Chapter 1: PHILOSOPHY AND ETHICS

a) Introduction to Philosophy

Philosophy is fundamentally the pursuit of wisdom. It is an academic discipline that explores fundamental questions about existence, knowledge, values, reason, mind, and language. It encourages critical thinking and systematic inquiry into complex problems.

Key Disciplines of Philosophy:

· **Metaphysics:** The study of reality, existence, and the nature of being.

· **Epistemology:** The study of knowledge, how we acquire it, and its limitations.

· **Aesthetics:** The study of beauty, art, and taste.

· **Logic:** The study of reasoning and argumentation.

· **Ethics (Moral Philosophy):** The study of moral principles, right and wrong conduct, and good and bad character.

b) Origin of Philosophy

Philosophy is often traced back to ancient Greece in the 6th century BCE, with figures like Thales of Miletus. These early thinkers moved away from mythological explanations to seek rational and natural explanations for the world around them, marking the transition from mythos (mythological explanation) to logos (rational explanation). Other major philosophical traditions also arose independently in ancient China (Confucianism, Taoism) and India (Hindu, Buddhist, Jain philosophies).

c) Characteristics of Philosophy

Philosophical inquiry is distinguished by several characteristics that set it apart from other fields of study:

· **Critical and Rational:** It involves reasoned arguments and the critical examination of beliefs, assumptions, and concepts.

· **Comprehensive:** It seeks to understand the whole of reality, not just one specific part (unlike specialized sciences).

· **Reflective and Speculative:** It requires deep thought and contemplation, often leading to non-empirical, abstract theories.

· **Normative:** In areas like ethics, it prescribes standards or rules for human conduct and judgment.

· **Methodological:** It uses logic, deduction, and rigorous argumentation to arrive at conclusions.

d) Common Sense and Philosophy

While both common sense and philosophy deal with everyday life and knowledge, their approaches differ significantly.

· **Common Sense:**

o Based on practical experience, inherited beliefs, and generally accepted notions within a community.

o It is often uncritical, vague, and inconsistent.

o It focuses on immediate, practical solutions.

· **Philosophy:**

o Critically examines the assumptions underlying common sense.

o Aims for clarity, consistency, and systematic understanding.

o It seeks deeper, fundamental truths, even if they contradict practical intuition.

o It subjects concepts like 'truth' or 'goodness' to rigorous scrutiny.

e) Relationship between Philosophy & Science

Philosophy and science are interconnected and historically linked, though they have specialized over time.

· **Historically:** Science (natural philosophy) emerged from philosophy. Key scientific figures like Isaac Newton were once considered "natural philosophers."

· **Philosophy of Science:** Philosophy continues to analyze the foundations, methods, implications, and limitations of science. It asks questions such as: What is a scientific law? What constitutes evidence? What is the limit of scientific knowledge?

· **Science:** Provides empirical data and concrete knowledge about the physical world. Its findings often challenge existing philosophical theories, prompting new philosophical questions.

· **Mutual Benefit:** Science provides material for philosophical reflection, and philosophy ensures the critical, logical rigor required in scientific methodology.

Chapter 2: SCIENTIFIC CONDUCT

a) Integrity and Ethics

Scientific integrity refers to the adherence to professional codes, principles, and practices that ensure the trustworthiness of research. Ethics in science deals with the moral principles that govern a person's or group's behavior, particularly in research and experimentation.

Core Principles of Scientific Integrity:

1. **Honesty:** In all aspects of the research process, including data collection, analysis, and reporting.

2. **Accuracy:** Ensuring results are reported precisely and objectively.

3. **Objectivity:** Striving to avoid bias in experimental design, data analysis, and interpretation.

4. **Openness:** Sharing data, resources, and methods freely with other researchers.

5. **Stewardship:** Responsible use of resources, including funding, personnel, and time.

b) Ethics concerning Science & Research

Research ethics governs the design and conduct of research involving human subjects, animals, or sensitive materials. It ensures that research benefits society while minimizing harm.

Key Ethical Considerations in Research:

· **Informed Consent:** Participants must voluntarily agree to participate after fully understanding the nature, risks, and benefits of the study.

· **Confidentiality and Privacy:** Protecting the identity and data of research participants.

· **Beneficence:** Maximizing potential benefits of the research and minimizing possible harms.

· **Justice:** Ensuring the burdens and benefits of research are distributed fairly across populations.

· **Animal Welfare:** Strict guidelines must be followed to ensure the humane treatment of research animals.

c) Intellectual Honesty & Research Integrity: Scientific Misconducts & Redundant Publications

Intellectual honesty is a necessary foundation for research integrity, demanding truthfulness, transparency, and accuracy in all academic and research work.

Scientific Misconducts: This refers to the violation of ethical standards in scientific research and falls into three primary categories (FFP):

· **Fabrication:** Making up data or results and recording or reporting them.

· **Falsification:** Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

· **Plagiarism:** The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

Redundant Publications (Self-Plagiarism): This involves publishing the same data or results in two or more different journals or publications without full cross-reference or justification. This inflates the scientific record and should be avoided, except in justified cases like republication with translation or in thesis excerpts, provided there is clear disclosure.

d) Selective Reporting and Misrepresentation of Data

These practices undermine the objectivity of science and constitute serious ethical violations.

· **Selective Reporting (Cherry-Picking):** This occurs when a researcher omits or suppresses data that does not support their hypothesis while reporting only the data that does. This biases the overall conclusion.

· **Misrepresentation of Data:** This includes manipulating graphics, charts, or statistics to distort the true meaning of the results. This is a form of falsification aimed at deceiving readers about the strength or direction of the findings. All data representation must be faithful and complete.

Chapter 3: PUBLICATION ETHICS

a) Publication Ethics

Publication ethics is a set of guidelines and professional standards that govern the publication process to ensure transparency, integrity, and fairness in disseminating research findings. It applies to authors, editors, peer reviewers, and publishers.

b) Best Practices/Standards Setting

Adherence to best practices is essential for maintaining trust in the scholarly record.

Best Practices include:

· **Transparency:** Clearly documenting all methods, funding sources, and conflicts of interest.

· **Accountability:** Ensuring all contributors are responsible for the work.

· **Peer Review Integrity:** Maintaining confidentiality and impartiality during the review process.

· **Data Availability:** Making research data available upon request to allow for reproducibility.

· **Timely Correction:** Promptly issuing corrections or retractions when errors or misconduct are discovered.

c) Initiatives & Guidelines: COPE, WAME, etc.

Several international organizations establish and promote ethical standards for academic publishing.

· **COPE (Committee on Publication Ethics):** Provides practical resources, guidance, and a framework for handling issues of misconduct for editors and publishers. It is widely recognized for its flowcharts on addressing common ethical problems.

· **WAME (World Association of Medical Editors):** Focuses on promoting best practices in medical journalism and strengthening the role of medical journal editors worldwide.

· **ICMJE (International Committee of Medical Journal Editors):** Developed "Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals," which includes criteria for authorship.

d) Violation of Publication Ethics

Violations of publication ethics are grave and can lead to severe penalties, including retraction of publications and professional sanctions.

Common Violations:

1. **Plagiarism** (as defined above).

2. **Data Fabrication/Falsification** (as defined above).

3. **Duplicate Submission/Publication:** Submitting the same manuscript simultaneously to multiple journals or publishing the same paper in more than one place.

4. **Improper Authorship:** Including guests or ghost authors (see below).

5. **Failure to Disclose Conflicts of Interest.**

e) Authorship and Contributorship

Authorship acknowledges intellectual contribution and responsibility for a published work. Contributorship acknowledges specific roles in the research process.

ICMJE Authorship Criteria (The most widely accepted standard):

An author must meet *all* four of the following criteria:

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work.

2. Drafting the work or revising it critically for important intellectual content.

3. Final approval of the version to be published.

4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

f) Types of Authorship

Improper authorship practices are a major ethical concern.

· **Guest/Gift Authorship:** Naming someone as an author who did not meet the authorship criteria. This is often done to honor a senior researcher or department head.

· **Ghost Authorship:** Failing to name a person who made substantial intellectual contributions to the research (e.g., a professional writer or data analyst). This is deceptive regarding who is accountable for the work.

· **Order of Authors:** The sequence of authors should be a joint decision of the co-authors and typically reflects the level of contribution, with the first and last authors having particularly significant roles.

g) Conflict of Interest (COI)

A COI exists when professional judgment concerning a primary interest (like research validity) may be influenced by a secondary interest (like financial gain, professional advancement, or personal relationships).

· **Disclosure is Key:** Authors, reviewers, and editors must disclose any potential COI. This does not mean the work is inherently flawed, but it allows readers and editors to judge the results fairly.

· **Financial COI:** Receiving grants, fees, or stock ownership from an organization whose products or interests are discussed in the research.

h) Complaints and Appeals

Journals and publishers must have clear, transparent mechanisms for handling complaints about scientific misconduct, ethical violations, and editorial decisions.

· **Complaints:** Should be directed to the journal editor or publisher and addressed following COPE guidelines.

· **Appeals:** Authors have the right to appeal editorial decisions, particularly rejections, if they believe there was an error in the peer review or decision-making process. The appeal process should be clearly documented by the journal.

i) Predatory Publishers & Journals

These are entities that prioritize self-gain at the expense of scholarship. They lack proper editorial and peer-review processes, often charging publication fees without providing the expected services, thus exploiting the Open Access model.

Identifying Characteristics:

· **Lack of Peer Review:** Very quick acceptance times or no evidence of rigorous review.

· **Spamming:** Aggressively soliciting manuscript submissions via email.

· **No Transparency:** Missing or opaque information on publication fees, location, and archiving policies.

· **Fake Metrics:** Claiming exaggerated or non-existent impact factors or other metrics.

Chapter 4: OPEN ACCESS PUBLISHING

a) Concept of OER (Open Educational Resource)

OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use, repurposing, and redistribution by others.

Key Features of OER (The 5 Rs):

· **Retain:** The right to make, own, and control copies of the content.

· **Reuse:** The right to use the content in a wide range of ways.

· **Revise:** The right to adapt, modify, translate, or change the content.

· **Remix:** The right to combine the original or revised content with other material to create something new.

· **Redistribute:** The right to share copies of the original content, your revisions, or your remixes.

b) Concept of Open License

An open license is a legal instrument that grants the public permission to use copyrighted material for nearly any purpose without the need for a specific, individual request.

· **Creative Commons (CC) Licenses:** These are the most common form of open licenses. They allow creators to select which rights they reserve and which rights they waive.

· **Key CC License Elements:**

o **BY (Attribution):** Requires giving credit to the original creator. (The minimum requirement for almost all open licenses).

o **SA (ShareAlike):** Requires adapted work to be licensed under the same terms.

o **NC (NonCommercial):** Prohibits commercial use of the work.

o **ND (No Derivatives):** Prohibits changes or adaptations of the work.

c) Open Access Publishing

Open Access (OA) is the practice of making peer-reviewed scholarly research available online, free of charge, and free of most copyright and licensing restrictions.

Routes to Open Access:

1. **Gold OA:** Publication in a journal that immediately makes all articles available OA, usually supported by an Article Processing Charge (APC) paid by the author or funder.

2. **Green OA:** Authors publish in a traditional subscription journal but also deposit a version (the pre-print or post-print) of their article in an institutional or subject-based repository.

d) Open Access Content Management

This involves the infrastructure and systems necessary to store, preserve, and provide access to OA content.

· **Institutional Repositories:** Digital archives maintained by universities to collect, preserve, and disseminate their faculty's and students' intellectual output. (Key to the Green OA route).

· **Subject Repositories:** Archives focused on a specific field, such as arXiv for physics or PubMed Central for biomedical literature.

· **Metadata:** OA content relies heavily on high-quality metadata (data describing the content, such as author, title, abstract) to ensure discoverability through search engines and databases.

e) Publication Misconduct: i. Ethical issues in various Disciplines ii. Identification of Publication Misconduct

i. Ethical issues in various Disciplines

Ethical challenges can be specific to certain research areas:

· **Social Sciences:** Concerns often revolve around the confidentiality of human subjects, particularly when dealing with vulnerable populations or sensitive personal data.

· **Medical Research:** Strict adherence to clinical trial protocols, data integrity, and avoiding conflicts of interest with pharmaceutical companies are paramount.

· **Engineering/Computer Science:** Ethical use of technology, avoiding bias in algorithms, and transparency in code development are critical.

ii. Identification of Publication Misconduct

Identifying misconduct often relies on vigilance from editors, reviewers, and the academic community.

· **Image Manipulation:** Tools can detect unacknowledged alterations of photographic data (e.g., western blots or micrographs).

· **Plagiarism Detection:** Software tools (see below) are used to check for textual overlap with existing publications.

· **Statistical Implausibility:** Expert reviewers may flag results that are statistically improbable or inconsistent with the methods described.

· **Whistleblowing:** Individuals (often co-authors or lab members) reporting suspected FFP to an institution or journal.

f) Fabrication, Falsification and Plagiarism (FFP)

FFP represents the core of research misconduct and is distinct from honest error or differences of opinion.

· **Fabrication:** Inventing data or results. This is lying about what was found.

· **Falsification:** Manipulating data or results to support a desired conclusion. This is misrepresenting what was found.

· **Plagiarism:** Stealing the intellectual work of others. This is claiming ownership of someone else's work.

g) Software Tools

Technology plays a crucial role in preventing and detecting research misconduct and facilitating open access.

· **Plagiarism Checkers:** Tools like Turnitin, iThenticate, and Urkund compare a submitted text against a vast database of academic works and web content to identify instances of unoriginal text.

· **Reference Managers:** Software like Zotero, Mendeley, and EndNote help researchers manage citations and generate bibliographies accurately, reducing the risk of citation errors.

· **Data Repositories:** Platforms like Figshare and Zenodo allow researchers to upload, share, and preserve their underlying research data, increasing transparency and reproducibility.

Chapter 5: DATABASE AND RESEARCH METRICS

5.1

a) Indexing Databases

Indexing databases are systems that compile and organize bibliographic information (like titles, abstracts, and author names) from academic journals and conference proceedings. Their primary purpose is to make scholarly literature searchable and discoverable. Examples include specialized databases like PsycINFO for psychology or the broader Web of Science and Scopus.

b) Citation Databases: Web of Science, Scopus, Google Scholar

These databases specifically track the references cited in published works, enabling researchers to measure the impact of articles and authors.

· **Web of Science (WoS):** A highly selective, multidisciplinary platform covering over 21,000 high-quality journals. It is known for its rigorous selection process and is often used for evaluating institutional performance.

· **Scopus:** A large abstract and citation database of peer-reviewed literature, covering over 25,000 journals. It has a broader coverage than WoS, including more journals from outside the Western world.

· **Google Scholar:** A freely accessible web search engine that indexes the full text or metadata of scholarly literature across numerous formats and disciplines. It is the broadest but least curated of the three.

c) Metrics: h-index, G-index, i10 index, Altmetrics

Research metrics are quantitative measures used to evaluate the influence and impact of a researcher, article, or journal.

· **h-index (Hirsch Index):** A metric that attempts to measure both the productivity and citation impact of a scientist or scholar. An h-index of *N* means an author has *N* papers that have each received at least *N* citations.

· **G-index:** Similar to the h-index, but gives more weight to highly cited articles. A g-index of *N* means the top *N* articles have cumulatively received N^2 or more citations.

· **i10-index:** Used exclusively by Google Scholar, it is the number of publications with at least 10 citations. It is a simple measure of productive contribution.

· **Altmetrics (Alternative Metrics):** Metrics that go beyond traditional citation counting to measure the impact of research in the wider social web, including mentions in social media, news outlets, policy documents, and Wikipedia.

d) Understanding Citation Metrics for Quality Research: Impact & Visualization Analysis

Metrics should be used carefully, complementing qualitative assessment (peer review).

· **Impact:** A journal's quality is often assessed using the **Journal Impact Factor (JIF)** (from WoS) or **CiteScore** (from Scopus), which measure the average number of citations received per paper published in that journal over a specific period. These indicate the journal's influence in the field.

· **Visualization Analysis:** Tools like VOSviewer or CiteSpace use citation data to create visual maps of scientific fields, showing relationships between researchers, publications, and keywords. This helps identify emerging trends and influential scholars.

e) Exploring the Citation Network

The citation network is the web of connections created when one paper references another.

· **Forward Citation:** Looking at papers that have cited the paper in question (who is building on this research?).

· **Backward Citation:** Looking at the papers cited by the paper in question (what research led to this paper?).

· **Co-citation Analysis:** Measures how often two documents are cited together by a third document, indicating they are related in content. Exploring this network helps map the intellectual landscape of a research topic.

f) Rules & Tools

Responsible use of metrics is paramount (The "Leiden Manifesto" and "DORA" principles promote this).

· **Rules for Responsible Metrics:** Metrics should support qualitative peer review, recognize disciplinary differences (citation rates vary widely by field), and avoid using single, flawed metrics (like raw JIF) for hiring or promotion.

· **Tools:** Various institutional and public tools calculate metrics automatically, but researchers should use them critically and cross-reference data from multiple sources (WoS, Scopus, Google Scholar) to gain a balanced view of impact.

Chapter 6: UGC Regulations 2018 on Academic Integrity

a) UGC Regulations-Meaning & concept

The University Grants Commission (UGC) of India published the **"Promotion of Academic Integrity and Prevention of Plagiarism in Higher Education Institutions (HEI) Regulations, 2018."** The primary goal of these regulations is to promote academic integrity and deter plagiarism in dissertations, theses, and all other academic and research writings submitted by students and faculty.

Key Concepts of the Regulations:

· **Focus on Deterrence:** The regulations emphasize creating a culture of honesty and responsibility through awareness and institutional mechanisms.

· **Defining Plagiarism:** They provide a clear, legally backed definition of plagiarism for the Indian higher education system.

· **Levels of Plagiarism:** The regulations classify plagiarism into various levels based on the extent of copied material, with corresponding penalties.

b) Legal Provisions (Levels of Plagiarism and Penalties)

The UGC Regulations mandate the establishment of institutional mechanisms to handle plagiarism, including the constitution of a **Departmental Academic Integrity Panel (DAIP)** and an **Institutional Academic Integrity Panel (IAIP)**.

Levels of Plagiarism and Corresponding Penalties (Example for Student Thesis/Dissertation):

· **Level 1 (Similarities above 10% to 40%):** The student shall be asked to withdraw the manuscript and submit a revised one within a stipulated period (usually six months).

· **Level 2 (Similarities above 40% to 60%):** The student shall be debarred from submitting a revised manuscript for a period of one academic year.

· **Level 3 (Similarities above 60%):** The registration of the student for that program shall be cancelled.

Legal Provisions for Faculty: Faculty members found guilty face penalties ranging from manuscript withdrawal and annual increment freezing to even compulsory retirement for severe, repeated Level 3 offenses. The regulations thus provide a clear legal framework and a structured process for addressing academic misconduct in Indian HEIs.

Important questions for full subject:

Chapter 1: PHILOSOPHY AND ETHICS

1. **Fundamental Concepts:** What are the five main branches or Key Disciplines of philosophy, and what fundamental question does each address?

2. **Origin:** Explain the historical transition from *mythos* (mythological explanation) to *logos* (rational explanation) that marked the origin of philosophy in ancient Greece.

3. **Characteristics:** List and briefly explain three distinguishing characteristics of philosophical inquiry (e.g., Critical, Comprehensive, Reflective).

4. **Distinction:** How does the critical and systematic nature of Philosophy contrast with the uncritical, practical nature of Common Sense?

5. **Interdependence:** Describe the reciprocal relationship between Philosophy and Science. How does the Philosophy of Science contribute to scientific practice?

Chapter 2: SCIENTIFIC CONDUCT

1. **Integrity Definition:** Define Scientific Integrity and list the five Core Principles required for ensuring the trustworthiness of research (Honesty, Accuracy, etc.).

2. **Research Ethics:** What are the five Key Ethical Considerations essential for research involving human subjects or sensitive materials (e.g., Informed Consent, Beneficence)?

3. **Misconduct Core:** Define and differentiate clearly between the three primary categories of Scientific Misconduct: Fabrication, Falsification, and Plagiarism (FFP).

4. **Publication Inflation:** Explain the concept of Redundant Publications (Self-Plagiarism) and why this practice is considered an ethical violation.

5. **Data Abuse:** How do the practices of Selective Reporting (Cherry-Picking) and Misrepresentation of Data undermine the objectivity and integrity of scientific findings?

Chapter 3: PUBLICATION ETHICS

1. **Scope of Ethics:** What is Publication Ethics, and who are the four main groups that must adhere to these professional standards?

2. **Standards:** List four essential Best Practices that are required for maintaining trust in the scholarly record (e.g., Transparency, Accountability).

3. **Guidelines:** What is the primary function of international organizations like COPE and WAME in academic publishing?

4. **Authorship Criteria:** According to the ICMJE, what are the four mandatory criteria that an individual must meet to be listed as an author on a publication?

5. **Improper Authorship:** Differentiate between **Guest/Gift Authorship** and **Ghost Authorship**, explaining why each is considered deceptive.

6. **COI:** Define a Conflict of Interest (COI) in the context of research, and explain why full disclosure is a vital ethical requirement.

7. **Predatory Journals:** List three Identifying Characteristics that can help a student distinguish a legitimate scholarly journal from a Predatory Publisher.

Chapter 4: OPEN ACCESS PUBLISHING

1. **OER & 5 Rs:** Define Open Educational Resources (OER) and explain what the "5 Rs" (Retain, Reuse, Revise, Remix, Redistribute) allow users to do with the content.

2. **Open Licenses:** Explain the function of an Open License, and describe the specific restrictions imposed by the **NC** (Non Commercial) and **ND** (No Derivatives) elements of a Creative Commons license.

3. **OA Routes:** Differentiate clearly between the two main Routes to Open Access publishing: **Gold OA** and **Green OA**.

4. **Disciplinary Ethics:** Provide one example of an ethical challenge specific to research conducted in the Social Sciences and one specific to Medical Research.

5. **Misconduct vs. Error:** How are Fabrication, Falsification, and Plagiarism (FFP) fundamentally distinct from simple honest error or differences of opinion?

6. **Detection Tools:** Name two different types of Software Tools used in research integrity and explain their roles in preventing or detecting misconduct.

Chapter 5: DATABASE AND RESEARCH METRICS

1. **Indexing vs. Citation:** What is the primary difference in function between an Indexing Database and a Citation Database?

2. **Database Comparison:** Compare Web of Science (WoS), Scopus, and Google Scholar in terms of their coverage and reputation for selection rigor.

3. **Metrics Definitions:** Define the following research metrics: the **h-index**, the **G-index**, and the **i10-index**.

4. **Altmetrics:** How do Altmetrics differ from traditional citation counting, and what kind of impact do they measure?

5. **Quality Assessment:** Explain how the Journal Impact Factor (JIF) or CiteScore is used to assess the quality or influence of a journal.

6. **Citation Network:** Explain the difference between **Forward Citation** and **Backward Citation** analysis in exploring the research landscape.

7. **Responsible Use:** List two core "Rules for Responsible Metrics" that researchers should follow, as promoted by initiatives like DORA.

Chapter 6: UGC Regulations 2018 on Academic Integrity

1. **Primary Goal:** What is the primary purpose and overall focus of the UGC Regulations 2018 concerning Academic Integrity in Indian Higher Education Institutions (HEIs)?

2. **Institutional Mechanisms:** What two specific institutional panels are mandated by the UGC Regulations to handle and investigate cases of plagiarism?

3. **Legal Provisions:** Describe the specific penalty applied to a student whose thesis or dissertation is found to have Level 2 Plagiarism (similarities above 40% to 60%).

4. **Faculty Penalty:** Give an example of a severe penalty a faculty member could face under the UGC Regulations for engaging in serious or repeated plagiarism.