Question No. 1: What is the difference between hazards and threats? Provide examples.

Hazard:

A hazard is any agent that can cause harm or damage to humans, property, or the environment. Risk is defined as the probability that exposure to a hazard will lead to a negative consequence, or more simply, a hazard poses no risk if there is no exposure to that hazard.

Examples:

A hazard is something that can cause harm, e.g. electricity, chemicals, working up a ladder, noise, a keyboard, a bully at work, stress, etc. An object that could fall from a height (potential or gravitational energy). The release of compressed gas or steam (pressure; high temperature)

Threat:

A threat is a statement of an intent to harm or punish, or a something that presents an imminent danger or harm.

Examples:

1) A person who has the potential to blow up a building is an example of a threat.
2) When it appears as if it is going to rain, this is an example of a situation where there is a threat of rain.

Difference between Hazard and Threat:

A hazard occurs (is "actualized") when your operations interact with hazard sources. A threat is simply a generic way to describe danger, whether the danger has actualized or not.

Sometimes, hazard and threat might be used interchangeably. Consider the example of a flock of birds flying close to an aircraft. This flock is both a hazard and a threat.

However, because the concept of a threat is vaguer than the concept of a hazard, a threat is not always a hazard. Consider the example of:

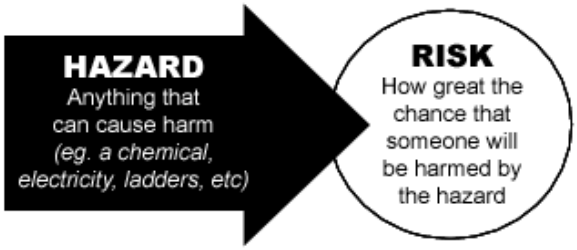
- migrating birds, which are a hazardous source but not an actual hazard, or
- fatigue, which is a contributing factor

Q.2: Define risk and provide a classification of risk based on its sources. Provide an example for each risk source

Risk:

A **risk** is the chance, high or low, that any hazard will actually cause somebody harm. For **example**, working alone away from your office can be a hazard.

Any action or activity that leads to loss of any **type** can be termed as **risk**. There are different **types of risks** that a firm might face and needs to overcome.



Source of Risk:

Risk sources are fundamental drivers that cause **risks** in a project or organization. There are many **sources** of **risks**, both internal and external to a project. **Risk sources** identify where **risks** can originate. Typical internal and external **risk sources** include the following: Uncertain requirements

Identifying risk sources provides a basis for systematically examining changing situations over time to uncover circumstances that affect the ability of the project to meet its objectives. Risk sources are both internal and external to the project. As the project progresses, additional sources of risk can be identified. Establishing categories for risks provides a mechanism for collecting and organizing risks as well as ensuring appropriate scrutiny and management attention to risks that can have serious consequences on meeting project objectives.

Sources of Risk:

S.No.	Sources of Risk	Examples
1	Commercial & Strategic	Competitions, market demand, new product, technology change etc.
2	Economics	Inflation, growth rate, price change, exchange rate variations etc.
3	Contractual	Client problem, delays, force majeure event.
4	Financial	Funding constraints, taxation impact, interest rates etc.
5	Environmental	Approval process, amenity value, heritage etc.

6	Political	Policy change, government endorsement, taxation
7	Social	Community expectations, pressure groups
8	Project initiation	Performance objection, innovation, stakeholder's role and responsibility.
9	Procurement Planning	Industry capability, cost estimation, private sector involvement, regulations and standards.
10	Project Delivery Stage	Contract selection, client commitment, tendering, negligence, damages and claims etc.
11	Construction & Maintenance	Build ability, contract ability, quality control, accidents, etc
12	Human factors	Estimation error, operators error
13	Natural Envents	Landslips, earthquake, fire, flood etc
14	Organizational	Industry relation, resource shortages, policy change etc
15	systems	Communication and network failure, hardware failure, software failure, policy and procedures etc.

Q.3: How would you assess the performance of a transportation system of a city?

Performance measurement can be defined as the assessment of an organization's output as a product of the management of its internal resources (money, people, vehicles, facilities) and the environment in which it operates.

The measurement of transit performance represents a very useful tool for ensuring continuous increase of the quality of the delivered transit services, and for allocating resources among competing transit agencies. Transit service quality can be evaluated by subjective measures based on passengers' perceptions, and objective measures represented by disaggregate performance measures expressed as numerical values, which must be compared with fixed standards or past performances.

Mobility demand of people living in urban and metropolitan areas is continuously growing because of the desire to participate in increasingly varied activities motivated by physiological, psychological and economic needs. Interdependencies among activities entail complex travel choices involving the generation of trip-chains and travel patterns. In order to satisfy this ever-changing mobility demand, people tend to use individual motorized transport modes. Nevertheless, the continuing trend of modal shift in favor of the private car produces the increase of environmental externalities, while these impacts have to be reduced in order to make the transport sector more environmentally sustainable. Making progress towards more sustainable transportation systems and mobility patterns, and at the same time increasing the economic prosperity and quality of life, are policy aims shared by countries.

Recently, transit has been called on to contribute to improve air quality in many major urban centers and to have a transportation system that is balanced, efficient, and intermodal. An effective transit system can make contributions toward improving the environment, thus elevating itself in the hierarchy of funding decisions. Modal substitution represents hence an important strategy of demand management for the achievement of a sustainable transportation; this can be accomplished by providing better modal options. Such as transit systems characterized by high quality levels.

In order to ensuring continuous improvement of the delivered transit services, performance measures are an essential tool for focusing transit agencies on their strategic goals. Performance measures can be useful also for the allocation of funds but, for this aim, a more thorough understanding of the applicability and appropriateness of performance measures to different types of transit systems is necessary.

City Transport Performance Measure:

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Performance measurement is very useful for different aims: assisting in evaluating the transit system's overall performance, assessing management performance expectations of the transit

system in relation to community objectives, assessing management performance and diagnosing problems such as disproportionate cost in relation to service, allocating resources among competing transit properties, providing a management control system for monitoring and improving transit services, facilitating the accountability sought by government funding agencies and demanded by legislators, regional and transit authority boards, and the general public.

Performance in general terms refers to any evaluation or comparison measure. A performance measure can be considered as a quantitative or qualitative characterization of performance. Each of these measures has certain indicators that are used to signify transit performance for each particular measure. A performance indicator is more specifically a performance measure used to document progress toward a performance goal, and to monitor performance. A review of the literature on transit performance reveals that not all agencies use the same terms for performance measures (e.g. Fielding, 1987). In addition, views of performance-based allocation and how indicators are calculated vary tremendously. Therefore, in the literature, there are various classifications of the transit performance measures, some are more schematic, and others more articulate.

1. Available Data and Standards:
2. Service availability
3. Service reliability
4. Comfort
5. Cleanliness
6. Safety and security
7. Fare
8. Information
9. Customer care
10. Environmental impacts

Q.4: Define security vulnerabilities of a university campus

Security Vulnerability:

Generally, an unintended flaw in a system that leaves it open to the potential for exploitation in the form of unauthorized access or malicious behavior.

A vulnerability assessment is a systematic review of security weaknesses in a system. It evaluates if the system is susceptible to any known vulnerabilities, assigns severity levels to those vulnerabilities, and recommends remediation or mitigation, if and whenever needed.

It describes the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors. Examples may include:

- poor design and construction of buildings,
- inadequate protection of assets,
- lack of public information and awareness,
- limited official recognition of risks and preparedness measures, and
- Disregard for wise environmental management.