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Declaration & Statement of Authorship

I, bearing registration number 103117086 agree and acknowledge that:

1. The assessment was answered by me as per the instructions applicable to each assessment and that I have not associated to any unfair means to deliberately improve my performance.

2. I have neither personated anyone nor have I been impersonated by any person for the purpose of assignments.

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Q.1.

Answer:

a. Land clearing activity

Direct Impacts	Indirect Impacts
1. Compaction of soil due to heavy equipments used for clearance.	1. Modification of water table below soil.
2. Destruction of site specific flora and fauna.	2. Disappearance of reproduction and food zones for migratory birds, animals.
3. Disturbance to wild lives or humans living nearby.	3. Increase in poaching activity.

b. Road Construction Activity.

Direct Impacts	Indirect Impacts
1. Modification of water course during construction and after construction.	1. Influence the water table underground.
2. Destruction of vegetation.	2. Increase in population.
3. Loss of topsoil	3. Increase in pollution due to increase in human settlement.

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Q. 2

Answer:

Some mitigation measures that can help in minimizing the effects of noise pollution are listed below:-

i) Using well-maintained equipments, machineries and vehicles to avoid generation of high noise.

ii) Use of peripheral barricade to prevent noise emission outside the project premises.

iii) Provision of PPEs (Personnel protective equipments) like earplugs/muffs for all the workers at the site.

iv) Green belt shall be prepared to reduce the intensity of noise.

Q. 3.

Answer:

Some legal provisions on EIA and Environment Impact Assessment notification are explained briefly below:

i) The Environmental Protection Act, 1986

→ This act establishes the framework for studying, planning and implementing long term requirements of environmental safety and laying down a system of speedy and adequate response to situations threatening the environment.

ii) The Air (Prevention and Control of Pollution) Act, 1981

→ This act provides prevention, control and abatement of air pollution

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and for the establishments of Boards at the Central and State levels with a view to carrying out the aforesaid purposes. It even empowers the State government after consultation with SPCB's to declare any area or areas within the State as air pollution control area or areas.

3. 4.

Solution,

The various steps involved in adopting EIA as a planning tool for 'Road Construction Project' are briefly explained below.

1. Defining the Project

: It is the submission of the preliminary information of the project. Its nature, location and impacts are briefly discussed. The existing laws and regulations on road construction are reviewed along with the regulating authorities.

2. Environmental Screening

: EIA process starts before the start of the project. Once a developer has identified a need and assessed possible alternatives of project design to select a preferred alternative, questions such as 'What will be the effect of Road Development on the Environment?' 'Are more effects significant?' should be answered.

If it is ayes, EIA must be carried out. This process is called screening.

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3. Environmental scoping:

: Here, the public and interested parties are involved which identifies the key environmental issues that should be addressed. Scoping controls the cost and time of the assessment in deciding the scope of the EIA.

1. Consideration of alternatives

: This seeks to ensure that the proponent has considered other feasible approaches, including alternative project locations scales, processes, layouts, operating condition and no action option.

5. Description of the environmental baseline

: The essential background information on the environmental situation is necessary so that the reviewers can interpret conclusions and provide recommendations. Preferably a simple schematic drawing properly cd is better than voluminous text.

6. Impact Prediction

: It involves forecasting the likely changes in the environment that will occur as a result of the development.

7. Impact Assessment

: Here, we assess the identified impacts. This is the most technical in nature and also is most difficult and controversial part of EIA. It requires interpretation of the importance or significance of the impacts to provide a conclusion.

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8. Mitigation measures.

: We take some measures to reduce the magnitude or intensity of the impacts affecting the environment. This measures help project economically and is also environmentally viable.

9. Public Participation

: EIA practice involves and engages the public at numerous points throughout the process with a two-way exchange of information and views. It may consist of informational meetings, public hearings, and opportunities to provide written comments about Road construction.

10. Producing the environmental impact statement.

: They are the public documents intended to inform the public of the nature and likely consequences of a development in time to comment and/or participate in the final project design.

11. EIS review

. Once EIA is complete, it is submitted to competent authority. This is the body with the authority to permit or refuse development applications. The review process should enable the decision-maker to decide whether the EIS is adequate, whether information is correct or whether it is unbaised.

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12: Decision

: A decision is to approve or reject a project and is generally based on final EIA. The decision is made by managers, or a committee, or personnel from the concerned ministry who had not been associated with the EIA during its preparation.

13. Auditing

: This follows monitoring and involves comparing actual outcomes with predicted outcomes, and can be used to assess the quality of prediction and effectiveness of mitigation.

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Q.5

Answer:

The important surface water contaminants and their impacts are briefly discussed below:

Surface water contaminants	Impacts
1. Heavy Metals	They are usually added to wastewater from commercial and industrial activities and may have to be removed if the wastewater is to be reused.
2. Suspended soils.	They can lead to development of sludge deposits and anaerobic conditions when untreated and thus affects the aquatic environment.
3. Pathogens	The pathogenic organisms transmit communicable diseases
4. Refractory organics.	These are surfactants, phenols, agricultural pesticides etc. They tend to resist the conventional methods of wastewater treatment.
5. Nutrients	Nitrogen, Phosphorous and carbon are essential nutrients for growth and if discharged can lead to undesirable aquatic life.

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Q.6

a)

Answer: Some of the criteria to adopt while selecting EIA methodologies are as follows:

i) General Criteria

ii) Impact Identification

iii) Impact Measurement

iv) Impact Interpretation and Evaluation

v) Impact Communication

b)

Answer:

Overlay method is one of the important methodologies for assessing impacts of development activities by preparing transparent maps representing spatial distribution of environment characteristics such as water, forest, settlements etc and overlaid to produce a composite map which helps to characterize area's physical, social and ecological and other relevant characteristics for validating the assessment.

Nowaday, GIS is being used as layered overlay technique. The computer model can store data relating to the characteristics of surrounding area as well as proposed development, enabling the introduction of impact weighting into assessment that helps us to indicate possible implications of our decision.

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The complex mathematical operations can be performed by computer involving many no number of variables which was restricted to 10 in conventional methods

The satellite images of required parameters can for the 'Dam Construction' can be taken of from a given area. They all can be then overlayed to create a final map describing the potential impact for the given region.

Q.7

Answer.

The mitigation measures for major road construction projects on soil and ground water environment are as follows:-

Soil	Ground water
1. Adoption of on site stabilization technique which will remove the ability of popullants to move offsite	1. Air sparging vaccum extraction, pump and treat methods is effective in a range of contaminants from groundwater.
2. Removal of contamination for offsite disposal which is commonly adopted method, however that will result in transport of hazardous material	2. Developing alternative to avoid interference of shallow acquifers and springs

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Soil	Groundwater
along public highway and displacement of pollution to a land fill site.	3. Intercepting and slowing water runoff contaminated with chemicals or harmful pollutants that might percolate inside.
3. Temporarily covering the soil with mulch or fast growing vegetation.	

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Q.8

Answer:

The various steps to be followed for a systematic approach for the study of prediction and assessments of impacts of any development activity on the air environment are as follows:-

i) Evaluation and Identification of sources and quantity of air pollutant emissions of different phases of the proposed activity like the construction operation and development.

→ In this step, we examine what types of air pollutants are likely to be emitted during the construction / operational phases of the proposed activity and their quantities.

For example, during combustion activity, the air pollutants are carbon dioxide and carbon monoxide.

ii) Detailed evaluation of existing ambient air quality, meteorological conditions and natural air quality existing in the project area

→ In this step, the general atmospheric conditions will provide a fundamental understanding of atmospheric transport. The base time air quality information has to be discussed on various systematic approaches.

For example, The general atmospheric dispersion condition helps us to know more about the dispersion capacity of the area

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(iii) Examination of appropriate laws and regulations, or criteria to be followed for maintaining ambient air quality and/or pollutant emission standards.

→ According to air quality standards criteria and policies of local, state and central government agencies, we have to decide between alternative actions or in assuring the need for mitigation measures for a given alternative.

Since, air pollution has become a major hazard, we have to follow appropriate laws or measures to keep our emission from activities as low as possible.

iv) Carrying out the impact assessment of project activities using mass balance, mathematical models or qualification prediction.

→ Here, using the available mathematical models, we get the predictions of concentrations and deposition rates to determine the potential for secondary and higher order impacts.

v) Assessment of significance of anticipated beneficial and detrimental impact

→ Here, we evaluate the anticipated changes related to the proposed project and this should be conducted through public meetings / public participation programme etc.

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vi) Appropriate mitigation/remedial plans for reducing adverse impacts.

→ Last but not the least the remedies/mitigation measures for reducing the adverse impacts are involved that can be used to minimize the magnitude of the air quality impacts.