fall into the gaps between the keys or spilled over liquid can cause issues to the devices.

Maintain a Balance!!

Enjoy the exciting world of digital devices in tandem with other pursuits of thrilling sports and hobbies. Online friends are good, but spending time with friends in real life is very fulfilling. Often the wholesome nature of real interactions cannot be compared to just online social networking.

1.CBSE ADDITION PRACTICE PAPER::2023.24

1. How can individuals protect themselves from identity theft?

- Share personal information freely on social media
- Use the same password for all online accounts
- Shred sensitive documents, use strong passwords, and monitor financial accounts
- Never check bank statements

Ans. c

2. Which environmental issue is associated with electronic waste?

- Ocean Acidification
- Air Pollution
- Noise Pollution
- Water Scarcity

Ans. b

8. Which of the following is not protected through Intellectual Property Rights (IPR)?

- Literary works
- Real estate properties
- Trademarks
- Patented inventions

Ans. b

9. _____ is a cyber attack method that involves sending fraudulent emails or messages to trick individuals into revealing sensitive information, such as login credentials or financial data?

- Malware Infection
- DDoS Attack
- Phishing
- SQL Injection

Ans. c

18. Identify FOSS from the following:

- MS Windows
- CorelDraw
- Photoshop
- Linux

Ans. d

19. Rashi has just started using internet. Mention her any four net etiquette which she should follow in order to become a good netizen.

Ans. Net-etiquette:

No copyright violation

Share the expertise with others on the web

One should respect the privacy of others on the web

One should respect the diversity of others

OR

Mention any four communication etiquette which one should follow while communicating on the internet.

Ans. Communication-etiquette:

One should be precise in communication on the web

One should be polite in communication

One should respect the data limits

One should be credible

29. Imagine a scenario where an individual, Alex, is concerned about his online privacy.

Alex has a social media presence and frequently posts updates, photos, and comments on various platforms. Additionally, Alex frequently uses mobile apps and visits websites for shopping and information.

a. Explain the concept of an active digital footprint, providing examples from Alex's online activities.

Ans. Active Digital Footprint: Alex's active digital footprint includes actions like posting photos and comments on social media platforms, making his intentional online activities visible to others.

b. Describe the concept of a passive digital footprint and provide examples of how it is generated in Alex's online interactions.

Ans. Passive Digital Footprint: Alex's passive digital footprint is created when websites and mobile apps collect data about his browsing habits and preferences without his direct input, often for purposes like targeted advertising.

c. Discuss the implications of both active and passive digital footprints for Alex's online privacy and security.

Ans. implications of both active and passive digital footprints for Alex's online privacy and security: Alex's active digital footprint may expose him to privacy risks if he shares sensitive information publicly. His passive digital footprint, when mishandled, can lead to data privacy concerns and potentially put his personal information at risk, emphasising the need for cautious online behaviour and data protection measures.

OR

With reference to 3R's, describe three essential approaches to manage electronic waste. Also, provide practical examples of how individuals can actively participate in each approach.

Ans. 1. Reduce: Individuals can minimise e-waste by making mindful purchasing decisions, such as buying longer-lasting electronic devices and only acquiring what is genuinely needed. For example, opting for modular smartphones with replaceable components can extend the lifespan of the device.

2. Reuse: Encouraging the reuse of electronic devices involves selling, donating, or trading-in old gadgets. For instance, individuals can refurbish and sell their old laptops to extend their use.

3. Recycle: To recycle e-waste responsibly, individuals can participate in e-waste recycling programs or drop-off centers. For instance, recycling old cell phones at designated collection points prevents them from ending up in landfills.

2. CBSE SP::2023.24::Questions

2. When e-waste such as electronic circuit boards are burnt for disposal, the elements contained in them create a harmful chemical called _____ which causes skin diseases, allergies and an increased risk of lung cancer.

- i. Hydrogen
- ii. Beryllium
- iii. Chlorine
- iv. Oxygen

3. Copyright, Patent and Trademark comes under:

- i. Intellectual Property Right
- ii. Individual Property Right
- iii. Industrial Property Right
- iv. International Property Right

6. _____ is not a FOSS tool.

- i. Libre Office
- ii. Mozilla Firefox
- iii. Google Chrome
- iv. Python

13. By restricting the server and encrypting the data, a software company's server is unethically accessed in order to obtain sensitive information. The attacker blackmails the company to pay money for getting access to the data, and threatens to publish sensitive information unless price is paid. This kind of attack is known as:

- i. Phishing
- ii. Identity Theft
- iii. Plagiarism
- iv. Ransomware

16. _____ is a non-profit organization that aims to build a publicly accessible global platform where a range of creative and academic work is shared freely.

- i. Creative Cost
- ii. Critical Commons
- iii. Creative Commons
- iv. Creative Common

23. Differentiate between the active digital footprint and passive digital footprints.

29. Richa, recently started using her social media account. Within a few days, she befriends many people she knows and some that she does not know. After some time, she starts getting negative comments on her posts. She also finds that her pictures are being shared online without her permission.

Based on the given information, answer the questions given below.

i. Identify the type of cybercrime she is a victim of.

ii. Under which act, she can lodge a complaint to the relevant authorities?

iii. Suggest her any two precautionary measures which she should take in future while being online to avoid any such situations.

OR

Mention any three health hazards associated with inappropriate and excessive use of gadgets.

CBSE SP::2023.24::Answers

2) ii. Beryllium 3) i. Intellectual Property Right

6) iii. Google Chrome 13) iv. Ransomware

16) iii. Creative Commons

23) **Active Digital Footprints:** Active digital footprints include data that we intentionally submit online. This would include emails we write, or responses or posts we make on different websites or mobile Apps, etc.

Passive Digital Footprints: The digital data trail we leave online unintentionally is called passive digital footprints. This includes the data generated when we visit a website, use a mobile App, browse Internet, etc.

29) i. She is a victim of Cyber Bullying.

ii. Information Technology Act, 2000 (also known as IT Act).

iii. a. Need to be careful while befriending unknown people on the internet.

b. Never share personal credentials like username and password with others.

OR

Simran needs to be made aware of the following consequences:

- i) Eye strain
- ii) Painful muscles and joints
- iii) Poor memory
- iv) Lack of sleep
- v) Back pain and neck pain

3. CBSE SP::2022.23::Questions

2. We need to exhibit proper manners and etiquettes while being online. Pick up one such net etiquette from the following :

- (a) Do not share the expertise
- (b) Respect privacy and diversity
- (c) Feed the troll
- (d) Copyright violation

3. A patent protects an invention for years, after which it can be freely used.

- (a) 40
- (b) 30
- (c) 20
- (d) 10

6. E-waste contains that causes respiratory disorders and brain damage.

- (a) Cadmium
- (b) Beryllium
- (c) Lead
- (d) Mercury

15. Rupam created an assistive device for the blind. This device is very helpful for the blind and people with low vision. Now, she wants that no one should copy her innovation. What should she do ?

- (a) Get the trademark for her invention
- (b) Get the license for her invention
- (c) Get the patent for her invention
- (d) Get the copyright for her invention

16. Presenting someone else's idea or work as one's own idea or work is called:

- (a) Phishing (b) Stacking
(c) Plagiarism (d) Bullying

23a) What do you understand about Copyright Infringement? What can be done as a user to avoid Copyright Infringement?

23b) What is meant by Trademark Infringement? What action can the owner take against someone who infringes its registered trademark?

29a) Riti received a message that she needs to update the KYC for her Bank Account therefore she should upload her Aadhar Card, Bank Account Number and the OTP on the link given in her message.

Answer the following questions :

- (i) Should Riti upload the documents and give the OTP on the link?
(ii) Should Riti call her bank immediately to recheck the validity of the message received?
(iii) What is the act mentioned in the message known as?

29b) Briefly explain the term FOSS. Give examples of any 2 Operating Systems that are FOSS.

CBSE Compartment::2022.23::Answers

2) (b) Respect privacy and diversity

3) (c) 20

6) Any one/two/three or all of the given option(s) to be accepted as correct answer.

15) (c) Get the patent for her invention

16) (c) Plagiarism

23a) Copyright infringement refers to the unauthorized use, reproduction, or distribution of copyrighted material without the permission of the copyright holder.

To avoid copyright infringement, users should obtain permission, use licensed content, create their own original works, or use open source content.

23b) Trademark infringement occurs when someone uses a registered trademark without permission.

The owner can take legal action against the infringer, seeking actions like injunctions, damages, orders to cease the infringing activities, to protect their brand and enforce their exclusive rights.

29a) (i) No, Riti should not upload the documents and give the OTP on the link

(ii) Yes, Riti should call her bank immediately to recheck the validity of the message received

(iii) Phishing OR Cyber Crime

29) FOSS (Free and Open-Source Software) refers to software that gives users freedom to study, use, modify, and distribute the software.

Examples of FOSS operating systems include Linux (e.g., Ubuntu, Fedora) and FreeBSD.

4. CBSE Board::2022.23::Questions

2. Ramandeep is a young woman with great aspirations and has a good team of like-minded people.

She along with her team members started a company to sell handicrafts online and also designed a logo for their company. What type of intellectual property does this logo represent?

- (i) Patents (ii) Copyright
(iii) Design (iv) Trademark

3. Which of the following is a type of cybercrime where objectionable and demeaning comments are posted on social media platform about a person, such that he/she is mentally harassed?

- (i) Phishing (ii) Hacking
(iii) Cyber bullying (iv) Identity Theft

6. Primary law in India for matters related to e-commerce and cyber crime is:

- (i) IT Act 1995 (ii) IT Act 2000
(iii) IT Act 1998 (iv) IT Act 2010

15. The digital footprint that we leave online unintentionally is called

- (i) Active digital footprint
(ii) Passive digital footprint
(iii) True digital footprint
(iv) False digital footprint

16. E-waste is responsible for the degradation of our environment if not properly treated or disposed of. Some of the feasible methods of e-waste management are reduce, ___ and recycle.

- (i) reuse (ii) recheck
(iii) resubmit (iv) regular

23a). Explain plagiarism with an example.

23b) Nowadays all of us frequently use social media to connect with our friends. Give any two netiquettes that we should follow while communicating on social media.

29a. Manohar received an email from a company, named Makemoney Pvt. Ltd., claiming that Manohar has won ₹ 20 lakhs in a survey done online. In order to claim the prize money, he was required to answer few security questions such as his Name, Account number, PAN card details, Phone number and OTP for verification purposes. For this, he had to click on the link provided in the email.

Answer the following questions:

(i) Should Manohar give the required details to the company?

(ii) What is the activity depicted above?

(iii) What should he do with this email?

29b. What do you understand by the term Hacking?

Write any two measures that one should take to avoid being the victim of hacking.

CBSE Board::2022.23::Questions

2) (ii) Copyright OR (iv) Trademark

3) (iii) Cyber bullying 6) (ii) IT Act 2000

15) (ii) Passive digital footprint 16) (i) reuse

23a) Plagiarism refers to using someone else's work/ideas without giving them credit.

Example : A student copies a poem written by his friend and submits it as his own for the School magazine.

23b) We should

- not post embarrassing or incriminating contents(photos/videos) on social-media sites.
- not bully anyone online.
- not post either our's or someone else's private information online.
- verify the source as credible before forwarding or posting something.
- Use proper language and avoid casual abbreviations (lol, ttyl, brb) that could be misunderstood or misinterpreted.

29a) i) No

ii) Phishing

(Cyber Crime should also be accepted as the correct answer.)

iii) Delete OR Ignore It OR Block OR Report

29b) It is the unauthorized access to a computer/computer network.

- Logging out from account after finishing work
- Using incognito/private window while using public computer
- Not sharing password with anyone

5. CBSE SP::2022.23::Questions

2. Which of the following is not a type of cyber crime?

- i. Data theft
- ii. Installing antivirus for protection
- iii. Forgery
- iv. Cyber bullying

3. What is an example of e-waste?

- i. A ripened mango
- ii. Unused old shoes
- iii. Unused old computers
- iv. Empty cola cans

6. 'O' in FOSS stands for:

- i. Outsource
- ii. Open
- iii. Original
- iv. Outstanding

15. Legal term to describe the rights of a creator of original creative or artistic work is:

- i. Copyright
- ii. Copyleft
- iii. GPL
- iv. FOSS

16. _____ is the trail of data we leave behind when we visit any website (or use any online application or portal) to fill-in data or perform any transaction.

- i. Offline phishing
- ii. Offline footprint
- iii. Digital footprint
- iv. Digital phishing

23. List any four benefits of e-waste management.

OR

Mention any four net etiquettes.

29. Nadar has recently shifted to a new city and school. She does not know many people in her new city and school. But all of a sudden, someone is posting negative, demeaning comments on her social networking profile etc.

She is also getting repeated mails from unknown people. Every time she goes online, she finds someone chasing her online.

i. What is this happening to Nadar?

ii. What immediate action should she take to handle it?

iii. Is there any law in India to handle such issues?

Discuss briefly.

OR

What do you understand by plagiarism? Why is it a punishable offence? Mention any two ways to avoid plagiarism.

CBSE SP::2022.23::Answers

2. ii. Installing antivirus for protection

3. iii. Unused old computers

6. ii. Open

15. i. Copyright

16. iii. Digital footprint

23. The e-waste management-

i. Saves the environment and natural resources

ii. Allows for recovery of precious metals

iii. Protects public health and water quality

iv. Saves landfill space

OR

i. No copyright violation

ii. Share the expertise with others on the internet

iii. Avoid cyber bullying

iv. Respect other's privacy and diversity

29. i. Nadar has become a victim of cyber bullying and cyber stalking.

ii. She must immediately bring it into the notice of her parents and school authorities. And she must report this cyber crime to local police with the help of her parents.

iii. Yes. The Information Technology Act, 2000 (also known as ITA-2000, or the IT Act) is the primary law in India dealing with cybercrime and electronic commerce.

OR

Plagiarism is the act of using or stealing someone else's intellectual work, ideas etc. and passing it as your own work. In other words, plagiarism is a failure in giving credit to its source.

Plagiarism is a fraud and violation of Intellectual Property Rights. Since IPR holds a legal entity status, violating its owners right is a legally punishable offence.

Any two ways to avoid plagiarism:

Be original

Cite/acknowledge the source

6. CBSE COMPARTMENT::2021.2022

No Questions from Societal Impacts

7. CBSE Board Paper::2021.2022::Questions

12. With the outset of Covid-19 schools started online classes but due to continuous online classes students health issues also started. Health practitioner advised the parents to follow a few health tips. Which of the following health tip should not be suggested.

(a) The sitting posture should be correct

(b) Breaks should be taken in between the online classes

(c) To protect the eyes the gadgets should be placed above eye level.

(d) Wash the eyes regularly.

13. The following is automatically granted to the creator or owner of any invention.

(a) Patent

(b) Copyright

(c) Trademark (d) License
 14. Himanshi sets up her own company to sell her own range of clothes on Instagram. What type of intellectual property can she use to show that the clothes are made by his company.

- (a) Patent (b) Copyright
 (c) Design (d) Trademark

15. GPL stands for
 (a) Guided Public License (b) General Public License
 (c) Global Public License (d) General Public Letter

16. E-waste is becoming one of the fastest growing environmental hazards in the world today. If it is not properly treated or disposed of it can cause serious health hazards, therefore The _____ has issued a formal set of guidelines for proper handling and disposal of e-waste.

- (a) Central Pollution Control Board (CPCB)
 (b) Department of Information Technology (DIT)
 (c) Electrical and Electronic Equipment (EEE)
 (d) Information Communication Technology (ICT)

25. Priya is a student of class 10 and she is a very frequent user of internet applications. One day she got an unpleasant message on her instant messenger. What do you think she should do?

- (a) Start chatting with an unknown person.
 (b) talk to her parents/teacher or other trusted adult and let them know that she is feeling uncomfortable.
 (c) Ignore the conversation
 (d) She should delete the chat so that no one comes to know.

27. The primary law in India dealing with cyber crime and electronic commerce is:

- (a) India's Technology (IT) Act, 2008
 (b) India's Digital Information Technology (DIT) Act, 2000
 (c) India's Information Technology (IT) Act, 2000
 (d) The Technology Act, 2008

28. Consider the following statement with reference to Trademark and Hacking.

Statement 1: Trademark is a document that provides legally binding guidelines for the use and distribution of software.

Statement 2: Hacking is the act of unauthorized access to a computer network or any digital system.

- (a) Statement 1 is True but Statement 2 is False
 (b) Statement 1 is False but Statement 2 is True
 (c) Both the statements are True
 (d) Both the statements are False

31. There is only 1 day left for Ravisha to submit her Science project. Therefore she performed the following activities to complete her task. Which of the following activities can be considered as plagiarism?

- (a) Downloaded the images that were marked as CC and pasted in her project file.
 (b) Copied the content from some website and pasted in her file.
 (c) Copied the content from the website and gave references about the same in the project.
 (d) Downloaded and installed the open source software for typing the synopsis.

32. A contract between the creator and the user to allow the user use his/her work with some price is

- (a) Agreement (b) Copyright
 (c) License (d) Patent

35. Companies get their Trademark registered to protect?

- (a) logos, names and brands
 (b) word, phrase, or symbol
 (c) slogans, stylized fonts, and colors.
 (d) Company furniture, worker, brands

37. Rohit forgot his laptop in his car and when he came back he found his laptop was missing. This act is

- (a) Cyber Crime (b) Phishing
 (c) Theft (d) Plagiarism

45. The rights of the owner of information to decide how much information is to be shared/ exchanged/ distributed, are collectively known as _____

- (a) Intelligent Portable Rights
 (b) Intellectual Property Rights
 (c) Interactive Property Rights
 (d) Instance Portability Rights

46. Abhilasha forgot to sign out from her gmail id and Aditi used Abhilasha's gmail id to send mail. This act of Aditi is considered as

- (a) Plagiarism (b) Identity Theft
 (c) Phishing (d) Piracy

47. The trail that is automatically created when a person uses the internet on any digital devices like laptops, smart phones, tablets etc is called

- (a) Cyberbullying (b) Phishing
 (c) Digital Footprint (d) Digital Activity

48. _____ operating system comes under FOSS

- (a) Windows (b) Ubuntu
 (c) Mac (d) Oracle

CBSE Board Paper::2021.2022::Answers

12. C 13. (b) Copyright 14. (d) Trademark

15. (b) General Public License 16. (a)

25. (b)

27. (c) India's Information Technology (IT) Act, 2000

28. (b) Statement 1 is False but Statement 2 is True

31. (b) Copied the content from some website and pasted in her file.

32. (c) License 35. (a) logos, names and brands

37. (c) Theft 45. (b) Intellectual Property Rights

46. (b) Identity Theft 47. (c) Digital Footprint

48. (b) Ubuntu

8. CBSE SP::2021.2022::Questions

11. A _____ is a unique data trace of a user's activities, actions, communications or transactions in digital media.

- a. Digital Handprint b. Digital Footprint
 c. Offline Footprint d. Offline Handprint

12. Which of the following is not a type of cybercrime?

- a. Data theft b. Forgery of online documents
 c. Damage to data and systems
 d. Installing antivirus for protection

13. 'F' in FOSS stands for:

- a. Free b. Forever c. Fire d. Freezing
- 15.** IPR stands for:
 a. Intelligent Property Rights
 b. Intellectual Property Reserve
 c. Intellectual Property Rights
 d. Intellectual Product Rights
- 16.** Which of the following is not a violation of IPR?
 a. Plagiarism b. Copyright Infringement
 c. Patent d. Trademark Infringement
- 18.** _____ is the practice of taking someone else's work or ideas and passing them off as one's own:
 a. Plagiarism b. Copyright
 c. Patent d. All of the above
- 20.** Following are the impact of e-waste on the environment. Choose the odd one out.
 a. Soil Pollution b. Water Pollution
 c. Air Pollution d. Sound Pollution
- 21.** Abdul deleted all his chats from all his social media accounts, and he thinks that all his traces are deleted completely. Is he right in thinking so?
 a. Yes b. No c. May be d. Not sure
- 22.** The legal and regulatory aspects of the internet refer to.....
 a. Cyber Space b. Cyber crime
 c. Criminal law d. IT act
- 29.** _____ is a cybercrime in which a target or targets are contacted by email, telephone or text message by someone posing as a legitimate institution to lure individuals into providing sensitive data such as personally identifiable information, banking and credit card details, and passwords.
 a. Plagiarism b. Phishing
 c. Cyberstalking d. Hacking
- 33.** Suhhani is confused about the free operating system available in the market. Few of her friends suggested a few operating systems. Help her in choosing free operating system for her device:
 a. Ubuntu b. Windows
 c. Mozilla Firefox d. Blender
- 34.** Consider the following statements with reference to the use of email:
Statement 1: Sending threatening messages to a classmate.
Statement 2: Inviting friends to participate in a school club or sports activity.
Statement 3: Asking your teacher for help on homework.
Statement 4: Responding to or forwarding spam emails.
 Which of the above statements refer to appropriate use of email?
 a. Statements 1 and 2. b. Statements 2 and 3.
 c. Statements 3 and 4. d. Statements 2 and 4.
- 36.** Saharsh is a student of class -9 and he is a very frequent user of internet applications. One day he got an unpleasant message on his instant messenger. What do you think he should do?
 a. ignore it and start chatting to someone else.
 b. reply back to them and find out what their

- problem is.
 c. shut down the computer and hope they'll leave him alone in future.
 d. go to his parents, teacher, or other trusted adult and let them know that he feels uncomfortable.
- 38.** Feasible method (s) to manage e-waste:
 a. Reduce b. Reuse
 c. Recycle d. All of the above
- 41.** We should exhibit proper manners and etiquettes while being online. Choose the right net etiquette (s) from the following:
 a. Avoid Cyber Bullying
 b. Respect Other's Privacy
 c. No Copyright violation
 d. All of the above
- 45.** Linux, MySQL and Mozilla Firefox software come under _____ category.
 a. Proprietary b. FOSS
 c. Freeware d. Shareware

CBSE SP::2021.2022::Answers

- 11. b.** Digital Footprint
12. d. Installing antivirus software
13. a. Free **15. c.** Intellectual Property Rights
16. c. Patent **18. a.** Plagiarism
20. d. Sound Pollution **21. b.** No **22. d.** IT Act
29. b. Phishing **33. a.** Ubuntu
34. b. Statements 2 and 3
36. d. go to his parents, teacher, or other trusted adult and let them know that he feels uncomfortable.
38. d. All of the above
41. d. All of the above
45. b. FOSS

9. CBSE COMPARTMENT::2020-21::Questions

- 1.** You were not able to create the IP project, therefore you downloaded a project from the internet and submitted it to your teacher by your name. This wrong/unethical act is considered as _____.
 (A) Copyright (B) Hacking
 (C) Plagiarism (D) Trademark
- 8.** Out of the following, which crime(s) will come under cyber crime category ?
 (A) Identity theft (B) Invasion of privacy
 (C) Online harassment (D) All of the above
- 12.** Technology not protected by copyright and available to everyone, is categorized as:
 (A) Proprietary (B) Open Source
 (C) Experimental (D) Shareware
- 14.** Indian law to deal with cyber crime is :
 (A) Cyber Act (CA) (B) Internet Act (IA)
 (C) IT Act (ITA) (D) WWW Act (WWWA)
- 17.** E-waste is harmful to the environment and human health if not properly treated or disposed of, therefore they must be handled with care. What are the health hazards which can be caused by E-waste ?
 (A) Lung cancer (B) DNA damage
 (C) Brain damage (D) All of the above
- 32.** Nowadays children are fond of playing computer games. What is the health hazard that can occur due to excessive use of computer/smart phone screens ?

35a) What is the difference between Copyright and Licenses ?

35b) What do you understand by Intellectual Property Rights ? Why is there a need to protect Intellectual Property Rights ?

CBSE COMPARTMENT::2020-21::Answers

1. (C) Plagiarism 8. (D) All of the above

12. (B) Open Source 14. (C) IT Act (ITA)

17. (D) All of the above

32. Constant exposure to computer/smartphone screens impact vision and may lead to eye-related problems.

Continuous engagement with a computer/ smartphone can also cause back, neck and shoulder pains and headache.

35a) Copyright is a legal instrument which reserves the right of the creator of an original creative work.

Licence is a legal instrument which reserves the right to use/reuse/distribute a product/creation of a copyright holder.

35b) IPR (Intellectual Property Rights) are the rights of the owner of information to decide how much of the information is to be exchanged, shared or distributed.

Intellectual Property Rights are needed because : ●

It encourages individuals and businesses to create new software as well as improving existing applications.

● Ensures new ideas and technologies are widely distributed.

● Promotes investment in the national economy

10. CBSE SP::2020.2021::Questions

1. State whether True or False :

i. A copyright is automatically granted to authors or creators of content. _____

ii. In FOSS source code is usually hidden from the users. _____

12. The practice of taking someone else's work or ideas and passing them off as one's own is known as _____

17. According to a survey, one of the major asian country generates approximately about 2 million tonnes of electronic waste per year. Only 1.5 % of the total e-waste gets recycled. Suggest a method to manage e-waste .

21. Receiving irrelevant and unwanted emails repeatedly is an example of _____.

32. List any two health hazards related to excessive use of Technology.

33. Priyanka is using her internet connection to book a flight ticket. This is a classic example of leaving a trail of web activities carried by her. What do we call this type of activity? What is the risk involved by such kind of activity?

35. What do you mean by Identity theft? Explain with the help of an example.

OR

What do you understand by Net Etiquettes? Explain any two such etiquettes.

CBSE SP::2020.2021::Answers

1. i) True ii) False

12. Plagiarism

17. Buy environmentally friendly electronics

Donate used electronics to social programs

Reuse , refurbish electronics

Recycling e-waste

21. Spam or spamming

32. The continuous use of devices like smartphones, computer desktop, laptops, head phones etc cause a lot of health hazards if not addressed. These are:

i. Impact on bones and joints: wrong posture or long hours of sitting in an uncomfortable position can cause muscle or bone injury.

ii. Impact on hearing: using headphones or earphones for a prolonged time and on high volume can cause hearing problems and in severe cases hearing impairments.

iii. Impact on eyes: This is the most common form of health hazard as prolonged hours of screen time can lead to extreme strain in the eyes.

iv. Sleep problem: Bright light from computer devices block a hormone called melatonin which helps us sleep. Thus we can experience sleep disorders leading to short sleep cycles.

33. We call this type of activity as Digital Footprints Risk involved :

It includes websites we visit emails we send, and any information we submit online, etc., along with the computer's IP address, location, and other device specific details. Such data could be used for targeted advertisement or could also be misused or exploited.

35. Identity theft is the crime of obtaining the personal or financial information of another person for the sole purpose of assuming that person's name or identity to make transactions or use it to post inappropriate remarks , comments etc.

Example:

Alex likes to do his homework late at night. He uses the Internet a lot and also sends useful data through email to many of his friends. One Day he forgot to sign out from his email account. In the morning, his twin brother, Flex started using the computer. He used Flex's email account to send inappropriate messages to his contacts.

OR

Net Etiquettes refers to the proper manners and behaviour we need to exhibit while being online.

These include:

1. **No copyright violation:** we should not use copyrighted materials without the permission of the creator or owner. We should give proper credit to owners/creators of open source content when using them.

2. **Avoid cyber bullying:** Avoid any insulting, degrading or intimidating online behaviour like repeated

posting of rumours, giving threats online,

posting the victim's personal information,

or comments aimed to publicly ridicule a victim.

or any other relevant answer.

11. CBSE Compartment::2019.20::Questions

5a) A software company purchases new computers every year and discards the old ones into the local dumping yard. Write the name of the most appropriate category of waste that the organisation is creating every year, out of the following options:

- (A) Business Waste (B) Commercial Waste
(C) Solid Waste (D) E-Waste

5b) Write names of any two common types of Intellectual Property Rights which are protected by the Law.

5c) A research student is expected to write a thesis on a topic. The student browses Internet for the topic and luckily finds it on the Internet. He copies and submits the entire thesis as his own research work. Which of the following activities appropriately categorises the act of the writer:

- (A) Spamming (B) Phishing
(C) Plagiarism (D) Trojan

5d) What is open source software? Write the names of any two software which can be categorized as Open Source.

5e) Suggest techniques which can be adopted to impart Computer Education for:

- (i) visually impaired students (someone who cannot see).
(ii) mobility challenged students (someone who cannot write).

CBSE Compartment::2019.20::Answers

5a) (D) E-Waste

5b) • Rights upon musical, literary, and artistic works

- Rights upon discoveries and inventions
- words, phrases, symbols, and designs
- copyrights, trademarks, patents, industrial design rights and trade secrets

5c) (C) Plagiarism

5d) Open source software is software with source code that anyone can inspect, modify, and enhance.

Names of open source software (Any two from the following)

- Mozilla's Firefox web browser.
- Thunderbird email client.
- PHP scripting language.
- Python programming language.
- Apache HTTP web server.
- LibreOffice
- GNU Image Manipulation Program
- Linux operating system

5e) (i) For visually impaired or blind users, programs like JAWS read any text out loud. Screen-magnification programs assist partially sighted computer users. Braille keyboards or pointers attached to the mouth, finger, head or knee can also be used.

(ii) A mobility impaired student, who can not write using a pen can use voice recognition software on the computer.

12. CBSE SP::2019.20::Questions

5A) Which of the following is not an intellectual property?

- (i) A poem written by a poet

(ii) An original painting made by a painter

(iii) Trademark of a Company

(iv) A remixed song

5B) Jhilmalini has stolen a credit card. She used that credit card to purchase a laptop. What type of offence as she committed?

5c) Name the primary law in India dealing with cybercrime and electronic commerce.

5d) Sutapa received an email from her bank stating that there is a problem with her account. The email provides instructions and a link, by clicking on which she can logon to her account and fix the problem. Help Sutapa by telling her the precautions she should take when she receives these type of emails.

5e) Explain any two ways in which technology can help students with disabilities.

5f) Explain the role of online social media campaigns, crowdsourcing and smart mobs in society.

OR

Ms Samtha has many electronics gadgets which are not usable due to outdated hardware and software. Help her to find any three best ways to dispose the used electronic gadgets.

CBSE SP::2019.20::Answers

5a) A remixed song is not an intellectual property

5b) She has committed a fraud

5c) The primary law is Information Technology Act 2000.

5d) She should check whether it is a valid bank site or not by checking in the url https. It is always better to type the url and then login to the site. She should not click on the link provided in the email.

5e) Different types of ICT tools assist people with learning disabilities to achieve positive outcomes.

They are :

Talking Word processors

Screen Readers

Conversion of local language to Braille

Eye Tracking mouse

5f)Role of Social Media Campaigns:-

- A social media campaign should focus around a singular business goal, whether it's on Facebook or Instagram. Common goals for a social media campaigns include:
 - Getting feedback from users.
 - Building email marketing lists
 - Increasing website traffic
- Crowdsourcing is the practice of engaging a 'crowd' or group for a common goal — often innovation, problem solving, or efficiency. It is powered by new technologies, social media and web 2.0. Crowdsourcing can take place on many different levels and across various industries.
- Smart mobs, so named because each person in the group uses technology to receive information on where to go and what to do. This ability to stay on top of current events makes smart mobs extremely effective

OR

1. Give Your Electronic Waste to a Certified E-Waste Recycler
2. Donating Your Outdated Technology
3. Give Back to Your Electronic Companies and Drop Off Points.

Q.7. Smridh has recently changed his school so he is not aware of the people, but someone is posting negative , demeaning comments on his social media profile. He is also getting repeated mails from unknown people. Everytime he goes online, he finds someone chasing him online.

i. Smridh is a victim of

- a. Eavesdropping b. Stolen identity
c. Phishing d. Cyber stalking

Answer:(d)

ii. The action that Smridh should take :

- a. He should ONLY share with his friends
b. He should NOT share with anyone as it can cause serious problem
c. He should immediately report to the police
d. He should bring to the notice of his parents and school authorities.

Answer : (d)

iii. is a set of moral principles that governs the behaviour of a group or individual and regulates the use of computers.

- a. Copyright b. Computer ethics
c. Property rights d. Privacy law

Answer: (b)

iv. Smridh needs to protect his personal information or data from unintentional and intentional attacks and disclosure which is termed as

- a. Digital right b. Copyright
c. Privacy d. Intellectual property

Answer : (c)

v. The act of fraudulently acquiring someone's personal and private information, such as online account names, login information and passwords is called as

- a. Phishing b. Fraud c. Scam d. Plagiarism

Answer : (a)

Q.20. Sumit has to prepare a project on “Swachh Bharat Shreshth Bharat”.

He decides to get information from the Internet. He downloads three web pages (webpage1, webpage 2, webpage 3) containing information on the given topic.

1. He read a paragraph on from webpage 1 and rephrased it in his own words. He finally pasted the rephrased paragraph in his project.

2. He downloaded three images of from webpage 2. He made a collage for his project using these images.

3. He also downloaded an icon from web page 3 and pasted it on the front page of his project report.

i. Step1 An Example of _____.

- a. Plagiarism b. Paraphrasing
c. copyright infringement
d. Intellectual Property right

Answer:(b) :Paraphrasing

ii. Step 2 An act of _____.

- a. plagiarism b. copyright infringement
c. Intellectual Property right
d. Digital Footprints

Answer: (a) Plagiarism

iii. Step 3 An act of _____.

- a. Plagiarism b. Paraphrasing
c. copyright infringement
d. Intellectual Property right

Answer : (c) Copyright Infringement

iv. A website is a collection of _____.

- a. Web Servers b. Web pages
c. Browsers d. Hyperlinks

Answer : (b)

v. The process of getting web pages, images and files from a web server to local computer is called

- a. FTP b. Uploading
c. Downloading d. Remote access

Answer : (c) Downloading