

Unit-V

INTELLECTUAL PROPERTY RIGHTS (IPR)

Patent Rights: Scope of Patent Rights, Licensing and transfer of technology, Patent information and databases. **Geographical Indications. New Developments in IPR:** Administration of Patent System. IPR of Biological Systems, Computer Software etc. **Traditional Knowledge Case Studies. IPR and IITs,** Licenses, Licensing of related patents. **Patent agents:** Registration of patent agents. **Introducing Patent databases:** WIPO and google patent database. **8-Hours**

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5.1 Patent Rights

5.1.1 Scope of Patent Rights

Patent rights, as per the Court of Law, grant inventors' exclusive control over their inventions, allowing the patent owner to decide who may or may not use the patented invention. This exclusivity is a crucial aspect of intellectual property law, designed to encourage innovation by enabling inventors to benefit financially from their creations. The patent owner may permit other parties to use the invention on mutually agreed terms, fostering collaboration while retaining control over their intellectual property.

1. **Exclusive Rights:** A patent owner possesses the legal authority to exclude others from making, using, distributing, importing, or selling the patented invention without their permission for up to 20 years from the filing date. This legal protection ensures your innovation remains under your control. This right is often described as a negative right, as it restricts others from utilizing the invention in any manner without prior consent from the patent holder [1][2][4]. If someone uses the patented invention without authorization, the patent holder can initiate legal action to stop this infringement and seek compensation for damages incurred due to unauthorized use [5][7].
2. **Maximized Returns on Investment:** Patents allow you to reap the rewards of your hard work and investment. By securing exclusive rights, you can position your business as a market leader, maximizing profits and gaining a competitive edge.
3. **Monetization Opportunities:** If you choose not to directly commercialize your invention, patents provide the flexibility to license or sell your innovation to other enterprises. This can generate additional income streams and diversify your business opportunities.
4. **Enhanced Negotiating Power:** A strong patent portfolio strengthens your position when negotiating licensing agreements or partnerships. Your patents may hold significant value to other enterprises, enabling you to enter advantageous cross-licensing deals that benefit both parties.
5. **Boosted Business Credibility:** A robust patent portfolio enhances your company's image, showcasing your expertise, innovation, and technological capability. This can attract investors, secure partnerships, and increase your market valuation, creating a positive perception among stakeholders.

Nature of Patent Rights

Patents are not absolute rights to exploit an invention; rather, they confer a *right to exclude* others from exploiting it. This means that even with a patent, an inventor may still need additional permissions or licenses if their invention builds upon existing patented technology [4][6][8]. For instance, if an inventor creates an improvement on a patented product, they must obtain permission from the original patent holder to use or sell their improved version.

What are the 2 types of claims in Patents?

Patents consist of various claims that define the scope of protection. In general, claims can be categorized into:

1. **Independent Claims:** These provide broad protection and stand-alone without referencing other claims.
2. **Dependent Claims:** These are narrower and reference independent claims, covering specific variations or features [1].

The scope of these claims is pivotal in determining whether an infringement has occurred. A successful infringement claim requires that the accused product or process falls within the boundaries defined by at least one claim of the patent [1][2].

Legal Enforcement and Limitations

To enforce patent rights, the patent owner must typically file a lawsuit against the alleged infringer. The court will evaluate whether the accused product infringes upon any of the claims in the patent. If successful, remedies may include injunctions against further infringement and monetary damages and criminal procedures in some cases [2][5][9].

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- [3] <http://www.diva-portal.org/smash/get/diva2:772445/FULLTEXT01.pdf>
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- [7] <https://www.legallore.info/post/india-s-patent-protection-scope-and-future>
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5.1.2 Licensing and Transfer of Technology

Technology transfer is a vital process that facilitates the movement of scientific knowledge and intellectual property from research institutions to public and private entities, promoting innovation and commercialization.

What are the 3 important stages in technology transfer?

Technology transfer involves several stages, including:

1. **Identification:** Recognizing valuable technologies developed in research settings.
2. **Contractual Agreements:** Establishing formal agreements, such as licenses, that define the terms under which technology can be used.
3. **Commercialization:** Transforming research outcomes into marketable products and services.

This process is essential for converting scientific discoveries into practical applications that benefit society, driving economic growth, and enhancing the quality of life.

Explain the benefits of technology transfer for Institutions.

Engaging in technology transfer provides numerous advantages for institutions, including:

1. **Attracting Talent:** Robust technology transfer programs draw entrepreneurial faculty and students.
2. **Increased Funding:** Successful transfers can lead to additional research funding.
3. **Enhanced Prestige:** Institutions gain recognition for bringing innovations to market.
4. **Improved Research Quality:** Collaborations with industry enhance access to resources and insights.
5. **Enriched Education:** Partnerships with businesses provide real-world experience for students.
6. **Career Opportunities:** Collaborations foster faculty exchanges and improve alumni prospects.

The above benefits contribute to a thriving academic environment that encourages innovation and research excellence.

Explain Licensing as a Mechanism for Technology Transfer.

Licensing is a formal method of transferring technology, involving a written agreement between the owner (licensor) and another party (licensee). This agreement grants the licensee specific rights to use the technology for defined purposes. Key aspects include:

1. **Rights Granted:** The licensee may develop, manufacture, and commercialize the technology.
2. **Financial Benefits:** Licensors typically receive royalty payments based on sales, creating a revenue stream that can be reinvested in further research.

Explain the benefits of Licensing for Industry.

Collaboration through licensing offers significant advantages for businesses:

1. **Access to Innovations:** Companies can leverage cutting-edge technologies developed by research institutions without incurring high internal R&D costs.
2. **Technical Support:** Research institutions often provide expertise that enhances business capabilities.
3. **Market Expansion:** Licensing agreements allow companies to introduce new products more rapidly, driving growth and competitiveness.
4. **Economic Growth:** High-tech innovation clusters around institutions stimulate local economies by attracting talent and creating jobs.

Technology transfer drives innovation and economic growth by translating research into commercial applications. It boosts institutional prestige, supports industry advancement, and benefits society. Effective licensing enables research institutions and businesses to collaborate and thrive in a dynamic economy.

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[1] https://autm.net/AUTM/media/Surveys-Tools/Documents/AUTM_Technology-Transfer-Infosheet_1.pdf

[2] <https://gardnerisp.com/what-is-technology-transfer/>

[3] <https://www.unemed.com/blog/the-importance-of-technology-transfer>

[4] <https://www.twi-global.com/technical-knowledge/faqs/what-is-technology-transfer>

5.1.3 Patent information and databases

Patent facilitation agencies - Technology Information, Forecasting and Assessment Council (TIFAC) serves as a nodal agency in India for intellectual property rights (IPR) activities. In 1995 a Patent Facilitation Centre (PFC) was established within TIFAC.

Explain the objectives of Patent Facilitation Centre.

1. **Integrating Patent Information:** It aims to incorporate patent information as a crucial element in promoting research and development programs.
2. **Providing Patenting Facilities:** The centre offers support for scientists and technologists in obtaining both Indian and foreign patents on a sustainable basis.
3. **Monitoring IPR Developments:** TIFAC keeps track of advancements in the IPR landscape, informing policymakers, scientists, and industry stakeholders about significant issues.
4. **Raising Awareness:** The centre is dedicated to enhancing understanding of patents, including the challenges and opportunities they present, through workshops, seminars, and conferences.

These initiatives contribute to strengthening the innovation ecosystem in India by facilitating better access to patenting resources and knowledge.

PFC has opened 24 **Patent Information Centres (PICs)** in various states of India to provide IPR related services. **PICs** play a crucial role in facilitating IPR services across India. Established under the administration of the Department of Science and Technology (DST), these centres aim to support inventors and innovators at the state level.

Explain the key functions of Patent Information Centres (PICs).

1. **Consultation and Guidance:** PICs serve as consultants, providing guidance on filing patent applications and navigating the patent process.
2. **Patent Search Services:** They extend services for conducting patent searches, helping inventors assess the patent landscape before filing.
3. **Workshops and Seminars:** PICs assist the Patent Facilitation Centre (PFC) in organizing workshops, seminars, and conferences to raise awareness about IPR.
4. **Geographical Indications (GI):** They work on the registration of GIs, promoting local products and protecting regional intellectual property.
5. **IPR Education:** PICs support the inclusion of IPR topics in academic curricula, fostering a better understanding of intellectual property among students and professionals.
6. **Support for IPR Cells:** They collaborate with IPR Cells established in various academic institutions to enhance IPR services.

References :

[1] <https://tifac.org.in/index.ph>

Patent databases

The Patent databases serve various needs in the field of intellectual property, from basic searches to advanced analytics, catering to researchers, inventors, and legal professionals alike.

Table 1 Patent Databases

Database Name	Description
Indian Patent Advanced Search System (InPASS)	<ul style="list-style-type: none"> • InPASS was launched on February 27, 2015, as an upgrade to the previous Indian Patent Information Retrieval System (IPAIRS), which has since been withdrawn. • A comprehensive database for searching Indian patents, providing bibliographic information. • InPASS supports the use of wildcards (e.g., ?) and Boolean operators (AND, OR, NOT), enhancing search precision.
PATENTSCOPE	<ul style="list-style-type: none"> • WIPO's global patent search system, allowing access to international patent applications filed under the PCT. • Contains 100 million patent documents from more than 75 regional and national patent offices. • Major national collections include Canada, China, European Patent Office, Japan, Korea, Russia, the U.K and U.S.
Google Patents	<ul style="list-style-type: none"> • A user-friendly search engine for patents, covering multiple jurisdictions worldwide. • Google Patents indexes more than 18 million patent documents published worldwide including full-text data from major offices such as the USPTO, EPO, JPO, KPO, WIPO, and CNIPA. • Google Patents also offers the ability to search within Google Scholar and Books collections for non-patent literature using the CPC scheme.
USPTO (United States Patent and Trademark Office) U.S. Patent Assignment Database	<ul style="list-style-type: none"> • Official database for U.S. patents, offering search capabilities for various patent documents. • Contains more than 11 million U.S. patents issued from 1790 to the present. Updated daily.
Espacenet	<ul style="list-style-type: none"> • Developed by the European Patent Office (EPO) together with its member states. • The largest public patent database on the Internet • Contains 100 million patent documents from more than 90+ countries including Canada and the U.S., plus 2 million records for non-patent literature cited in EPO search reports.

Pateststate	<ul style="list-style-type: none">• Pateststate is an Indian online database of Council of Scientific & Industrial Research (CSIR), -granted patents along with new inventions being protected. The database contains bibliographic details of patents which can be searched by Simple search or Advance search. Alternatively, the Patent database can be browsed by subject categories.
Canadian Patent Database	<ul style="list-style-type: none">• Maintained by Canadian Intellectual Property Office (CIPO).• Two million Canadian patents from 1869 to the present.• Full-text documents are available and is updated weekly
DEPATISnet	<ul style="list-style-type: none">• Produced by the German Patent and Trademark Office (DPMA).• It covers patent documents from more than 90 countries including Canada and the U.S.
JP-PlatPat	<ul style="list-style-type: none">• The official database of the Japan Patent Office (JPO).• Contains Japanese patents, utility models and designs from 1922 to the present.
Orbit Intelligence	<ul style="list-style-type: none">• A professional patent search tool offering extensive databases and analytical capabilities on payment basis.

5.2 Geographical Indications



Geographical Indications (GIs) are vital in protecting the unique qualities and reputation of products linked to specific regions. In India, GIs are governed by the **Geographical Indications of Goods (Registration & Protection) Act, 1999**, and the associated rules established in 2002.

What is a geographical indication?

A **Geographical Indication** is a sign used on products that originate from a specific geographical area, where the quality, reputation, or other characteristics of the goods are essentially attributable to that location. For instance, products like **Darjeeling Tea** and **Basmati Rice** are recognized for their unique attributes linked to their geographical origins.

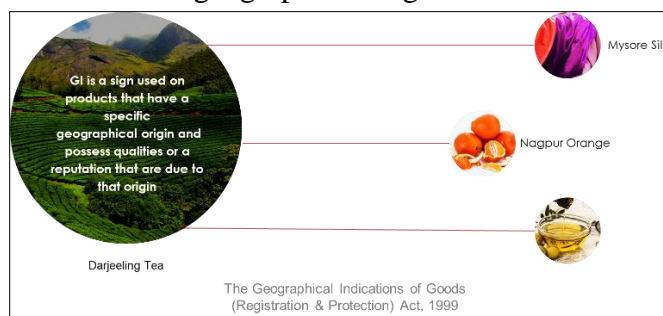


Figure 1 Geographical Indication

India's rich cultural heritage is reflected in its diverse range of GIs. The framework established under the Geographical Indications Act not only protects local producers but also promotes economic sustainability by enhancing the marketability of unique regional products. As awareness grows, so too does the potential for expanding India's presence in global markets through its distinctive geographical indications.

Legal Framework:

- **Acts and Regulations:** The GI framework in India is primarily governed by the **Geographical Indications of Goods (Registration & Protection) Act, 1999**, which provides a structured approach to registration and protection.
- **Administration:** The administration of GIs falls under the Office of CGDPDTM, which operates under DPIIT within the Ministry of Commerce and Industry.

Rights of GI Holders:

GI holders possess several rights, including:

- The ability to **gift, sell, transfer, or license** their GI products.
- The right to take legal action against unauthorized use or infringement of their GI.

Validity and Renewal:

The validity of a GI registration is typically **10 years**, with provisions for renewal for additional periods of **10 years** each. This ensures ongoing protection as long as the product maintains its geographical association.

Prohibition of registration of certain geographical indications:

The registration of certain geographical indications (GIs) in India is subject to specific prohibitions as outlined in the Geographical Indications of Goods (Registration and Protection) Act, 1999.

What are the reasons for refusal of a Geographical Indication (GI) application?

1. **Contradiction to Existing Laws:** Any GI that conflicts with current laws cannot be registered.
2. **Scandalous or Obscene Matter:** GIs containing scandalous or obscene content are prohibited.
3. **Offensive to Societal Sentiments:** Any indication likely to offend societal sentiments is not eligible for registration.
4. **Generic Names or Disused Indications:** GIs that are generic names or have ceased to be protected in their country of origin cannot be registered. This includes indications that have fallen into disuse.
5. **Religious Sensitivities:** Any GI that could hurt the religious susceptibilities of any class or section of citizens in India is barred from registration.
6. **False Representation of Origin:** GIs that, while literally true regarding their geographical origin, mislead consumers into believing that the goods originate from a different territory or locality are also prohibited [1][2][4].

These regulations aim to protect consumers and maintain the integrity of geographical indications by ensuring that only those that genuinely represent their origins and do not offend societal norms are registered [3][6].

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- [4]<https://aishwaryasandeep.wordpress.com/2022/06/17/prohibition-of-registration-of-certain-geographical-indications/>
- [5] <https://blog.ipleaders.in/geographic-indication-law-in-india/>
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- [7] https://www.indiacode.nic.in/handle/123456789/1981?view_type=browse

International Treaties:

India's GI system aligns with international agreements administered by WIPO, including:

- The TRIPS Agreement for governing registration systems for obtaining protection
- The **Lisbon Agreement** for protecting appellations of origin.

Ownership and Registration:

Ownership of registered GIs can be held by:

- Producers as a group or cooperative society.
- Associations representing producers.
- In some cases, government bodies.

List the examples of GIs in India.

As on date 16th March 2024, India has registered 573 **GIs**, with notable examples including:

- **Mysore Silk** from Karnataka
- **Kashmir Pashmina** from Jammu & Kashmir
- **Banaras Sarees** from Uttar Pradesh
- **Tirupati Laddu** from Andhra Pradesh etc

List the various categories under which GIs are classified.

GI products are classified under various categories such as:

1. Handicrafts
2. Agricultural products
3. Foodstuffs
4. Alcoholic beverages

What are the distinct types of GIs?

1. **Generic GI**: Refers to a product name that has become widely used and synonymous with its geographical origin, often losing its exclusive association with the original region. For instance, "Camembert cheese" is commonly associated with a specific region in France but may also be used generically in other contexts.

Some of the **examples of Generic GIs** are listed below,

- a) **Basmati Rice**: Originally a GI specific to certain regions in India and Pakistan, it is sometimes used generically in other countries to describe long-grain aromatic rice.
- b) **Darjeeling Tea**: While protected in India, "Darjeeling" is sometimes used generically to describe similar teas abroad.
- c) **Alphonso Mango**: Associated with Maharashtra, India, but the term is often used generically to describe mango varieties with similar characteristics.
- d) **Mysore Silk**: Known for its origin in Karnataka, but sometimes misused to describe any silk of high quality.

2. **Homonymous GI:** Refers to cases where two or more products share similar or identical names but originate from different geographical areas. For instance, "Rioja wine" can refer to wines produced in Spain as well as Argentina, despite their distinct origins.

Some of the **examples of Homonymous GIs** are listed below,

- a) **Nagpur Orange:** Refers to oranges from Nagpur in Maharashtra, but "Nagpur" might also be associated with other products (e.g., oranges from regions with similar names).
- b) **Kolhapuri Chappals:** Refers to leather footwear from Kolhapur, Maharashtra, but similar names are sometimes used for chappals made in other regions.
- c) **Banaras Saree:** Traditionally from Varanasi, Uttar Pradesh, but the term is occasionally used for similar sarees from other places with "Banaras" in their name.
- d) **Kashmir Pashmina:** Refers to high-quality wool from Kashmir, India, but similar terms like "Pashmina" are sometimes used generically for shawls made in other regions.

Compare Geographical Indications (GIs) & Appellations of Origin (AOs)

Understanding the differences between GIs and AOs is essential for grasping how these terms function in the context of product protection and marketing. Here's a detailed comparison:

Table 2 Comparison between GI and AO

Criteria	Geographical Indication (GI)	Appellation of Origin (AO)
Definition	A sign indicating products with specific geographical origins, possessing qualities or reputation linked to that location.	A specific type of GI that denotes products whose quality or characteristics are significantly influenced by their geographical environment.
Connection to Geography	May rely on one or more characteristics associated with the geographical origin; does not require all production to occur in that area.	Requires a strong connection between the product and its geographical area, including both raw materials and processing occurring in that area.
Scope of Protection	Provides broader protection; may have less stringent requirements compared to AOs.	Offers a higher level of protection with strict standards regarding production methods and quality control.
Examples	Darjeeling tea (from the Darjeeling region in India).	Champagne (from the Champagne region in France).

5.3 New Developments in IPR

5.3.1 Administration of Patent System

The administration of the patent system in India operates under the Department for Promotion of Industry and Internal Trade (DPIIT). DPIIT is a department under the **Ministry of Commerce and Industry** of the Government of India. The Controller General of Patents, Designs & Trade Marks (CGPDTM) an office under the **DPIIT** located at Mumbai. The organizational chart of CGPDTM is depicted in Figure 2. The Head Office of the Patent office is at Kolkata and its Branch offices are located at Chennai, New Delhi and Mumbai. The Trade Marks registry is at Mumbai and its Branches are located in Kolkata, Chennai, Ahmedabad and New Delhi. The Design Office is located at Kolkata in the Patent Office. The Offices of The Patent Information System (PIS) and National Institute of Intellectual Property Management (NIIPM) are at Nagpur. The Controller General supervises the working of the Patents Act, 1970, as amended, the Designs Act, 2000 and the Trade Marks Act, 1999 and also renders advice to the Government on matters relating to these subjects. To protect the Geographical Indications of goods a Geographical Indications Registry has been established in Chennai to administer the Geographical Indications of Goods (Registration and Protection) Act, 1999 under the CGPDTM.

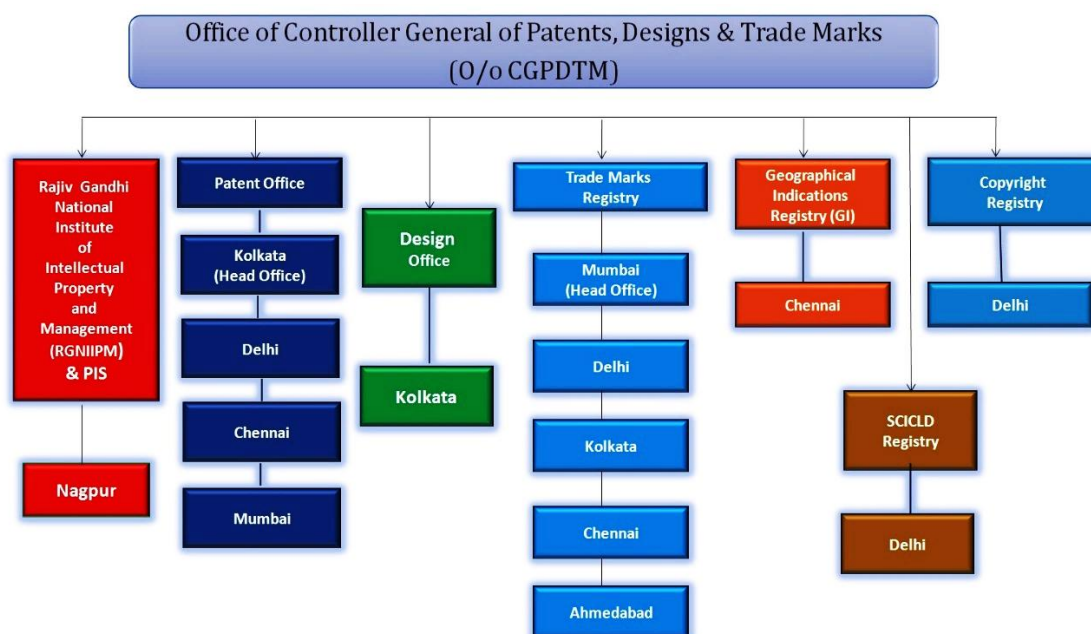


Figure 2 Organizational Structure of CGPDTM
(With a flowchart explain the organizational structure of CGPDTM)

Controller General of Patents, Designs & Trademarks (CGPDTM): The head of the Indian Patent Office, responsible for overseeing the administration of patents, designs, trademarks, and geographical indications.

Staff Composition: The Indian Patent Office employs 667 Group-A Gazetted officers, including: 526 Patent Examiners, 97 Assistant Controllers, 42 Deputy Controllers, 1 Joint Controller and 1 Senior Joint Controller.

Explain the recent reforms and highlights of patent system in India.

- 1. IPR Policy 2016:** Introduction of a comprehensive Intellectual Property Rights policy to enhance innovation and protect IP.
- 2. Expedited Examination Process:** Special provisions for startups, small entities, MSMEs, women entrepreneurs, government bodies, and educational institutions to facilitate quicker processing.
- 3. Fee Reductions:** Filing fees for eligible applicants have been significantly reduced (e.g., from ₹8,000 to ₹1,600).
- 4. Certificates for Inventors:** Issuance of 'Certificate of Inventorship' to recognize inventors' contributions in patented inventions.
- 5. Grace Period Provisions:** Streamlined process for claiming benefits under Section 31 with the introduction of Form 31.
- 6. Renewal Fee Discounts:** A 10% reduction in renewal fees if paid in advance electronically for a minimum period of four years.
- 7. Frequency of Filing Statements:** The requirement to file statements of working of patents (Form 27) has been changed from annually to once every three financial years, with provisions for condoning delays.

The Indian patent system is continuously evolving through administrative reforms aimed at enhancing efficiency and accessibility. These changes reflect India's commitment to fostering innovation while ensuring robust protection for intellectual property rights.

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5.3.2 IPR of Biological Systems

IPR related to biological systems encompass a wide range of innovations, including microorganisms, plant varieties, animal breeds, genetic sequences, and more. Since the mid-1970s, IPR systems have evolved to protect these unique biological resources, which are crucial for advancements in life sciences. The complexity of these resources necessitates a tailored approach to IPR that spans multiple legal frameworks.

Explain the types of Biological Resources under IPR.

Biological resources that are subject to IPR include:

1. **Microorganisms:** Bacteria, fungi, and other microscopic life forms.
2. **Plant Varieties:** New or distinct plant species developed through breeding.
3. **Animal Breeds:** Specific strains of livestock or companion animals.
4. **Genetic Sequences:** DNA and RNA sequences that can be patented under certain conditions.
5. **Molecular Events:** Biological processes and interactions at the molecular level.
6. **Plasmids and Vectors:** Tools used in genetic engineering to transfer genetic material.

These resources intersect with various branches of IPR law, such as patents, trade secrets, and copyright, creating a multifaceted legal landscape that must address both innovation and ethical considerations [1][2][3].

Explain the challenges and controversies of Biological Resources.

There are ongoing debates about how to reconcile the protection of biodiversity with intellectual property rights, especially in the context of bioprospecting and the use of genetic resources.

Bioprospecting is defined as a systematic and organized search for useful products derived from bioresources including plants, microorganisms, animals, etc., that can be developed further for commercialization and overall benefits of society.

The application of IPR to biological resources has sparked significant debate, particularly regarding:

1. **Biopiracy:** The appropriation of indigenous knowledge and biological materials without appropriate compensation or recognition. This raises ethical concerns about the rights of local populations to their traditional knowledge [1].
2. **TRIPS Agreement vs. CBD:** The Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement and the Convention on Biological Diversity (CBD) often conflict. TRIPS promotes strong patent protections that can undermine the rights of countries over their biological resources, while the CBD emphasizes sovereign control and equitable sharing of benefits derived from biodiversity [2][4].
3. **Patenting Issues:** Legal challenges have emerged around the patentability of natural products versus modified organisms. For instance, while cDNA (complementary DNA) can be patented due to its synthetic nature, natural genes generally cannot be patented as they are considered products of nature [1].

As IPR continues to evolve in response to advancements in biotechnology and life sciences, it is imperative that stakeholders engage in ongoing dialogue to balance innovation with ethical considerations and respect for traditional knowledge systems.

Patentability Scope for Biological Systems

The IPR regime for biological systems in India is governed by multiple laws, international agreements, and guidelines that regulate the protection of biological resources, innovations, and traditional knowledge. The scope of patentability for biological systems is defined under **Section 3 of the Indian Patent Act 1970**.

Explain the eligible Biological Inventions for patent.

- 1. Biological Materials:** Inventions involving biological materials, such as living organisms (plants, animals, microorganisms), and their constituent elements (e.g., DNA, genes) are generally eligible for patent protection, provided they meet the criteria of **novelty, utility, and non-obviousness**.
- 2. Biotechnological Products and Processes:** This includes products derived from biotechnological processes (e.g., recombinant proteins, monoclonal antibodies) and methods utilizing biological materials (e.g., fermentation processes, breeding methods).

Explain the prohibited Biological Inventions for patent.

Generally, the plants, animals, and biological processes for their production are not patentable. The following are the biological inventions prohibited for patent,

- 1. Human Body and Genetic Material:** The human body at various developmental stages cannot be patented. Additionally, processes for cloning humans or modifying human germline genetic identity are excluded from patentability.
- 2. Essentially Biological Processes:** Many jurisdictions exclude "essentially biological processes" for producing plants or animals from patentability. For example, in Europe, plants and animals obtained exclusively through such processes cannot be patented.
- 3. Natural Products:** While isolated elements from the human body or naturally occurring substances may be patentable if they have been modified or isolated through technical processes, naturally occurring forms without modification are typically not eligible for patent protection.

Briefly explain the Key Legislation on Biological Resources in India.

- 1. The Biological Diversity Act - 2002**, regulates the use of biological resources and associated traditional knowledge.
- Plant-related inventions are generally non-patentable under the Indian Patent Act, they are protected under the **Protection of Plant Varieties and Farmers' Rights (PPVFR) Act, 2001** PPVFR Act, 2001.
- 3. Geographical Indications (GI) Act, 1999** protects products that have a specific geographical origin, including biological and agricultural products.
- 4. Traditional Knowledge Digital Library (TKDL)** The Traditional Knowledge Digital Library (TKDL) is an initiative by India to protect its rich biological resources and associated traditional knowledge from misappropriation at international patent offices. Indigenous communities heavily rely on these biological resources for healthcare and

livelihood, making them vulnerable to exploitation due to documentation in ancient and regional languages. The turmeric patent case underscored the need for a proactive system like TKDL to safeguard India's biological resources and traditional knowledge globally [7].

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5.3.3 IPR of Computer Software:

Inventions related to computer software are generally not patentable in India due to the exclusion of computer programs per se under Section 3(k) of the Indian Patent Act 1970. However, certain Computer-Related Inventions (CRIs) may qualify for patent protection if they meet specific criteria, such as:

- Hardware-software integration.
- Demonstrable technical effect.
- Industrial applicability.

However, Computer programs and software can be protected under the Copyright Act 1957 of India.

Examples of Patentable CRIs:

- Improved computing devices or systems.
- Innovative methods of data processing with specific hardware implementations.
- Software controlling industrial machinery or medical devices.
- AI-based systems or machine learning algorithms applied to technical problems (e.g., image processing, speech recognition).
- Blockchain systems integrated with hardware for secure transactions.

This framework ensures a balanced approach, promoting innovation while safeguarding traditional knowledge, biodiversity, and technological advancements.

How does the Copyright Act, 1957 specifically protect software in India?

The Copyright Act, 1957 plays a vital role in protecting computer software in India by recognizing it as a literary work and providing comprehensive rights to authors. This legal framework not only safeguards the interests of software creators but also encourages innovation within the industry by ensuring that original works are protected from unauthorized use.

Here are the key aspects of how the Act specifically protects software:

Definition of Software: Under Section 2(o) of the Copyright Act, software is explicitly defined as a form of "literary work," which includes computer programs, tables, and compilations such as databases. This legal recognition ensures that software developers can claim copyright over their creations.

Computer Program: Section 2(ffc) further defines a "computer programme" as a set of instructions expressed in various forms, including machine-readable mediums. This broad definition encompasses both source code (human-readable) and object code (machine-readable), ensuring that both forms are protected under copyright law.

Scope of Protection

The protection provided by the Copyright Act extends to several aspects of software:

1. **Source Code:** The original code written by programmers is protected against unauthorized reproduction and distribution.
2. **Object Code:** The compiled version of the source code, which is in binary form and directly usable by computers, is also covered under copyright protection.
3. **Overall Structure:** The general layout and organization of the software can be protected, which includes the graphical user interface (GUI) and other design elements²³.

What are the Rights Granted to Authors of computer software?

The Copyright Act grants several exclusive rights to authors of computer software:

1. **Reproduction Rights:** Authors have the right to reproduce their work in any material form, including storage on electronic media.
2. **Distribution Rights:** Authors can issue copies to the public and control how their work is disseminated.
3. **Adaptation Rights:** Authors can create derivative works or adaptations based on their original software.
4. **Public Performance Rights:** Authors can perform their work publicly if applicable⁴⁵.

Duration of Protection

The duration of copyright protection for software lasts for the lifetime of the author plus an additional 60 years from the beginning of the calendar year following the author's death. This extended protection period aims to incentivize creativity and innovation in software development.

Infringement and Enforcement

Copyright infringement occurs when any rights granted to the copyright owner are exercised without authorization. Key forms of infringement relevant to software include:

1. Unauthorized copying or distribution of source or object code.
2. Creation of derivative works without permission.

To combat these infringements, copyright holders can seek remedies through legal action, which may include injunctions against further infringement and monetary damages.

What is the different software piracy remaining a significant concern in India.

1. **End User Piracy:** Installing licensed software on multiple computers beyond what is allowed.
2. **Hard Disk Loading:** Pre-installing unauthorized copies of software on computers before sale.
3. **Software Counterfeiting:** Duplicating and selling software that closely resembles genuine products.
4. **Internet Piracy:** Distributing software online without authorization [8][9].

Explain the steps for Copyright Registration for computer software in India?

To register copyright for computer software in India, the following steps are typically involved:

1. **Application Filing:** Apply detailing both the source code (kept confidential) and object code (published) along with proof of identity and work description.
2. **Publication:** The copyright office publishes the source code in their diary for public viewing for 30 days.
3. **Objection Handling:** If no objections are raised during this period, the application proceeds; otherwise, a hearing is scheduled.
4. **Examination:** The application is examined for errors, and if accepted, copyright is granted [3][9].

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5.4 Traditional Knowledge Case Studies

5.4.1 Understanding Traditional Knowledge and Traditional Cultural Expressions

Traditional knowledge refers to the wisdom, skills, innovations, and practices passed down through generations within indigenous and local communities. This knowledge often encompasses fields such as medicinal practices, sustainable agriculture, environmental management, and craftsmanship.

Traditional cultural expressions, on the other hand, refer to the tangible and intangible forms in which traditional knowledge is expressed. These can include music, dance, art, design, and handicrafts, which embody the cultural identity of a community.

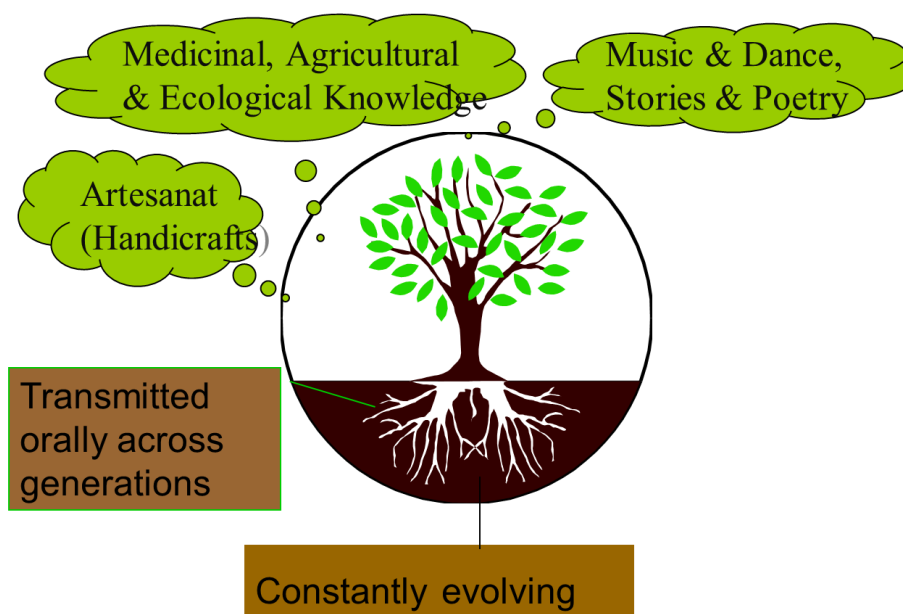


Figure 3 Traditional knowledge and cultural expressions

Give examples of traditional knowledge and cultural expressions.

1. The medicinal knowledge indigenous communities have about the use of plants.
2. Traditional songs, dances, and designs that represent the cultural heritage of a group.
3. Handicrafts that reflect both the traditional methods of creation and the cultural meanings they convey.

Explain the challenges for Traditional Knowledge and cultural expressions with Intellectual Property Systems.

Traditional knowledge and cultural expressions often face difficulties in being recognized and protected under the current intellectual property (IP) system. This is due to the mismatch between the criteria of IP laws and the nature of traditional knowledge, which typically does not meet the following requirements:

- Copyright requires originality, fixation, and identifiable authorship, which is difficult to apply to collective and orally transmitted knowledge.
- Patent law necessitates novelty and inventive steps, which can be challenging for traditional knowledge that is based on generations of cultural practices.

Despite these challenges, intellectual property law can still be leveraged to protect and promote traditional knowledge and cultural expressions in innovative ways. The following case studies illustrate this.

5.4.2 Case Studies in Traditional Knowledge and Intellectual Property Protection**Case 1: Aboriginal Community in Australia and Herbal Medicines**

In Australia, an Aboriginal community partnered with a university to develop a pain-relieving drug based on traditional herbal remedies. They successfully protected the resulting drug through patent law, ensuring that the community benefitted from its commercialization.

Case 2: Traditional Farmers in Peru and Trademarks

Farmers in Peru, known for cultivating a distinct type of potato prized for its quality, began using trademarks to promote their product. This helped them command higher prices and protect their unique agricultural practices.

Case 3: Copyright Reform in Ghana to Protect Textile Designs

In Ghana, the government reformed copyright laws to prevent companies from copying fabric designs developed by specific ethnic groups, preserving the traditional cultural expressions embedded in these textiles.

Case 4: The Kuna People of Panama and the "Mola" Textile

The Kuna people of Panama, known for their hand-crafted textile work called "mola," have seen efforts to protect this traditional cultural expression from unauthorized use, ensuring the recognition of their artistic heritage.

5.4.3 The Kani Tribe and the Development of Jeevani Drug

The Kani tribe, a nomadic people living in the Agasthyamalai hills of India's Western Ghats, have a long history of utilizing local plants for medicinal purposes. One notable example is their knowledge of the *Arogyapacha* plant (*Trichopus zeylanicus* ssp. *Travancoricus*), which has remarkable energy-boosting properties.



Figure 4 Sowing the Kani tribe, Arogyapacha leaves and the Jeevani Product form Arogyapacha

Explain the significance of the Kani tribe's traditional knowledge of medicinal plants and its contribution to modern scientific research.

The Kani tribe, living in the Agasthyamalai hills of India's Western Ghats, possess extensive traditional knowledge of local plants used for medicinal purposes. One such plant, Arogyapacha (*Trichopus zeylanicus*), was particularly significant due to its energy-boosting properties. This knowledge led to a crucial collaboration between the tribe and researchers, contributing to the discovery of Arogyapacha's medicinal potential. Through the Kani tribe's guidance and expertise, the researchers were introduced to the plant, which was subsequently studied for its health benefits, highlighting the importance of traditional knowledge in modern scientific research.

1. Describe the circumstances under which the Kani tribe's knowledge of the Arogyapacha plant was discovered by Dr. Pushpangadan and his research team.

In December 1987, Dr. Pushpangadan and his team from the **Jawaharlal Nehru Tropical Botanical Garden and Research Institute (JNTBGRI)** were on an ethnobotanical expedition in the Western Ghats. During their journey, the Kani tribe served as guides through the rugged terrain, consuming small black fruits from a local plant. The researchers observed that the Kani guides showed no signs of fatigue, unlike the researchers themselves. Upon sampling the fruits, the team experienced an immediate surge in energy, sparking their curiosity about the source of this vitality. After persistent inquiry, the Kani guides revealed the plant, Arogyapacha, which was then studied for its medicinal properties.

2. What were the key medicinal benefits of Arogyapacha that were discovered through extensive research, and how did these findings contribute to the field of ethnobotany?

Over eight years of research, the team at JNTBGRI discovered that Arogyapacha (*Trichopus zeylanicus*) possessed multiple health benefits. These included **anti-stress properties, immune**

system stimulation, reduction of fatigue, and potential cancer-fighting abilities. This discovery underscored the value of **ethnobotany**, the scientific study of the relationship between people and plants and demonstrated how traditional knowledge could lead to the identification of new, bioactive compounds with significant therapeutic potential.

3. Analyze the ethical implications of the collaboration between the Kani tribe and the researchers in the context of traditional knowledge and intellectual property rights.

The collaboration between the Kani tribe and the researchers raised important ethical considerations regarding the use of traditional knowledge. While the Kani tribe shared valuable knowledge of Arogyapacha, the researchers recognized the need for equitable benefit-sharing with the tribe. This led to the establishment of a benefit-sharing agreement, ensuring that the Kani people would receive financial compensation for their contribution. The case emphasizes the need for intellectual property laws and ethical frameworks that protect the rights of indigenous communities and ensure they benefit from the commercialization of their traditional knowledge.

4. How did the Kani tribe's knowledge of Arogyapacha contribute to Jeevani's development, and how was it protected?

The Kani tribe's knowledge of Arogyapacha directly contributed to the development of Jeevani, a herbal product derived from the plant's energy-boosting properties. Recognizing the significance of the tribe's traditional knowledge, Dr. Pushpangadan and his team ensured that the Kani people benefited from the commercialization of Jeevani. They filed a patent in 1994 for the production process of Jeevani and entered into a licensing agreement with **Arya Vaidya Pharmacy Ltd. (AVP)** in 1995. Additionally, JNTBGRI established a benefit-sharing agreement with the Kani tribe, ensuring financial compensation for their role in the discovery. This collaboration underscores the importance of protecting traditional knowledge within intellectual property systems.

5. Explain the process of commercialization of Jeevani Drug. OR

Explain the process of benefit sharing to Kani Tribe's from Jeevani Drug.

1. Recognizing the Value of Kani Tribe's Traditional Knowledge:

Dr. Pushpangadan and his team acknowledged the significant contribution of the Kani tribe's traditional knowledge in discovering the medicinal properties of the Arogyapacha plant. They understood the importance of ensuring the Kani people benefited from the commercialization of this knowledge.

2. Patent Filing in 1994:

In 1994, the Jawaharlal Nehru Tropical Botanical Garden and Research Institute (JNTBGRI) filed a patent for the production process of Jeevani, a herbal product derived from Arogyapacha. This step protected the intellectual property (IP) surrounding the plant's use in health and wellness products.

3. Licensing Agreement in 1995:

In 1995, JNTBGRI entered into a licensing agreement with Arya Vaidya Pharmacy Ltd.

(AVP), a pharmaceutical company. The agreement allowed AVP to manufacture and sell Jeevani for a seven-year term, with JNTBGRI receiving a licensing fee of **US\$50,000 (₹1,600,000)** for this arrangement.

4. No Explicit Mention of the Kani Tribe in the Patent:

While the patent for Jeevani did not specifically reference the Kani tribe, Dr. Pushpangadan and JNTBGRI recognized the crucial role the Kani people played in identifying the plant's medicinal benefits. This led to their commitment to share the commercial benefits with the tribe.

5. Establishment of a Trust for Benefit Sharing:

In November 1997, with JNTBGRI's help, a trust was formed consisting of nine Kani tribal members to manage and oversee the distribution of benefits. The trust ensured that the Kani tribe received their rightful share of the profits generated from the commercialization of Jeevani.

6. First Payment in 1999:

By March 1999, the Kani tribe received their first payment of **US\$12,500 (₹5,43,750)** from the benefit-sharing agreement. This was a direct result of the profits made from Jeevani and marked the beginning of ongoing financial support for the community.

6. Explain the Global Recognition and Success of the agreement between JNTBGRI and Kani Tribe.

The benefit-sharing agreement between JNTBGRI and the Kani tribe has been internationally recognized as a model for other such agreements. In 2002, JNTBGRI received the United Nations Equator Prize for its work with the Kani people, and the United Nations Environment Program (UNEP) and the World Trade Organization (WTO) praised the agreement for its alignment with the guidelines of the United Nations Convention on Biological Diversity.

In 2006, the agreement evolved further when the Kani tribe formed a Business Management Committee (BMC). The BMC negotiated more favorable terms for the benefit-sharing arrangement, including an increase in the licensing fee to **US\$52,000 (₹23,40,000)** and an increase in royalty payments from 2% to 4%. These adjustments reflect the increasing success and financial benefits for the Kani tribe.

7. What are the impacts of benefit sharing from Jeevani Drug to Kani Tribe?

The benefit-sharing agreement has provided the Kani community,

1. with financial support for education, healthcare, and development.
2. a mutually beneficial partnership with researchers (JNTBGRI).
3. in recognizing and protecting their knowledge through IP systems, ensuring fair compensation and cultural preservation.
4. a cooperative approach of building trust, encouraging resource sharing, and setting an example for other communities worldwide.

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5.5 IPR and IITs: Licenses, Licensing of related patents

The Indian Institutes of Technology (IITs) play a pivotal role in fostering innovation and protecting the IP generated by their faculty, students, and researchers. Each IIT has established an Intellectual Property Rights (IPR) cell dedicated to managing and promoting the intellectual assets created within the institute. To enhance the focus on intellectual property, the Ministry of Human Resource Development has implemented several initiatives, including the establishment of five IPR Chairs across various IITs under the **Intellectual Property Education, Research and Public Outreach (IPERPO)** scheme.

5.5.1 IPR Policies of IITs

The Indian Institutes of Technology (IITs) have established various Intellectual Property Rights (IPR) policies to promote innovation and protect the intellectual creations of their faculty, students, and researchers. Here's an overview of the IPR policies from some of the IITs:

1. IIT Delhi

- a) **Foundation for Innovation and Technology Transfer (FITT):** IIT Delhi manages its IPR through FITT, which oversees the entire process of intellectual property management. This includes conducting analyses, processing invention disclosures, and managing IP registrations.
- b) **Types of Protection:** The policy covers patents, copyrights, trademarks, and industrial designs.
- c) **Objectives:** The policy aims to foster creativity, safeguard inventor rights, and facilitate technology transfer while ensuring compliance with legal standards[2][4][5].

2. IIT Roorkee

- a) **IPR Policy Framework:** The IPR policy at IIT Roorkee provides guidelines for managing intellectual property created by staff and students. It emphasizes academic freedom while establishing a structured approach to IP management.
- b) **Objectives:** The policy aims to promote scientific research, safeguard creator interests, provide legal support against infringements, and create an environment conducive to innovation.
- c) **Coverage:** It encompasses various forms of IP including patents, trademarks, copyrights, and trade secrets[1].

3. IIT Mandi

- a) **IPR Policy Overview:** IIT Mandi's IPR policy is designed to protect the rights of its inventor's, faculty, students, and staff—while promoting an environment conducive to innovation.
- b) **Technology Transfer:** The policy encourages technology transfer by protecting breakthrough technologies developed within the institute.
- c) **Implementation:** The Intellectual Property & Technology Transfer (IP & TT) cell is responsible for implementing the policy and resolving any disputes related to IP rights[3].

4. IIT Bombay

IIT Bombay is known for its **Society for Innovation and Entrepreneurship (SINE)**, which supports tech startups and likely incorporates elements of IP management like those in other IITs.

The IPR policies across these leading IITs share common objectives of promoting innovation while protecting the rights of creators. They provide structured frameworks for managing various types of intellectual property, facilitating commercialization through technology transfer, and ensuring that inventors benefit from their contributions. Each institute tailors its approach to align with its mission of fostering research and development in science and technology.

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Functions of IPR Policies and Cells

5.5.2 The functions of IPR cells at IITs:

The IPR cells at IITs play a vital role in fostering innovation, protecting intellectual property, and promoting research commercialization. Some of their key functions include:

1. **Patent Filing:** Ideas with commercial potential are evaluated, and patents are filed under the institute's name.
2. **Ownership and Revenue Sharing:** Institute retains ownership, and revenue is shared between the institute and inventors.
3. **Support for Commercialization:** Incubators and industry collaborations support technology transfer.
4. **Technology Transfer:** Licensing, startup support, innovation cells, and collaborations with external entities facilitate technology transfer.

5.5.3 Impact of IPR on Research and Innovation

The emphasis on IPR at IITs underscores their commitment to research excellence. Collectively, IITs in India file over 600 patent applications annually, ranking among the top ten applicants in the Scientific Research & Development Organizations community. Each IIT has established dedicated IPR cells to effectively manage these rights, supporting researchers in patenting, protecting, and commercializing their innovations.

5.5.4 Licensing as a Commercialization Strategy

Licensing is a fundamental method for commercializing intellectual property. It involves a legal arrangement where IP owners grant permission to others to use their IP under agreed terms. This strategy offers several benefits to IITs, including revenue generation, supporting further research, and accelerating the translation of research into real-world applications.

General Licensing Process:

1. **Identification:** IITs actively identify innovations with commercial potential through technology scouting, market research, and expert evaluations.
2. **Filing:** Patents are filed in relevant jurisdictions to protect intellectual property rights.
3. **Engagement:** IITs actively engage with industries or startups interested in utilizing patented technology through various channels.
4. **Negotiation:** Terms of licensing agreements, including royalties, duration, exclusivity (exclusive, non-exclusive, field-of-use), and other relevant aspects, are carefully negotiated.
5. **Agreement:** A formal licensing agreement is executed, ensuring compliance with all relevant institutional and legal standards.

The commitment of IITs to intellectual property rights not only protects their innovations but also fosters an environment conducive to research and entrepreneurship. By establishing comprehensive IPR policies and dedicated support structures, IITs contribute significantly to India's innovation landscape while ensuring that creators benefit from their contributions.

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5.6 Patent agents: Registration of patent agents

(Who are Patent Agents? Explain the process of registration of patent agents)

Patent Agents are specialized professionals who assist inventors, businesses, and institutions in navigating the complex process of obtaining and managing patents. They possess a deep understanding of patent law, procedures, and technical subject matter.

Registration process for patent agents in India

To become a registered patent agent in India, individuals must fulfill the following requirements:

1. Eligibility Criteria:

- Educational Qualifications: Hold a bachelor's degree in science, engineering, or technology from a recognized university.
- Age Limit: Be at least 21 years of age.
- Nationality: Be a citizen of India.

2. Application and Registration:

- Submit an application to the Indian Patent Office (IPO) along with the prescribed fees.
- Register for the Patent Agent Examination conducted by the IPO.

3. Patent Agent Examination:

- The examination will be conducted once in every year. The exam typically consists of two written papers and a viva voce examination.
- Written Papers: Cover topics such as the Patents Act, 1970, Patent Rules, 2003, patent drafting, and interpretation.
- Viva Voce: Assesses the candidate's practical knowledge and understanding of patent law and procedures.

4. Registration:

- Candidates who successfully pass the examination and meet all eligibility criteria has to register at the IPO porter to get the Indian Patent agent number issued by IPO and he need to practise before the IPO.
- Their names are entered in the Register of Patent Agents maintained by the IPO.

Explain the Roles and Responsibilities of Patent Agents.

Patent agents play a critical role in the patenting process, leveraging their technical and legal expertise to secure intellectual property rights for inventors and organizations.

An outline of their key roles and responsibilities are as follows:

1. Drafting Patent Applications:

- Prepare detailed and accurate patent applications that clearly and concisely describe the invention and its advantages.
- Ensure compliance with all legal and technical requirements for patent applications.

2. Filing Patent Applications:

- File patent applications with the Indian Patent Office (IPO) and other relevant patent offices worldwide.
- Track the progress of patent applications and respond to any office actions or requests for information.

3. Conducting Prior Art Searches:

- Conduct thorough searches of existing technologies and publications to identify prior art and assess the novelty and inventiveness of an invention.
- This helps determine the patentability of an invention and identify potential challenges during the examination process.

4. Advising Clients on Various IPR Matters:

- Provide expert guidance on a wide range of intellectual property matters, including patent strategy, licensing agreements, infringement litigation, and intellectual property portfolio management.

5. Managing Patent Portfolios:

- Assist clients in managing their patent portfolios, including tracking patent expiration dates, monitoring potential infringements, and ensuring the ongoing protection of their intellectual property rights.

6. Facilitating International Patent Applications:

- Assist clients in filing patent applications in foreign countries through the Patent Cooperation Treaty (PCT) or other international filing routes.
- Navigate the complexities of foreign patent laws and procedures.

7. Associating with Commercializing of IPRs:

- Advise clients on strategies for commercializing their intellectual property, such as licensing agreements, technology transfer, and the formation of spin-off companies.

8. Staying Updated on Legal and Technological Developments:

- Continuously update their knowledge of patent law, regulations, and technological advancements to provide the most effective and up-to-date advice to their clients.

5.7 Introducing Patent databases: WIPO and Google patent database

5.7.1 WIPO Patentscope

WIPO PATENTSCOPE is a comprehensive global patent database maintained by the World Intellectual Property Organization (WIPO). It provides free access to patent documents and information from a wide range of countries and international organizations. It is a vital tool for conducting prior art searches, analysing patent trends, and accessing technological knowledge.

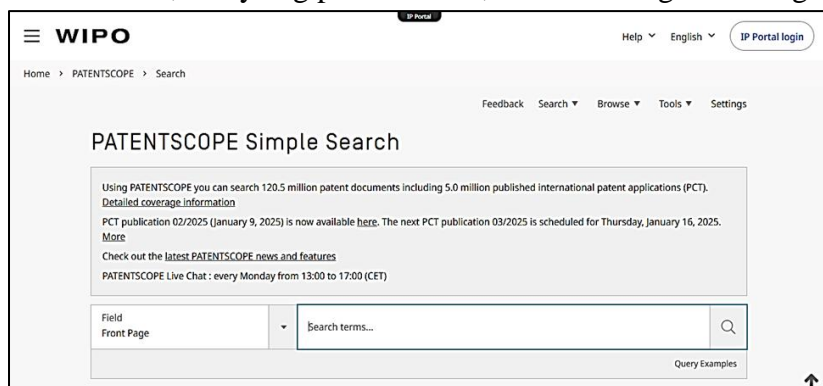


Figure 5 WIPO website: <https://patentscope.wipo.int>

5.7.2 Google patent database

Google Patents is a free, user-friendly platform developed by **Google** that provides access to a vast collection of patent documents and scholarly works. It serves as a valuable resource for conducting prior art searches, exploring innovation trends, and accessing patent information from multiple jurisdictions. The platform is designed to simplify the process of searching and analyzing patent data, making it accessible to inventors, researchers, businesses, and legal professionals.

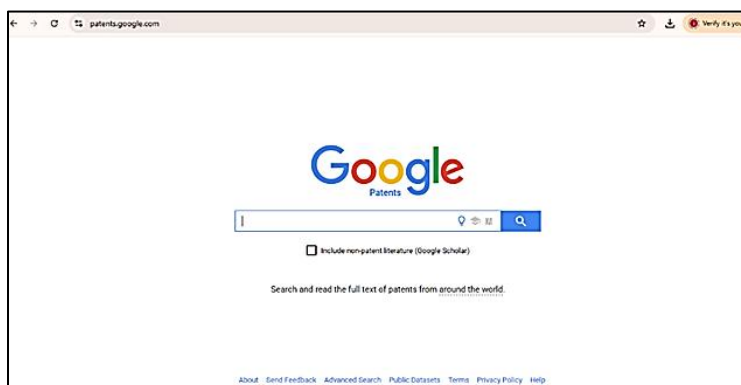


Figure 6 Google Patents website: <https://patents.google.com>.