PROFESSIONAL ETHICS IN ENGINEERING
PART – "A" QUESTIONS

UNIT – I
HUMAN VALUES

1. What are human values?
Values decide the standard of behavior. Some universally accepted values are freedom justice and equality. Other principles of values are love, care, honesty, integrity, self-respect.

2. What are ethical values?
Trustworthiness, respect, responsibility, fairness, caring is ethical values

3. Distinguish values from ethics and culture.
- Values are mainly related to individuals and since they are related to justice, they remain the same for everyone. E.g. Truth, honesty, empathy, self-respect.
- Values do not change from individual. Ethics is common to a group of individuals; group may be religious or professional.
- Cultural community refers to conduct of group. E.g. system of worship, it may differ from society to society, nation to nation or religion to religion

4. What is integrity? [Nov/Dec 2018]
Integrity is the unity of character based on moral values. Consistency in attitudes, emotionsand conduct in relations to morally justified actions and values are also the part of integrity ofindividual. It implies honesty, trustworthiness.
Integrity is the bridge between responsibility in private and professional life.

5. Define work ethics. [Apr/May 2019]
By one's work one cannot harm others. Any worker cannot escape accountability. Worker hasthe moral responsibility to see that no other person's right, private or freedom is impaired ortransgressed.

6. What is service learning? [Nov/Dec 2019][Apr/May 2017]
Service learning tells that one has moral responsibility to increase the desirable effects and todecrease the harmful effects. Any service should increase the desirable result.

7. Mention some civic virtues. [Apr/May 2019]
Good citizen demand civic virtue. It is the principle of not harming the surroundings .it also includes living peacefully, respect for others, protecting the environment and being normally and ethically good.

8. Write short notes on caring and sharing.
- Caring is the essence of moral life. Caring involves feelings, relationship, contends with other persons and protecting others and causing least damage to others.
- Sharing means sharing of feelings, ideas thoughts, resources and profits.
- Sharing is always mutually beneficial. Sharing morally acceptable feelings, materials is a value.

9. What is honesty? [Nov/Dec 2019]

Any human being should imbibe honesty-honesty in acts, honesty in speech and honesty in beliefs. Honesty is the fundamental virtue in human relationship even though in may be difficult to follow some times.

10. What is courage as a value?

Courage implies self-respect and governs confrontations with danger and risk. It is not excessive rashes or cowardice, but it is the middle ground. Taking calculated risks and boldness in facing crises are the hallmarks of courage as a human value. It defines the mental makeup of an individual in taking bold decisions even under adverse situations.

11. Define cooperation.

Co-operation means extending help to others, for a good cause. Co-operation may be through an idea, a suggestion, an assistance or physical work which extends to others for common benefit.

12. Define empathy. [Apr/May 2019]

Empathy means putting self in a position of someone else and thinking as the later andreasoning suitable action.

13. Define spirituality. [Apr/May 2019]

Spirituality raises a man above the materialistic world into a realm where he seeks peace and real happiness

14. Define compromise.
- In a negative sense it means to undetermined integrity by violating one's fundamentalmoral principles.
- In a positive sense, however, it means to settle differences by mutual concessions or to reconcile conflicts through adjustments in attitude and conduct.

15. List out any two aspects of honesty.
- **Truthfulness** – meeting responsibilities concerning truth-telling.
- **Trustworthiness** – Meeting responsibilities concerning trust.

16. Differentiate Self-respect and Self-esteem?
- **Self-respect:** It is a moral concept; refers to the virtue properly valuing oneself.
- **Self-esteem:** It is a psychological concept; means having a positive attitude toward oneself, even if the attitude is excessive or otherwise unwarranted.

17. Write the Objective of professional ethics and human values.
- To understand the moral values to guide the engineering profession.
- Resolve the moral issue.
- Justify the moral judgment.
- Develop a set of attitude, belief and habits.

18. Elements of Work Ethics.
Interpersonal skill Initiative Being dependable Importance of Civic virtue:
      Make them understanding the responsibility, it makes them understand the democratic values and bill of rights Main goal is to produce responsible citizen and active participants in society

19. Difference between Mortality and Ethics.

Mortality	Ethics
Based on customs and tradition.	It is a critical reflection of moral
Concerned with wrong action when done	Concerned with right action when not done
Top Priority is givenbecause damage is high	Less priority & less serious
Example: corruption and crime	Example: belief about manners

20. Characteristics of service learning:
      Linksacademic content and standardPromotes skill associated with team work, community involvement & citizen ship Ability to identify the critical issue in society

21. Write the difference between ethics, moral and values.
      Morality is any concern in right and wrong, with telling between them in order to further right or oppose wrong. "Morals" is either another way to say "morality," or refers to a person's collection of moral bases, drives or principles.
      Ethics is a code of right conduct voluntarily embraced by those of like-mind (philosophical ethics) or like-purpose (e.g. professional ethics)
      The values which he learns in his childhood (primary socialization) constitute a large part of his disposition or character, which makes him adhere to the norms of society.

22. Differentiate sympathy from empathy.
      Sympathy involves understanding from your own perspective. Empathy involves putting yourself in the other person's shoes and understanding WHY they may have these particular feelings.

23. Define Yoga.
- Yoga recognizes the interconnection and interaction between body and mind.
- Yoga provides the best means of self-improvement and attaining one's full potential.
- To increase the strength and flexibility of the body.

24. Define Meditation
      Meditation is a universal spiritual wisdom and a practice found at the core of all the great religious traditions, leading from the mind to the heart. Meditation works to increase mindfulness, to train your mind to more clearly see things as they are and to train your mind to create new way of being.

25. Define moral values with suitable examples. [Apr/May 2017]
Moral values are principles, not rules.
Honesty is an example of a moral value.

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UNIT – II
ENGINEERING ETHICS

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1. Define Ethics?

      Study of right or wrong

      Good and evil.

      Obligations & rights.

      Justice.

2. Define Engineering Ethics.

- Study of the moral issues and decisions confronting individuals and organizations engaged in engineering/ profession.
- Study ofrelated questions about the moral ideals, character, policies and relationships of people and corporations involved in technological activity.
- Moral standards / value and system of morals.

3. What is the need to study Ethics?[April/May 2021]

- To responsibly confront moral issues raised by technological activity.
- To recognize and resolve moral dilemma.
- To achieve moral autonomy.

4. Differentiate Moral and Ethics?

MORAL:

- Refers only to personal behavior.
- Refers to any aspect of human action.
- Social conventions about right or wrong conduct.

ETHICS:

- Involves defining, analyzing, evaluating and resolving moral problems anddeveloping moral criteria to guide human behavior.
- Critical reflection on what one does and why one does it.
- Refers only to professional behavior.

5. What is the method used to solve an Ethical problem?

- Recognizing a problem or its need.
- Gathering information and defining the problem to be solved or goal to be achieved.
- Generating alternative solutions or methods to achieve the goal.
- Evaluate benefits and costs of alternate solutions.
- Decision making & optimization.
- Implementing the best solution.

6. What are the Senses of Engineering Ethics?

- An activity and area of inquiry.
- Ethical problems, issues and controversies.
- Particular set of beliefs, attitudes and habits.
- Morally correct.

7. What are the steps in confronting Moral Dilemma?
- Identify the relevant moral factors and reasons.
- Gather all available facts that are pertinent to the moral factors involved.
- Rank the moral considerations in order of importance as they apply to the situation.
- Consider alternative courses of actions as ways of resolving dilemma, tracing the full implications of each.
- Get suggestion and alternative perspectives on the dilemma.
- By weighing all the relevant moral factors and reasons in light of the facts, produce a reasoned judgment.

8. What is Moral Autonomy? [Nov/Dec 2019][Apr/May 2019][Nov/Dec 2018]
- Self-determining
- Independent
- Personal Involvement
- Exercised based on the moral concern for other people and recognition of good moral reasons

9. Give the importance of Lawrence Kohlberg's and Carol Gilligan's theory?
Kohlberg gives greater emphasis to recognizing rights and abstract universal rules.
Gilligan stresses the importance of maintaining personal relationships based on mutual caring.

10. Define Moral dilemmas. [Apr/May 2019]
Moral dilemmas are situations in which 2 or more moral obligation and ideas come into conflict with each other. Moral principles cannot be fully respected in a given situation. Solving 1 moral principle can create 2 or more conflicting applications

11. What are the types of Theories about Morality? [Nov/Dec 2019][Apr/May 2019]
- Virtue ethics – Virtues and vices
- Utilitarianism – Most good for the most people
- Duty ethics – Duties to respect people
- Rights ethics – Human rights

12. State Rawl's principles?
- Each person is entitled to the most extensive amount of liberty compatible with an equal amount for others.
- Differences in social power and economic benefits are justified only when they are likely to benefit everyone, including members of the most disadvantaged groups

13. Give the drawbacks of Utilitarianism?
Sometimes what is best for the community as a whole is bad for certain individuals in the community.
It is often impossible to know in advance which decision will lead to the most good.

14. Differentiate Ethical Relativism and Ethical Egoism?
Ethical egoism – The view that right action consist in producing one's own good.
Ethical relativism – The view that right action is merely what the law and customs of one's society require.

15. Define Ethical Pluralism?

Ethical pluralism is the view that there may be alternative moral perspectives that arereasonable, but no one of which must be accepted completely by all rational and morally concerned persons.

16. Give the uses of Ethical Theories?
- In understanding moral dilemmas
- Justifying professional obligations and ideals
- Relating ordinary and professional morality

17. What do you mean by normative ethics?

Normative ethics deals with the professional codes of ethics that specify rolenorms or obligations that professions attempt to enforce. It is the recommendations of standards and guidelines for morally right or good behavior.

18. What is moral autonomy?

Moral autonomy can be viewed as the skill and habit of thinking rationally about ethical issues on the basis of moral concern.

19. What are the attributes to a profession?
- Knowledge
- Organization
- Public good

20. What is descriptive ethics or non-normative ethics?

Descriptive ethics deals with the factual investigation of moral behavior and beliefs ie., the study not of what people ought to do but how they reason and how they act.

21. List the theories about right action. [Nov/Dec 2018]
- Consequentialist Theory
  - Ethical Egoism
  - Ethical Altruism
  - Ethical Utilitarianism
- Non Consequentialist Theory
  - Duty or Deontological Theories
  - Virtue Ethics

22. What is meant by engineering as experimentation? [Apr/May 2017]

During the course of an engineer's carrier he is frequently involved in research experimentation or the test of new products especially during the design phase one need to apply various experimental procedures which is called experimentation.

23. State the importance of ethical theories. [Apr/May 2017]
- Ethical theories are helpful in understanding and resolving moral dilemmas.
- Ethical theories are useful in justifying professional obligations and ideas

ENGINEERING AS SOCIAL EXPERIMENTATION

1. What are the conditions required to define a valid consent?
- The consent was given voluntarily.
- The consent was based on the information that rational person would want, together with any other information requested, presented to them in understandable form.
- The consenter was competent to process the information and make rational decisions.

2. What are the two main elements which are included to understand informed consent?

[Nov/Dec 2019]

Informed Consent is understood as including two main elements:
- Knowledge [Subjects should be given not only the information they request, but all the information needed to make a reasonable decision].
- Voluntariness [Subjects must enter into the experiment without being subjected to force, fraud, or deception].

3. What are the general features of morally responsible engineers?
- Conscientiousness.
- Comprehensive perspective.
- Autonomy.
- Accountability.

4. What is the purpose of various types of standards?
- Accuracy in measurement, interchangeability, ease of handling.
- Prevention of injury, death and loss of income or property.
- Fair value of price.
- Competence in carrying out tasks.
- Sound design, ease of communications.
- Freedom from interference.

5. Define Code?
    Code is a set of standards and laws.

6. Enumerate the roles of codes?
- Inspiration and Guidance
- Support
- Deterrence and Discipline
- Education and Mutual Understanding
- Contributing to the Profession's Public Image
- Protecting the Status Quo
- Promoting Business Interests

7. Give the limitations of codes? [Apr/May 2019]
- Codes are restricted to general and vague wording.

- Codes can't give a solution or method for solving the internal conflicts.
- Codes cannot serve as the final moral authority for professional conduct.
- Codes can be reproduced in a very rapid manner.

8. What are the problems with the law in engineering?
- Minimal compliance
- Many laws are without enforceable sanctions.

9. What is the need to view engineering projects as experiments?
- Any project is carried out in partial ignorance.
- The final outcomes of engineering projects, like those of experiments, are generally uncertain.
- Effective engineering relies upon knowledge gained about products before andafter they leave the factory – knowledge needed for improving current products and creating better ones.

10. Differentiate scientific experiments and engineering projects?
Scientific experiments are conducted to gain new knowledge, while "engineering projects are experiments that are not necessarily designed to produce very much knowledge".

11. What are the uncertainties occur in the model designs? [Apr/May 2019] [Apr/May 2017]
- Model used for the design calculations.
- Exact characteristics of the materials purchased.
- Constancies of materials used for processing and fabrication.
- Nature of the pressure, the finished product will encounter.

12. Comment on the importance of learning from the past, using Titanic disaster, as an example?
The Titanic lacked a sufficient number of lifeboats.

13. Comment on the importance of learning from the past, using the nuclear reactor accident atThree Mile Island, as an example?
Values are notorious for being among the least reliable components of hydraulicsystems.It was a pressure relief valve, and lack of definitive information regarding its open orshut state. Similar Malfunctions had occurred with the identical values on nuclear reactorsbecause of the same reasons at other locations, but no attention had been given to them.

14. Give any two prominent features of contemporary engineering practice that differentiate casual influence and moral accountability in engineering?
Large-scale engineering projects involve fragmentation of work.

Due to the fragmentation of the work, the accountability will spread widely within the organization There is frequently pressure to move on to a new project before the current one has been operating long enough to be observed carefully.

The contagion of malpractice suits currently afflicting the medical profession is carryingover into engineering.

15. Define Whistle Blowing.
This is an act by an employee of informing the public or higher management of unethical or illegal behavior by an employee or supervisor.

16. What is meant by Engineering Experimentation?

Engineers involve in research experimentation and testing of new products. Appling various experimental producers is called experimentation.

Every stage of product development, experiments are conducted. One can view Engineering work & project as experiment.

17. State the importance of Ethical codes. [Apr/May 2019][Nov/Dec 2018]
- To provide framework for ethical judgment.
- Express the ethical principles and standards in an understanding manner.
- It defines the role of responsibilities of professions.
- Applying moral ethical principles in critical situation.
- Codes are well established and widely accepted in society.

18. State General features of morally responsible engineers.

A conscientious commitment to live by moral values: protect the safety of human respect.

A Comprehensive perspective: Constant awareness of the experimental nature.

Autonomy: Personally motivated to have dedicated involvement in the project.

Accountability: Accountable for the results of the project.

19. What are the two elements of two informed consent?

Informed consent:

Knowledge: Person who participates in the experiments should be given all the information to make a reasonable decision.

Voluntariness: Person should not be forced and he should have willingness to volunteer himself.

20. In what ways engineering experiment differs from standard experiments.

Final outcomes of engineering projects may also lead to unexpected problems that may endanger life.Similar to Standards experiment, engineering experiments requires knowledge about the product at the pre-production& post production stages.

21. Differentiate between scientific experiments and engineering projects.

While scientists study how nature works, engineers create new things, such as products, websites, environments, and experiences. Scientists perform experiments using the scientific method; whereas, engineers follow the creativity-based engineering design process.

22. Mention the significance of code of conduct. [Apr/May 2019]

A code of conduct is the most common policy within an organization. This policy lays out the company's principles, standards, and the moral and ethical expectations that employees and third parties are held to as they interact with the organization.

23. How does the law facilitate ethics in engineering? [Apr/May 2017]

Engineers are expected to play a vital role in framing implementation and propagating the rule s of engineering also they have to strictly adhere to those rules.

SAFETY, RESPONSIBILITIES AND RIGHTS

1. What is conflict Interest?
Types of Conflicts of interest
Actual conflict of interest
Potential conflict of interest
Apparent conflict of interest
Moonlighting
Insider information

2. What are the reasons for Risk-Benefit Analysis?
- Risk-benefit analysis is concerned with the advisability of undertaking a project.
- It helps in deciding which design has greater advantages.
- It assists the engineers to identify a particular designs cores higher with that of t h e another one.

3. What are the safety measures an engineer must know before assessing a risk of any product? The factors are:
- Does the engineer have the right data?
- Is he satisfied with the present design?
- How does he test the safety of a product?
- How does he measure and weight he risks with benefits for a product.

4. Explain the two types of Risk?
i. Personal Risk:
 An individual, who is given sufficient information, will be in a position to Decide whether to take part in a risky activity or not. They are more ready to take on voluntary risks than in voluntary risks.
ii. Public Risks:
 Risks and benefits to the public are more easily determined than to individuals, as larger number of people is taken in to account .Involuntary risks are found here.

5. Give the reasons for the Three Mile Island disaster?
- In adequate training to the operators.
- Use of B&W reactors.

6. Define "risk".
A risk is the potential that something unwanted and harmful may occur.
 Risk = Probability X Consequences.

7. What do you mean by voluntary risk?
 If a person knowingly takes any risk, then he feels it safe. In contrast, if the same risk is forced to him, then he feels it unsafe.
 In simple terms the voluntary risks are considered as safe and the involuntary risks are considered as unsafe.

8. What is safe risk and acceptability of risk?

Acceptability of risk:

A risk is acceptable when those affected are generally no longer apprehensive about it. Apprehensiveness mainly depends on how the risk is perceived by the people.

Safe Risk:

If a person knowingly takes any risk then he feels it safe. In the same way voluntary risks are considered as safe risk

9. List the methods that can be applied when testing is inappropriate.
- Scenario Analysis
- Failure modes and effects analysis
- Fault free analysis
- Event free analysis

10. What is the use of knowledge of risk acceptance to engineers?

Though past experience and historical data give better information about safety of products designing there are still inadequate .The reasons are

a. The information is not freely shared among industries

b. There also new applications of old technologies that provides available data, which are less useful.

c. So, in order to access the risk of a product, the engineers must share their knowledge and information with others in a free manner.

11. What are the positive uncertainties in determining risks?
- Purpose of designing
- Application of the product
- Materials and the skill used for producing the product

12. What is the Risk Transfer?

It refers to the legal assignment of the cost of certain potential losses from one party to another. The most common way of affecting such transfer is by insurance.

13. What are the steps involved in design for safety?

1. Define the problem   **2.**Generate alternate solutions

3. Analyses each solution   **4.**Test the solution

5. Select the best solution   **6.**Implement the chosen solution.

14. State the industrial definition on safety.
- A ship in harbor is safe, but that is not what ships are built for‖ – John A. Shedd
- A thing is safe if its risks are judged to be acceptable„ - William W. Lawrence
- We buy an ill-designed Iron box in a sale-> Underestimating risk
- We judge fluoride in water can kill lots of people -> Overestimating risk
- We hire a taxi, without thinking about its safety -> Not estimating risk

15. What is meant by Disaster?

A DISASTER = A seriously disruptive event + A state of unprepared ness.

e.g., Titanic collision with an iceberg, at night: Emergency Fewer lifeboats, inadequate training and warnings of icebergs unheeded ->Disaster

16. What is informed consent?

Informed consent is the process by which the treating health care provider discloses appropriate information to a competent patient so that the patient may make a voluntary choice to accept or refuse treatment. It originates from the legal and ethical right the patient has to direct what happens to her body and from the ethical duty of the physician to involve the patient in her health care.

17. What is the use of risk analysis? [Apr/May 2017]

Risk analysis is the process of defining and analyzing the dangers to individuals, businesses and government agencies posed by potential natural and human-caused adverse events.

In practice all the dangerous spots such as motorcycle racing, bungee jumping, horseback riding, boxing, etc., are carried out under the assumed control of the participants these are use of risk analysis.

18. What is collegiality?

Collegiality is a kind of connectedness grounded in respect for professional expertise and in a commitment to the goals and values of the profession and collegiality includes a disposition to support and cooperate with one's colleagues.

19. What are the elements of collegiality?

- Respect
- Commitment
- Connectedness
- Cooperation

20. What do you meant by employee rights and lists its categories?

Employee rights are rights, moral or legal, that involve the status of being an employee. They include some professional rights that apply to the employer-employee relationship.

21. What is the Basic Right of Professional Conscience?

The right to do what everyone agrees it is obligatory for the professional engineers to do the basic professional right is an entitlement giving one the moral authority to act without interference from others.

22. What is Institutional Recognition of Rights?

One should have moral right, having it respected by others and given Recognition with in the institution is the other. Koning states in 1975, conference on Engineering Ethics- that one item that should be in the code of ethics is that engineers have the right at all times to exercise the dictates of their own conscience.

23. State the specific right.

Specific rights can be stated as a particular professional obligation to apply Professional rights according to specific circumstances.

24. What are the two basic rights of professional/conscience?

First is to proceed piecemeal by reiterating the justification given for the specific professional duties Second, is to justify the right of professional conscience, which involves grounding it more directly in the ethical theories, for organizing moral reflections and approaching practical problems.

25. What is Duty Ethics?

Duty ethics rights are not the ultimate moral appeal. Engineers have a right to do something it is only because other have duties or obligations to allow him to do it. No employer has the right to threat engineers with loss of the jobs for refusing to work on project they see as likely to lead to the death or injury of unsuspecting victims.

26. What is Utilitarianism?

Utilitarianism will justify the right of professional conscience by referring to the Basic goal of producing the most good for the greatest number of people the public good is certain to observed by allowing professionals to meet their obligations to the public.

27. What is meant by collective Bargaining? [Apr/May 2017]

Collective bargaining is a process of negotiations between employers and a group of employees aimed at reaching agreements to regulate working conditions. The interests of the employees are commonly presented by representatives of a to which the employees belong. The collective agreements reached by these negotiations usually set out wage scales, working hours, training, health and safety, overtime, grievance mechanisms, and rights to participate in workplace or company affairs

28. What is meant by Occupational crime?
Occupational Crime

Occupational crimes are illegal acts made possible through one's lawful employment.
It is the secretive violation of laws regulating work activities.

When committed by office workers or professionals, occupational crime is called white collar crime

29. List the factors that shape the self confidence in a person.
- Emphasize Strengths
- Take Risks.
- Use Self-Talk.
- Self-Evaluate.

30. Difference between Bribe and Gift.

Gift: Something of value given without the expectation of return
Bribe: Something of value given with the hope of a future influence or benefit

31. Define the term safety. [Nov/Dec 2018]

In the definition stated by William W. Lawrence safety is defined, as a thing is safe if its risks are acceptable. A thing is safe with respect to a given person or group, at a given time, if its risk is fully known, if those risks would be judged acceptable, in light of settled value principles. In the view of objective, safety is a matter of how people would find risks acceptable or unacceptable.

32. What is meant by conflict of interest? [Nov/Dec 2018]

Conflict of interests is a situation in which two or more interests are not simultaneously realizable. It is the disagreement between public obligation and self-interest of an official.

33. What is 'Safe Exit'? [Nov/Dec 2019]

It assure when a product fails it will fail safely and also it assure that the user can safely escape the product

34. State the reasons that may cause risk. [Nov/Dec 2019]
- Natural causes
- Human causes
- Economic causes

35. What are the paramount obligations of an engineer? [Apr/May 2019]
Recent Code of ethics typically states that engineer's paramount obligations are to protect the public health, safety and welfare rather than the obligations of loyalty and faithful service to employers. Paramount is to mean "chief in importance or deserving primary emphasis"

36. Explain the term confidentiality. [Apr/May 2019]
Keeping confidence is one of the most central and widely acknowledged duties of any professional. In this context, Confidential Information (Privileged Information) is information deemed desirable to keep secret. Keep secret is relational information.

37. Explain professional rights. [Apr/May 2019]
Engineers have fundamental rights to live and freely pursue their legitimate interests. They have a human right to pursue their work and not to be fairly discriminated `against in employment based on sex, race, or age.

38. What is IPR and explain its main clauses? [Apr/May 2019][Apr/May 2017]
Intellectual Property Rights (IPR) will have wide range of socio economic technological and political impacts. Intellectual Property is the information and original expression that derives its original value from creative ideas with a commercial value. Intellectual property permits the people to have fully independent ownership for their innovations and creativity like that for their own physical property.

39. List the factors that shape the self confidence in a person. [Nov/Dec 2018]
Home: Relationships with your parents, grandparents, brothers, sisters, etc. influence your self-esteem this is because you 'copy' their attitudes and reactions when you are still young and this influences the way you think of yourself and others
School: Relationships with classmates, teachers, administrators and counsellors influence your self-esteem, due to the result of you learning from others. Experiences with schoolwork, extracurricular activities, sports, discipline, etc. can also play an important role in shaping the kind of person you are going to be in the future
Society: Relationships with members of different cultures, races and religions can influence your self-esteem, as you learn from them and cope through different times will shape your characteristics. Experiences with standards and images created by others can also influence you. The nature of your community helps shape you.

UNIT - V
GLOBAL ISSUES

1. What is meant by multi National Corporation? [Apr/May 2019][Nov/Dec 2018]

Multinational Corporation does extensive business in more than one country. For example Hindustan lever ltd, Maruthi, Hyundai, etc are multinational corporations. For example, Union Carbide (Bhopal) of USA has more than 37 branches across the world, which includes INDIA also.

The country in which the company is established is called the Home country and the company's country is called as Host country. In most of the multinational companies, the home company has a share of 51% and the host company has 49% of share

2. Define CSR. [Apr/May 2019][Nov/Dec 2018][Apr/May 2017]

The term corporate social responsibility (CSR) refers to practices and policies undertaken by corporations that are intended to have a positive influence on the world. The key idea behind CSR is for corporations to pursue other pro-social objectives, in addition to maximizing profits. Examples of common CSR objectives include minimizing environmental externalities, promoting volunteerism among company employees, and donating to charity.

3. What is appropriate technology? [Nov/Dec 2019]

Appropriate Technology: Appropriate Technology means identification, transformation, and implementation of the most suitable technology for a new set of conditions. These conditions include social factors, which are apart from economic and technical engineering constraints. Identification done, based on human values and needs.

4. What is meant by environmental ethics? [Apr/May 2019]

Environmental Ethics forbid the activities of people for deteriorating the surroundings of environment in so many ways. It is well known fact that we are misusing our major resources there by spoiling the environment. Moreover, it is well known agreed fact that industrial activities mainly affect the biosphere, polluting water and atmosphere.

5. What is meant by moral leadership? [Nov/Dec 2019]

Moral Leadership is a very different kind of leadership. Rather than aspiring to being followed, Moral Leaders aim to serve. Instead of showcasing their own skills, Moral Leaders tend to develop the capacities of others. Moral Leadership is not about rank – any person holding any position can be a Moral Leader, but such individuals are always characterized by a deep sense of ethics, are driven by core ideals (such as justice) and are motivated by the pursuit of a higher purpose.

6. What are the three senses of relative values?

Relative values mean relative principles. These relative values help in deciding how the multinational corporations and individuals have to act in host countries. There are many versions of relativisms depending on the way in which values are supposed to be relative. Here are three versions namely Ethical Relativism, Descriptive Relativism and Moral Relationalism or Contextualism

7. Explain: Ethical Relativism.

Ethical Relativism: Actions are morally right within a particular society when they are approved by law, custom, or other conventions of that society. It is a false one as it implies ridiculous and illogical ways. It justifies a deliberate extermination of a race of people such as in Germany. They are not morally correct as it is criticized with human rights, public good, and duties to respect people.

8. Explain: Descriptive Relativism.
Descriptive Relativism: As a matter of fact value beliefs and attitudes differ from culture to culture. It does not entail (involve) ethical relativism. As per this theory, there exists some difference between the moral beliefs and attitudes of different culture.

9. List some of the International Human Rights.
The following are some of the international human rights, namely
- The right to freedom of physical movement
- The right to ownership of property
- The right to freedom from torture
- The right to fair trail
- The right to nondiscrimination
- The right to physical security
- The right to freedom of speech and association
- The right to minimal education
- The right to political participation

10. Explain: Moral Relationalism.
Moral Relationalism or Contextualism: Moral judgments should be made in relation to the factor that varies from case to case. In particular, customs and laws are usually morally relevant factors that should be taken into account. For example in our country, we remove the shoes before entering a house as a symbol of respect, but we cannot expect it in western culture.

11. List some steps for promoting morally Just measures.
Some of the steps are listed below.
- Multinational corporations and individuals should respect the basic human rights of the people of the host countries.
- The activities of the multinational corporations should give some benefits to the host countries.
- The multinational should do more good to the host countries by the way of promoting the overall economy and improving the welfare of the workers.
- The business activities of the multinationals must improve morally justified institutions in the host countries.
- Multinationals should respect the laws and the cultures of the host countries without violating the basic moral rights.
- Multinationals should give a fair wage to their employee and workers of the home company same as that of the host company.
- Sufficient safety of the workers and danger in the working conditions should be taken care of the multinationals.

12. What is technology transfer?
Technology Transfer: Technology transfer is a process of changing the technology to a newsetting and implementing it. Technology includes hardware such as machines and installations aswell as techniques such as technical, organizational, and managerial skills & procedures. Thetransfer of technology may be done by governments, universities private voluntary organizations,consulting firms and by multinational companies.

13.What is acid rain?

Industries and thermal power plants release innumerable quantities of nitrogen oxide andsulphur every day. These gases react with atmospheric moisture thereby forming nitrates,sulphates, nitric acid, and sulphuric acid droplets. These compounds emitting at a particular place may be transmitted even hundreds of kilometers in downstream and may be deposited on groundand vegetarian lands directly as acid rains.

14. What is computer ethics?

Computer Ethics is the analysis of the nature and social impact of computer technology andthe corresponding formulation and justification policies for the ethical use of technology. It definesas a field concerned with "policy vacuums" and "conceptual muddles" regarding the social andethical use of information technology.

15. What is meant by biocentric ethics?

A life-centered ethics regards all living organisms as having inherent worth. The mostfundamental feature of us is our will to live, by which both a will to survive and a will to developaccording to inmate tendencies. Most recent defenders of biocentric ethics however havedeveloped complex sets of rules for guiding decisions.

16. What is ecocentric ethics?

It defines, as "A thing is right when it tends to preserve the integrity, stability and beauty ofthe biotic community." A frequent criticism of sentiment-centered and biocentered ethics is thatthey are too individualistic, since they locate inherent worth in individual organisms.

17. What is meant by Sentient-centered ethics?

Of the several versions of natural-centered ethics advanced by philosophers, we examinefirst the one that recognizes all sentient animals as having inherent worth. Sentient animals arethose that feel pain and pleasure and have desires.

18. Who are hackers?

The individuals who directly meddle with any computer security system by implantingunwanted codes with the objective of paralyzing the network and destroying the equipment's saidas hackers.

19. Who are consulting engineers?

Consulting engineers work in private practice. Fees for the services they render, not bysalaries received from employers compensate them. Because of this, they tend to have greaterfreedom to make decisions about the projects they undertake. Yet, their freedom is not absolute.They share with salaried engineers the need to earn a living.

20. List out the problems of Defense Industry.

- Many nations feel with privilege on their defense industry but without thinking onsome serious problems that they may come across along with huge militarybuildings.
- The defense industry faces the problem of waste and huge cost in implementing andmaintaining a weapon system.

- The defense industry also facing the problem of technology creep, that is thedevelopment of new weapons. It makes changes in the arrangements relating todiplomacy. It upsets all negotiations. It affects the political ability of a country.
- It also faces the problems in maintaining secrecy. The secrecy in weaponsdevelopment paves the way for corruptions and leads to create mistakes in theweapon system itself.
- Every country allocates a large amount of its resources to defense sector. Theamount spent in the defense industry creates only a few jobs when compared withthe other industries

21. List out the engineer involvement in Weapon Development.

Engineer's involvement in manufacturing of weapons is unavoidable. For engineers whodesign weapons, manufacture them, and use them have some reasons to support their involvement.

The following are some of the justifying arguments

- Take a case of an engineer who involves in the manufacturing of antipersonnel bombs.Antipersonnel bombs are most dangerous. When they explode, they evolve a shower ofsharp fragments of steel or plastic on the victims. They can fix the time to explode aftersome hours of delivery. When they explode on a person, the removal of the fragments is atime consuming task. The engineer who produces this kind of bomb clearly known aboutits danger. When he thinks morally he does not want to be involved in producing them.
- However, for his involvement he may argue that if he does not do his job, someone elsewill be doing the job. Doing job produces a steady income for his family.
- A chemical engineer who gets involved in the production of napalm (napalm is a jelly likepetrol substance used in incendiary bombs) argues that only the government must takenecessary actions to stop the production of napalms.
- Another engineer, who is a specialist in controlling and guiding missiles, says that he feelsproud to be able to help his country through his involvement in the defense industry. Healso adds that there should have not been any more world wars.
- A nuclear engineer knows very well about the danger of increasing nuclear arsenal. Arsenalis a place where the weapons are being stored. He argued that he is working very hard toreduce the risk of nuclear accidents.

From the above examples it is clear that all over the world talented engineers are engaged in theweapons work. They should think morally, before getting involved in weapons production.

22. Explain competitive bidding for consulting engineers.

Competitive bidding means offering a price in order to achieve something in return by thatoffer. The professional codes of ethics forbid the consulting engineers from involving competitivebidding. They are restricted from competing for jobs based on submitting priced proposals.

23. What is bias and explain three types of bias.

The most common abuses involve more subtle biases resulting from money, ego, andsympathy. The various types of bias are
- Financial Biases
- Ego Biases
- Sympathy Biases

24. Explain your views on engineers as managers.

Most of the engineers are experiencing the best methods of technical training like otherprofessions. Many of the engineers move into managerial jobs. The reason being many companies'wants to have the engineers as managers. Because they have thought that in order to managetechnological corporation, the technical understanding of the engineers is very essential.

25. What are the duties of an engineer as an experimenter, in environmental ethics?
- To Study how industry and technology affect environment,
- To fix tolerable and actual pollution levels, protective measures for immediateimplementation, and
- To educate people.

26. What is meant by conceptual framework in computer ethics?
Computer program: Is it an IP? Is copyright applicable to this? Or is it a process protectedby a patent? Is it proprietary information? Here, guidelines are needed.

27. List the provision in NSPE codes on the advertisement by consultant.
The following are prohibited:
- Statement containing misrepresentation or omission of a necessary fact,
- Statement likely to create an unjustified expectation, statement containing prediction offuture success, and
- Statement likely to attract clients, by the use of slogans

28. Mention the different types of intellectual property rights.
IP rights are categorized into different types, as per the nature of the intellectual property.The most common types are copyrights, trademarks, patents, industrial design rights, and tradesecrets. So these rights safeguard the interests of the owners of IP. If you are an author, who haswritten a new book, you can apply for a copyright for your work. Likewise, patents can beobtained for inventions. Once you establish your IP right, you can protect your work legally.

PROFESSIONAL ETHICS IN ENGINEERING
PART – "B" QUESTIONS

UNIT – I
HUMAN VALUES

1. Explain the scope and importance of professional ethics in engineering. **[Apr/May 2017]**
2. Identify the meaning of integrity and importance in Ethics. **[Apr/May 2018]**
3. What is service learning discuss the role in caring & sharing in society with suitable examples? **[Nov/Dec 2018]**
4. Write short notes on Honesty and integrity. **[Apr/May 2019]**
5. Summarize the importance of caring and sharing.
6. Discuss the importance of honesty and courage in detail.
7. Examine the importance of valuing time and co-operation.
8. What is empathy? Discuss its role in the spiritual development for excellence in an organization with suitable examples. **[Nov/Dec 2018]**
9. Explain self-confidence and its importance.
10. Write short notes on yoga and meditation for professional excellence and stress management.
    [Apr/May 2019] [Nov/Dec 2019] [Apr/May 2017]
11. Explain the different ways to improve human values
12. Explain the different ways to improve the spirituality incorporate Environment.
    [Nov/Dec 2019] [Apr/May 2018]
13. Analyze the various human values, which are essential to Engineers
14. Illustrate the necessity for adherence to civic virtues
15. Illustrate the necessity of stress management with suitable examples
16. Discuss the role and importance of Ethics in Engineering. **[Apr/May 2019]**

UNIT – II
ENGINEERING ETHICS

1. List the scope of Engineering Ethics.
2. Define the importance of Ethics.
3. Describe in details about the senses of Engineering Ethics.
4. Identify variety in Moral issues.
5. Examine in detail the various types of Moral issues.
6. Name and explain the various types of Ethical inquiries available.
7. Describe in detail about the concept of Moral Dilemmas.
8. Describe in detail about the concept of Moral Autonomy. **[Apr/May 2018]**
9. Discuss the theories of moral autonomy by Kohlberg and Gilligan.
    [Nov/Dec 2018] [Apr/May 2017]
10. Explain the three levels of moral developments with respect to Gilligan views.
    [Nov/Dec 2019]
11. Describe about Consensus and Controversy.
12. Describe about Heinz's Theory.
13. Discuss any two theories on Ethics. **[Apr/May 2019]**
14. Discuss in detail about Professional and Professionalism.
15. Discuss the motives for professionalism and the models for professional engineers.
    [Apr/May 2018] [Nov/Dec 2018]

16. Illustrate in details the various theories about right action. **[Apr/May 2017] [Apr/May 2017]**
17. What is duty Ethics? Explain in detail. **[Nov/Dec 2019]**
18. Enumerate on Moral issues and types of inquiry.**[Apr/May 2019]**
19. Explain moral dilemma with a suitable case study.
20. Illustrate the applications of ethical theories in current scenario

UNIT - III
ENGINEERING AS SOCIAL EXPERIMENTATION

1. List how can engineer become a responsible Experimenter. **[Nov/Dec 2019] [Apr/May 2017]**
2. Define the code of ethics for Engineers. **[Nov/Dec 2019] [Apr/May 2017]**
3. Discuss on 'Engineers as responsible Experimenters'.
4. Explain the code of Ethics to be followed by an Engineer.**[Apr/May 2019]**
5. Compare and contrast engineering experiments with standard experiments with suitable examples. **[Apr/May 2018] [Nov/Dec 2018]**
6. Summarize that engineers would learn not only from their earlier design and operating results.
7. Discuss in detail about balanced outlook on law.
8. Express in detail about industrial standards.
9. Illustrate in detail about engineering as experimentation.
10. Demonstrate the various problems of law in Engineering.
11. Analyze what are code of ethics.
12. Explain limitations of code of ethics.
13. "Engineering as experimentation plays a vital role in the design process" - Discuss with suitable example
14. Explain the characteristics of morally responsible engineers. **[Apr/May 2019]**

UNIT IV
SAFETY, RESPONSIBILITIES AND RIGHTS

1. List out the main elements of IPR. Give examples of Discrimination. **[Nov/Dec 2019]**
2. Write short notes on Occupational crime.
3. What are the elements of Intellectual property rights? Explain.
4. Discuss the procedure in risk benefit analysis and discuss its role in reducing risks with suitable examples. **[Nov/Dec 2019] [Nov/Dec 2018] [Apr/May 2017]**
5. Discuss on the importance of Collective Bargaining.**[Apr/May 2019]**
6. Discuss in detail about the employee rights and its role in the organization. **[Apr/May 2017]**
7. Explain the concept of liability with suitable example.
8. Explain the risk benefit analysis and conceptual problems associated with it.
9. Explain "Employee Rights" and its role in a Business organization.**[Apr/May 2019]**
10. Illustrate with example how IPR provides security to manufacturing and selling of a product.

UNIT - V
GLOBAL ISSUES

1. Describe in details about Environmental Ethics.
2. Describe in details about Code of Conduct.

3. Describe in details about the Global issue of Weapons development.
4. Discuss the ethical role of engineers in weapon development with suitable examples.

[Apr/May 2018]

5. Give the ideals of voluntary service in engineering profession.
6. Describe the significance of the concept of Computer Ethics. **[Nov/Dec 2019]**
7. Discuss in details about Moral Leadership.
8. Discuss the ethical issues related to computer ethics. **[Apr/May 2017]**
9. Explain how engineersshould act as consultants and its importance.
10. Summarize the IEEE Code of Ethics.
11. Examine the dynamic nature of an Engineer's managerial role with suitable example.
12. Explain the significance of Environmental Ethics for an Engineer by giving an examples of environment issue. **[Apr/May 2019]**
13. Write in detail about Engineers used as Consultant and Advisor.

[Apr/May 2019] [Nov/Dec 2018]

14. Discuss in detail about the moral and ethical issues involved in use of Computer Technology.

[Apr/May 2019]

UNIT I – INTRODUCTION

Part A – Question Bank

1. **Define information retrieval.**
   Information Retrieval is finding material of an unstructured nature that satisfies an information need from within large collections.

2. **Explain difference between data retrieval and information retrieval.**

Parameters	Data Retrieval	Information retrieval
Example	Data Base Query	WWW Search
Matching	Exact	Partial Match, Best Match
Inference	Deduction	Induction
Model	Deterministic	Probabilistic

3. **List and explain components of IR block diagram.**
   - **Input** – Store Only a representation of the document
   - **A document representative** – Could be list of extracted words considered to be significant.
   - **Processor** – Involve in performance of actual retrieval function
   - **Feedback** – Improve
   - **Output** – A set document numbers.

4. **What is objective term and nonobjective term?**
   Objective Terms – Are extrinsic to semantic content, and there is generally no disagreement about how to assign them.
   Nonobjective Terms – Are intended to reflect the information manifested in the document, and there is no agreement about the choice or degree of applicability of these terms.

5. **Explain the type of natural language technology used in information retrieval.**
   Two types
   I.   Natural language interface make the task of communicating with the information source easier, allowing a system to respond to a range of inputs.
   II.   Natural Language text processing allows a system to scan the source texts, either to retrieve particular information or to derive knowledge structures that may be used in accessing information from the texts.

6. **What is search engine?**

   A search engine is a document retrieval system design to help find information stored in a computer system, such as on the WWW. The search engine allows one to ask for content meeting specific criteria and retrieves a list of items that match those criteria.

7. **What is conflation?**

   Stemming is the process for reducing inflected words to their stem, base or root form, generally a written word form. The process of stemming if often called conflation.

8. **What is an invisible web?**

   Many dynamically generated sites are not index able by search engines; This phenomenon is known as the invisible web.

9. **Define Zipf's law.**

   An empirical rule that describes the frequency of the text words. It state that the ith most frequent word appears as many times as the most frequent one divided by $i^{@}$, for some $@>1$.

10. **What is open source software?**

    Open source software is software whose source code is available for modification or enhancement by anyone.

    "Source code" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software—a "program" or "application"—works. Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly.

11. **What is proprietary software?**

    Proprietary software is computer software which is the legal property of one party. The term of use for other parties is defined by contracts or licensing agreements.

These terms may include various privileges to share, alter , dissemble, and use the software and its code.

12. What is closed software?

Closed software is a term for software whose license does not allow for the release or distribution of the software's source code. Generally it means only the binaries of a computer program are distributed and the license provides no access to the programs source code. The source code of such programs is usually regarded as a trade secret of the company. Access to source code by third parties commonly requires the party to sign a non-disclosure agreement.

13. List the advantage of open source.
- The right to use the software in any way.
- There is usually no license cost and free of cost.
- The source code is open and can be modified freely.
- Open standards.
- It provides higher flexibility.

14. List the disadvantage of open source.
- There is no guarantee that development will happen.
- It is sometimes difficult to know that a project exist, and its current status.
- No secured follow-up development strategy.

15. What are the reasons for selecting open software?
- Development and maintenance of open source software is a community based activity.
- Open source software licenses are copyright protected they strictly ensure the user freedom to use, modify and distribute the programs.
- Is interoperable customizable according to the needs and fulfills the software industry standards.
- Open source software allows everyone to use, study, modify and distribute the software.
- Allows a broader perspective when comes to its support.

16. What do you mean by Apache License?
- The Apache License is a free software license written by the Apache Software Foundation (ASF). The name Apache is a registered trademark and may only be used with the trademark holders express permission.

- Apache license is a high performance, Full-featured text search engine library written entirely in Java.

17. Explain features of GPL version2.
- It gives permission to copy and distribute the programs unmodified source code.
- It allows modifying the programs source code and distributing the modified source code.
- User distributes compiled versions of the program, both modified and unmodified.
- All modified copies are distributed under the GPL v2.
- All compiled versions of the program are accompanied by the relevant source code.

UNIT II – INFORMATION RETRIEVAL

Part A - Questions

1. **What do you mean information retrieval models?**

   A retrieval model can be a description of either the computational process or the human process of retrieval: The process of choosing documents for retrieval; the process by which information needs are first articulated and then refined.

2. **What is cosine similarity?**

   This metric is frequently used when trying to determine similarity between two documents. Since there are more words that are in common between two documents, it is useless to use the other methods of calculating similarities.

3. **What is language model based IR?**

   A language model is a probabilistic mechanism for generating text. Language models estimate the probability distribution of various natural language phenomena.

4. **Define unigram language.**

   A unigram (1-gram) language model makes the strong independence assumption that words are generated independently from a multinomial distribution

5. **What are the characteristics of relevance feedback?**
   - It shields the user from the details of the query reformulation process.
   - It breaks down the whole searching task into a sequence of small steps which are easier to grasp.
   - Provide a controlled process designed to emphasize some terms and de-emphasize others.

6. **What are the assumptions of vector space model?**

   Assumption of vector space model:
   - The degree of matching can be used to rank-order documents;
   - This rank-ordering corresponds to how well a document satisfying a users information needs.

7. **What are the disadvantages of Boolean model?**
   - ☐ It is not simple to translate an information need into a Boolean expression
   - ☐ Exact matching may lead to retrieval of too many documents.
   - ☐ The retrieved documents are not ranked.
   - ☐ The model does not use term weights.

8. **Define term frequency.**

   Term frequency: Frequency of occurrence of query keyword in document.

9. **Explain Luhn's ideas**

   Luhn's basic idea to use various properties of texts, including statistical ones, was critical in opening handling of input by computers for IR. Automatic input joined the already automated output.

10. **Define stemming.**

    Conflation algorithms are used in information retrieval systems for matching the morphological variants of terms for efficient indexing and faster retrieval operations. The Conflation process can be done either manually or automatically. The automatic conflation operation is also called stemming.

11. **What is Recall?**

    Recall is the ratio of the number of relevant documents retrieved to the total number of relevant documents retrieved.

12. **What is precision?**

    Precision is the ratio of the number of relevant documents retrieved to the total number of documents retrieved.

13. **Explain Latent semantic Indexing.**

    Latent Semantic Indexing is a technique that projects queries and documents into a space with "latent" Semantic dimensions. It is statistical method for automatic indexing and retrieval that attempts to solve the major problems of the current technology. It is intended to uncover latent semantic structure in the data that is hidden. It creates a semantic space where in terms and documents that are associated are placed near one another.

UNIT III – WEB SEARCH ENGINE – INTRODUCTION AND CRAWLING

Part A – Question Bank

1. **Define web server.**

   Web server is a computer connected to the internet that runs a program that takes responsibility for storing, retrieving and distributing some of the web files.

2. **What is web Browsers?**

   A web browser is a program. Web browser is used to communicate with web servers on the Internet, Which enables it to download and display the web pages. Netscape Navigator and Microsoft Internet Explorer are the most popular browser software's available in market.

3. **Explain paid submission of search service.**

   In paid submission user submit website for review by a search service for a preset fee with the expectation that the site will be accepted and include d in that company's search engine, provided it meets the stated guidelines for submission. Yahoo! is the major search engine that accepts this type of submission. While paid submissions guarantee a timely review of the submitted site and notice of acceptance or rejection, you're not guaranteed inclusion or a particular placement order in the listings.

4. **Explain paid inclusion programs of search services.**

   Paid inclusion programs allow you to submit your website for guaranteed inclusion in a search engines database of listings for a set period of time. While paid inclusion guarantees indexing of submitted pages or sites in a search database, you're not guaranteed that the pages will rank well for particular queries.

5. **Explain in pay-for-placement of search services.**

   In pay-for-placement, you can guarantee a ranking in a search listing for the terms of your choice. Also known as paid placement, paid listing, or sponsored listings, this program guarantees placement in search results. The leaders in pay-for-placement are Google, Yahoo! and Bing.

6. **Define Search Engine Optimization.**

   Search Engine Optimization is the act of modifying a website to increase its ranking in organic, crawler-based listing of search engines. There are several ways to increase the visibility of your website through the major search engines on the internet

today. The two most common forms of internet marketing paid placement and natural placement.

7. **Describe benefit of SEO.**
   - ☐ Increase your search engine visibility
   - ☐ Generate more traffic from the major search engines.
   - ☐ Make sure your website and business get NOTICED and VISITED.
   - ☐ Grow your client base and increase business revenue.

8. **Explain the difference between SEO and Pay-per-click**

SEO	Pay-Per-click
SEO results take 2 weeks to 4 months	It results in 1-2 days
It is very difficult to control flow of traffic	It has ability to turn on and at any moment
Requires ongoing learning and experience to reap results	Easier for a novice
It is more difficult to target local markets	Ability to target "local" markets
Better for long-term and lower margin campaigns	Better for short-term and high-margin campaigns.
Generally more cost-effective , does not penalize for more traffic	Generally more costly per visitor and per conversion

9. **What is web crawler?**
   A web crawler is a program which browses the world web in a methodical, automated manner. Web crawlers are mainly used to create a copy of all the visited pages for later processing by a search engine that will index the downloaded pages to p[provide fast searches.

10. **Define focused crawler.**
    A focused crawler or topical crawler is a web crawler that attempts to download only pages that are relevant to a pre-defined topic or set of topic.

11. **What is hard and soft focused crawling?**
    In **hard focused crawling** the classifier is invoked on a newly crawled document in a standard manner. When it returns the best matching category path, the out-neighbors of the page are checked into the database if and only if some node on the best matching category path is marked as good.

In **soft focused crawling** all out-neighbors of a visited page are checked into DB2, but their crawl priority is based on the relevance of the current page.

12. What is the Near-duplicate detection?

Near-duplicate is the task of identifying documents with almost identical content. Near- duplicate web documents are abundant. Two such documents differ from each other in a very small portion that displays advertisements, for example. Such differences are irrelevant and for web search.

13. What are requirements of XML information retrieval systems?

☐ Query language that allows users to specify the nature of relevant components, in particular with respect to their structure.

☐ Representation strategies providing a description not only of the content of XML documents, but also their structure.

☐ Ranking strategies that determine the most relevant elements and rank these appropriately for a given query.

UNIT IV – WEB SEARCH – LINK ANALYSIS AND SPECIALIZED SEARCH

Part A - Questions

1. What is link analysis?

The goal of information retrieval is to find all documents relevance for a user query in a collection of documents. With the advent of the web new source of information became available, one of them being the hyperlink between documents and records of user behavior. Collections of documents connected by hyperlinks. Hyperlinks provide a valuable source of information for web information retrieval. This area of information retrieval is commonly link analysis.

2. What is in query independent ranking?

In query-independent ranking a score is assigned to each page without a specific user query with the goal of measuring the intrinsic quality of a page. At query time this score is used with or without some query-dependent criteria to rank all documents matching the query.

3. What is query dependent ranking?

In query-dependent ranking a score measuring the quality and the relevance of a page to a given user query is assigned to some of the pages.

4. Define authorities?

Authorities are pages that are recognized as providing significant, trustworthy and useful information on a topic. In-degree is one simple measure of authority. However in-degree treats all links as equal.

5. Define hubs.

Hubs are index pages that provide lots of useful links to relevant content pages. Hub pages for IR are included in the home page.

6. What is Hadoop?

At Goggle MapReduce operation are run on a special file system called Google File System that is highly optimized for this purpose. GFS is not open source. Doug Cutting and Yahoo! reverse engineered the GFS and called it Hadoop Distributed File System. The software framework that supports HDFS, MapReduce and other related entities is called the project Hadoop or simply Hadoop

7. **What are the Hadoop Distributed File System?**

    The Hadoop Distributed File System is designed to store very large data sets reliably, and to stream those data sets at high bandwidth to user application. HDFS stores file system metadata and application data separately. The HDFS namespace is a hierarchy of files and directories. Files and directories are represented on the NameNode by inodes, Which record attributes like permissions, modification and access times, namespace and disk space quatas.

8. **Define MapReduce.**

    MapReduce is a programming model and software framework first developed by Google. Intended to facilitate and simplify the processing of vast amounts of data in parallel on large clusters of commodity hardware in a reliable, fault-tolerant manner.

9. **List the characteristics of MapReduce?**
    - Very large scale data: peta, exa bytes
    - Write once and read many data. It allows for parallelism without mutexes
    - Map and Reduce are the main operations: Simple code
    - All the map should be completed before reduce operation starts.
    - Map and reduce operations are typically performed by the same physical processor.
    - Number of map tasks and reduce tasks are configurable.
    - Operations are provisioned near the data.
    - Commodity hardware and storage.

10. **What are the limitation of Hadoop/MapReduce?**
    - Cannot control the order in which the maps or reductions are run.
    - For maximum parallelism, you need Maps and Reduces to not depend on data generated in the same MapReduce job.
    - A database with an index will always be faster than a MapReduce job on unindexed data.
    - Reduce operations do not take place until all Maps are complete.
    - General assumption that the output of Reduce is smaller than the input to Map;large data source used to generate smaller final values.

11. **What is Cross-Lingual Retrieval?**

    Cross – Lingual Retrieval refers to the retrieval of documents that are in a language different from the one in which the query is expressed. This allows users to search document

collections in multiple language and retrieve relevant information in a form that is useful to them, even when they have little or no linguistic competence in the target languages.

12. Define Snippets.

Snippets are short fragments of text extracted from the document content or its metadata. They may be static or query based. In static snippet, it always shows the first 50 words of the document, or the content of its description metadata, or a description taken from a directory site such as dmoz.org.

13. List advantages of invisible web content.

- Specialized content focus – large amounts of information focused on an exact subject.
- Contains information than might not be available on the visible web.
- Allows a user to find a precise answer to a specific question
- Allow a user to find WebPages from a specific date or time.

14. What is collaborative filtering?

Collaborative filtering is a method of making automatic predictions about the interests of a single user by collecting preferences or taste information from many users. It uses given rating data by many users for many items as the basic for predicting missing ratings and/or for creating a top-N recommendation list for a given user, called the active user.

15. What do you mean by item-based collaborative filtering?

Item-based CF is a model-based approach which produces recommendations based on the relationship between items inferred from the rating matrix. The assumption behind this approach is that users will prefer items that are similar to other items they like.

16. What are problem of user based CF?

The two main problems of user-based CF are that the whole user database has to be kept in memory and that expensive similarity computation between the active user and all other users in the database has to be performed.

17. Define user based collaborative Filtering.

User-based collaborative filtering algorithms work off the premise that if a user(A) has a similar profile to another user (B), then A is more likely to prefer things that B prefers when compared with a user chosen at random.

UNIT V – DOCUMENT TEXT MINING

Part A - Questions

1. **What do you mean by information filtering?**

   An information filtering system is a system that removes redundant or unwanted information from an information stream using (semi)automated or computerized methods prior to presentation overload and increment of the semantic signal-to-noise ratio.

2. **What are the characteristics of information filtering?**
   - Filtering system involve large amounts of data.
   - Information filtering systems deal with textual information.
   - It is applicable for unstructured or semi-structured data.

3. **Explain difference between information filtering and information Retrieval.**

Information Filter	Information Retrieval
IF is concerned with the removal of textual information from an incoming stream and its dissemination to groups or individuals.	IR systems are concerned with the collection and organization of texts so that users can then easily find a text in the collection.
Information filtering is concerned with repeated uses of the system by users with long-term, but changing interests and needs.	A query represents a one-time information need.
Filtering is based on descriptions of individual or group interests or needs that are usually called profiles.	Retrieval of information is instead based on user specified information needs in the form of a query.
IF systems deal with dynamic data.	IR systems deal with static databases.

4. **What is text mining?**
   - Text mining is understood as a process of automatically extracting meaningful, useful, previously unknown and ultimately comprehensible information from textual document repositories.

☐ Text mining can be visualized as consisting of two phases: Text refining that transforms free-form text documents into a chosen intermediate form, and knowledge distillation that deduces patterns or knowledge from the intermediate form.

5. **What is classification?**

Classification is a technique used to predict group membership for data instances. For example, you may wish to use classification to predict whether the weather on a particular day will be "sunny", "rainy" or "cloudy".

6. **Explain clustering.**

Clustering is a process of partitioning a set of data in a set of meaningful subclasses. Every data in the subclass shares a common trait. It helps a user to understand the natural grouping or structure in a data set.

7. **What are the desirable properties of a clustering algorithm?**
   ☐ Scalability
   ☐ Ability to deal with different data types
   ☐ Minimal requirements for domain knowledge to determine input parameters
   ☐ Interpretability and usability

8. **What is decision tree?**
   ☐ A decision tree is a simple representation for classifying examples. Decision tree learning is one of the most successful techniques for supervised classification learning. A decision tree or a classification tree is a tree in which each internal node is labeled with an input features.
   ☐ The arcs coming from a node labeled with a feature are labeled with each of the possible values of the feature. Each leaf of the tree is labeled with a class or a probability distribution over the classes.

9. **List the advantages of decision tree.**
   ☐ Decision tree can handle both nominal and numeric input attributes.
   ☐ Decision tree representation is rich enough to represent any discrete value classifier.
   ☐ Decision trees are3 capable of handling database that may have errors.
   ☐ Decision trees are capable of handling datasets that may have missing values.
   ☐ It is self-explanatory and when compacted they are also easy to follow.

10. List the disadvantages of decision tree

- Most of the algorithms require that the target attribute will have only discrete values.
- Most decision-tree algorithms only examine a single field at a time.
- Decision trees are prone to errors in classification problems with much class.
- As decision tree use the "divide and conquer" method, they tend to perform well if a few highly relevant attribute exists, but less so if many complex interactions are present.

11. What is supervised learning?

In supervised learning, both the inputs and the outputs are provided. The network then processes the inputs and compares its resulting outputs against the desired outputs. Errors are then propagated back through the system, causing the system to adjust the weights which control the network.

12. What is unsupervised learning?

In an unsupervised learning, the network adapts purely in response to its inputs. Such networks can learn to pick out structure in their input.

13. What is dendrogram?

Decompose data objects into a several levels of nested partitioning called a dendrogram. A clustering of the data objects is obtained by cutting the dendrogram at the desired level, then each connected component forms a cluster.