TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2082 Shrawan

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impacts Assessment *(Elective III) (CE 78504)*

- ✓ *Candidates are required to give their answers in their own words as far as practicable.*
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ ***Necessary graph is attached herewith.***
- ✓ *Assume suitable data if necessary.*

1. a) Describe briefly the emergence of EIA in Nepal. Justify that the EIA is one of the tools for achieving sustainable development. [4+4]

   b) What is meant by screening? Describe with examples how screening is carried out according to EPR, 2077. [2+6]

2. a) Describe about ToR and scoping process. Justify that the scoping is considered as heart of the EIA. [4+4]

   b) Define the environmental setting in the EIA study. Describe the methods of collecting baseline data/ information for biological and socio-economic environment. [4+4]

3. a) A cement factory was developed far from a city center which burns 7.5 tons of coal per hour and discharges the combustion products through a stack that has effective height of 70 m. The sulfur content of coal is 4.7%. The wind velocity at the top of the stack is 6 m/s. The atmospheric conditions are slightly unstable. Determine the maximum ground level concentration of SO_2 and the distance from the stack at which it occurs. Predict the impact on air environment at 1200 m downwind distance (Use the attached graph if required). [8]

   b) In a public place, a speaker generates a noise level of 65 dB for 20 minutes every 60 minutes. If the background noise level of two sources produces equal noise level 40 dB. Calculate the average equivalent noise level. [8]

4. a) List the objective of environmental monitoring. What are the different types of environmental monitoring carried out in EIA? Discuss them with some examples. [2+2+4]

   b) Explain the statement, "Avoidance is common and preferable method of mitigation measure". Also, describe the hierarchy of EPMs (Environmental protection measures). [8]

5. Write short note on the following (Any Four) [4×4]
   a) Methods of Impact Prediction.
   b) Type of EIA with examples
   c) Types of Environmental Study in EPR-2077
   d) Method of Initial Environmental Examination (IEE)
   e) Environmental Monitoring and Auditing

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2081 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV/ II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE 78504)*

- ✓ *Candidates are required to give their answers in their own words as far as practicable.*
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ ***Necessary Graph is attached herewith.***
- ✓ *Assume suitable data if necessary.*

1. a) Define EIA. Explain that the EIA is both art and science. Describe in brief about EIA process and project cycle. [4+4]
   b) What is meant by screening, and what are its objectives? Justify the importance of screening while selecting a project. [4+4]
2. a) Discuss the objectives of ToR and Scoping. Explain, why the Scoping is considered as heart of the EIA. [4+4]
   b) Define the Environmental Baseline in EIA study. List out method of baseline data collection. Justify the importance of baseline data while determining the project alternatives. [4+4]
3. a) An industrial power plant is to be developed in an area which will burn coal at the rate of 8.0 tonnes per hour and will discharge the flue gases through a stack having effective height of 110 m. The coal has sulphur content of 6.5 %. The wind velocity at the top of the stack is 6 m/s. The atmospheric conditions are slightly unstable. Determine the maximum ground surface concentration of SO_2 and the distance from the stack at which this occurs. (Use the attached graph) [8]
   b) A river is receiving wastewater from a town have following data.
   Population = 14,000; Domestic sewage = 175 lpcd; BOD of domestic sewage = 200 mg/l; River discharge = 0.6m^3/s; BOD of river water = 1 mg/l; DO of river water = 7.8mg/l. Calculate amount of oxygen & BOD just after mixing wastewater in the river. [8]
4. a) Define Environmental Management Action Plan (EMAP). Discuss the EMAP with some examples of a road project. [2+6]
   b) Explain the statement, "Avoidance is common and preferable method of mitigation measure". Also, describe the hierarchy of EPMs (Environmental protection measures). [8]
5. Write short notes on: (Any Four) [4×4]
   a) Methods of Impact Identification.
   b) Environment, Impact, and Assessment
   c) Types of Environmental Study in EPR-2077
   d) Initial Environmental Examination (IEE)
   e) Stakeholder Consultation and Public Participation

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2080 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: -Environmental Impact Assessment *(Elective III) (CE 78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **Any Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ ***Necessary graph is attached herewith.***
- ✓ *Assume suitable data if necessary.*

1. a) Define Environmental Impact Assessment (EIA). Describe the emergence of EIA in the context of Nepal. [2+6]
   b) What are the different types of impacts to be considered during EA process? Describe the various identification methods for impacts determination. [3+5]
2. a) List out the objectives of Scoping. Discuss the different methods of Scoping with suitable examples. [3+5]
   b) Define Environmental Setting. Explain the need of collecting baseline data of the area likely to be affected by the proposed project. [2+6]
3. a) A thermal power plant burns coal at the rate of 6.0 tonnes per hour and discharge the flue gases through a stack having effective height of 90 m. The coal has sulphur content of 4.5 %. The wind velocity at the top of the stack is 7.5 m/s. The atmospheric conditions are slightly unstable. Determine the maximum ground surface concentration of SO_2 and the distance from the stack at which this occurs. (Use attached graph). [8]
   b) EIA report for municipal wastewater management project suggests to construct treatment plant before discharge domestic sewage in a stream. What will be the maximum permissible effluent BOD and the percentage purification required in treatment plant with the following data: [8]
   Population of town = 32,000
   Minimum flow of stream = 0.15 m^3/s
   BOD of stream = 5 mg/l
   DWF of sewage = 150 lpcd
   BOD of sewage = 400 mg/l
   Maximum BOD of stream on downstream = 20 mg/l
4. a) Develop a brief Environmental Management Plan (EMP) for minimizing the adverse impacts during construction and implementation of the project. [8]
   b) Explain the measures to be taken for mitigation of adverse environmental impacts during operational phases of an engineering project. [8]
5. a) Discuss the legal procedure and importance of public participation and stakeholder's consultation both in EIA study of a project and its implementation phases. [8]
   b) What is meant by Environmental Audit? Discuss the objectives of different types of the environmental audit. [2+6]
6. Write short note on: (Any Four) [4×4]
   a) Scoping in EIA
   b) Linkage of project cycle with EIA
   c) Impact evaluation techniques
   d) Screening criteria
   e) Importance of public hearing in EIA

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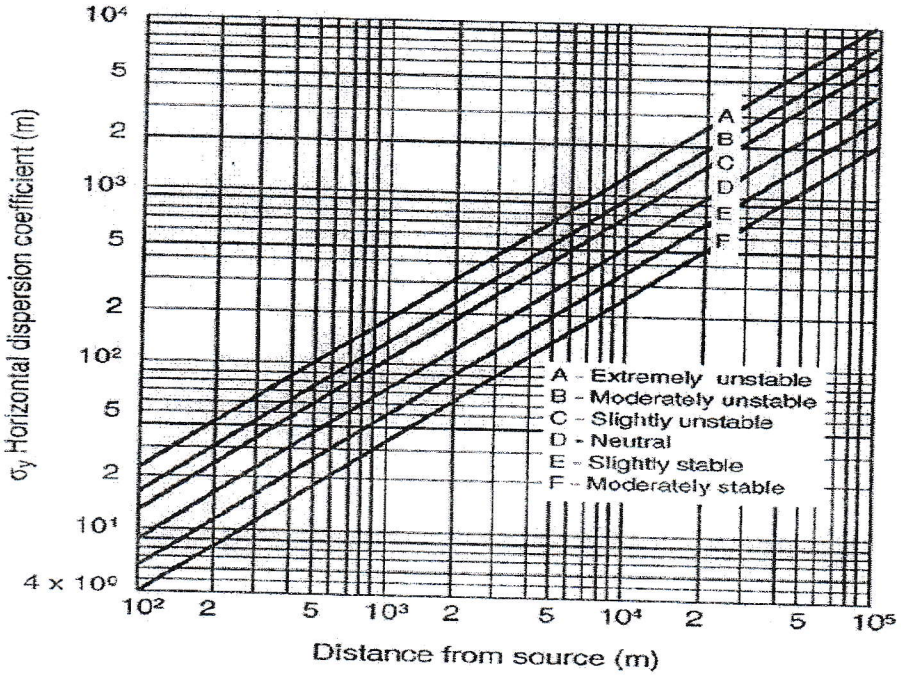
σ_y Horizontal dispersion coefficient (m)
10^4
5
2
10^3
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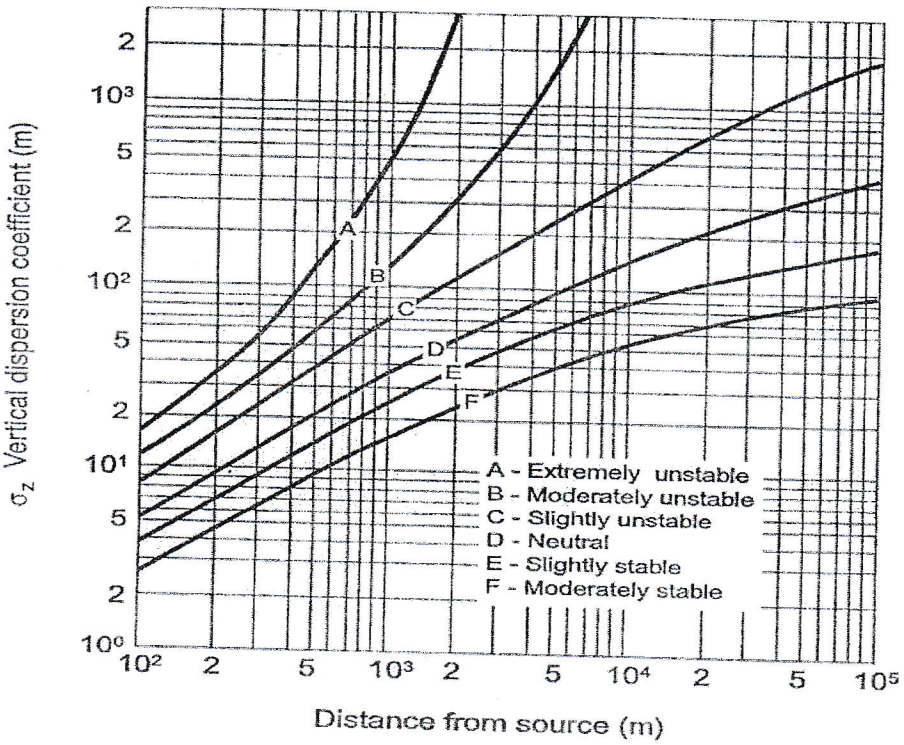
2
10^2
5
2
10^1
4×10^0
10^2 2 5 10^3 2 5 10^4 2 5 10^5
Distance from source (m)
A
B
C
D
E
F
A - Extremely unstable
B - Moderately unstable
C - Slightly unstable
D - Neutral
E - Slightly stable
F - Moderately stable


σ_z Vertical dispersion coefficient (m)
2
10^3
5
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10^2
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2
10^1
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2
10^0
10^2 2 5 10^3 2 5 10^4 2 5 10^5
Distance from source (m)
A
B
C
D
E
F
A - Extremely unstable
B - Moderately unstable
C - Slightly unstable
D - Neutral
E - Slightly stable
F - Moderately stable

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2079 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE 78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Define EIA and list out benefits of EIA. Explain "EIA is considered as an effective tool to tackle the "environmental" issues". [8]
   b) Describe the screening criteria. Compare the difference between IEE and EIA. [8]
2. a) What are the objectives of Scoping? Briefly describe main components of Scoping [8]
   b) Write down the different types of baseline information need to be collected during EA process. Also write down the importance of such collected information. [8]
3. a) A power plant consumes 4.21 tons of coal per hour and discharges the combustion products through a stack that has an effective height of 120 m. The coal has sulfur content of 2.5%, and the mean wind velocity at the top of the stack is 7.0m/s and the atmospheric condition is moderately unstable. The distance from the stack at which maximum concentration occurs is 690 m and σy for this atmospheric condition is 98m. Determine the maximum ground level concentration of SO_2. The SO_2 concentration over 125$\mu g/m^3$ will increase the risk of bronchitis to human receptors. Does the operation of this power plant effect human receptors or not?
   b) The domestic sewage of a town is to be discharged into a stream after treatment. Determine the permissible effluent BOD 5 and the percentage purification required in the treatment plant with the following information:

   Population = 40,000; DWF of sewage 150lpcd; BOD 5 concentration per capita = 0.075kg/day; minimum flow of stream = 0.15m/sec; BOD 5 of stream = 2mg/L; maximum allowable BOD 5 of stream on downstream = 6mg/L. At what level you can add BOD 5 in a stream from domestic sewage? [8]
4. a) Define Environmental Monitoring. Discuss briefly the different types and methods of Environmental Monitoring. [8]
   b) Write about types of mitigation measures. Describe noise pollution and method for reduction of noise pollution in a community. [8]
5. a) Discuss the legal procedure and importance of public participation and stakeholder's consultation in EIA study and implementation stages. [8]
   b) Explain different methods of impacts prediction during the EIA process in Nepal. [8]
6. Write Short note on: [8]
   a) EIA and Project cycle
   b) Environmental Settings and its importance
   c) EIA and Sustainable development
   d) EIA report review process

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2078 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Define EIA and types of EIA. State the need and role of EIA in ecosystem restoration. [8]
   b) Discuss about the emergence of EIA from local to global scale. Highlight major features of Environmental Protection Regulation (EPR), 2077 B.S of Nepal. [8]
2. a) Why is screening important in environmental assessment? With flow diagram, state about screening process. [2+6]
   b) Illustrate about the objective of collecting baseline data. How do you collect such data for environmental assessment (EA)? [2+6]
3. a) Write down the different types of mitigation measures with examples for implementation and their hierarchy. [8]
   b) Highlight the objectives of environmental monitoring. What are the different types of monitoring carried out in EIA? [8]
4. a) A brick factory is located near a community. The physical stack height of the factory is 75 m and inside diameter of stack at exit is 1.2 m. The wind velocity is 3 m/s and stack gas exit velocity is 15 m/s. The barometric pressure is 1000 millibars and the temperature of stack gas at exist is 200°C and air is 20°C. Determine effective height of the stack and describe the effects of brick factory to the surrounding community. [8]
   b) The municipal sewage is to be discharged in a nearby stream after treatment. The minimum flow of stream is 300 liters per second and BOD_5 is 4 mg/l. The population of the municipality is 70000, D.W.F of sewage is 120 liters per capita per day, BOD_5 contribution per capita is 0.065 kg per day. Determine the permissible BOD_5 of effluent if the maximum permissible BOD_5 of stream at downstream is 10 mg/l. What percentage of treatment is required and why? [8]
5. a) Briefly discuss about types of mitigation measures with suitable examples. [8]
   b) What is public participation? What are advantages and disadvantages of public participation in environmental assessment? [8]
6. Write short notes on: [4×4]
   a) Emergence of EIA
   b) Environmental Auditing
   c) Environmental Management Plan
   d) Alternative Analysis of EIA

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2077 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ ***Necessary graph are attached herewith.***
- ✓ *Assume suitable data if necessary.*

1. a) "EIA is the both planning and decision making tool" Describe this statement with suitable examples. [8]
   b) On the basis of recent Nepalese legal process and objectives differentiate the process of EIA and IEE. [8]
2. a) "Scoping is the heart of EIA". Describe this statement highlighting scoping's objectives. [8]
   b) What do you mean by environmental setting? Write down the importance of baseline data. [8]
3. a) Explain the main elements of mitigation measures on the basis of their hierarchy. [8]
   b) Write down the stages of stakeholder involvement during EIA process. [8]
4. a) A manufacturing plant burns coals at the rate of 6 tonnes per hour and discharges the flue gases through a chimney having effective height of 85 m. The coal has Sulphur content 4.5%. The wind velocity at the top of the stack is 8 m/s. The atmospheric conditions are moderately unstable. Predict the maximum ground concentration of SO_2. (Use attachment graph) [8]
   b) Tikapur Municipality Kailali plan to treat municipal wastewater before discharge into Karnali River so that minimum DO level of river maintains 4 mg/l. Predict the degree of treatment required before discharge to river. The characteristics of river and wastewater are found during baseline study as follows: [8]

Parameter	Karnali River	Wastewater
Flow, m^3/s	200	5
DO, mg/l	8.52	0.00
BOD, mg/l	4	350
Temperature, °C	20°	20° C
DO saturation = 9.17 mg/l at 20° C, K_{20} = 0.1 per day and R_{20} = 0.3 per day		

5. Write short notes on: (Any Four) [4×4]
   a) Environmental Management Plan
   b) EA Review Process
   c) Impact Evaluation techniques
   d) Linkage between EIA and project cycle (diagram only)
   e) Features of Environment Protection Regulation, 2077 (BS)

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Bhadra

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE 78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. State the meaning of EIA and describe the environmental assessment review and public participation process in decision making process? [8]
2. Discuss the statement "Scoping is the heart of the EIA process." Explain Term of Reference (ToR) and the main components of (ToR). [8]
3. A cement factory burns 8.5 tons of coal per hour and discharges the combustion products through a stack that has effective height of 80m. The sulfur content of coal is 4.5%. The wind velocity at the top of the stack is 2 m/sec. The atmospheric conditions are moderately to slightly stable. Predict the impact on air environment at 850m downwind distance. The guideline states that if the concentration of SO_2(Sulfur dioxide) exceeds 300μg/m^3 in the ambient environment it may cause adverse impact on human health. Assume standard deviation of horizontal and vertical plum concentration at downwind distance of 850m is 80m and 50m respectively. If it causes the adverse impacts to human health, refer at least three mitigation measures. Use Gaussian Model to predict the concentration. [8]
4. Elaborate the impartance of impact prediction in EIA. Explain methods of impact prediction and any uncertainties associated with such methods. [8]
5. Mention the main elements of environment protection method. Describe various mitigation measures to be adapted for a development project (with suitable example). [8]
6. Why review of EIA is necessary for decision making? Write down the objective of review process. Discuss which parameters are reviewed in EIA and how? [8]
7. What is meant by environmental baseline? Discuss about the key environmental setting to be considered while collecting environmental base line information. [8]
8. What are different types of impacts considered in EIA for a new development projects. Discuss about impact evaluation techniques with suitable example. [8]
9. Write short notes on: [4×4]
   a) Methods of IEE
   b) Screening procedure
   c) Stakeholder consultation
   d) Environmental monitoring

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06 D TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What is the role of EIA for sustainable development? Discuss briefly on "Environmental issues has emerged from local to global scale." [4+4]
   b) Explain principles of EIA. Explain the various steps involved in EIA process with figure. [2+6]
2. a) Define screening criteria. Discuss methods for Initial Environmental Examination (IEE) of a small feeder road construction in your area. [4+4]
   b) What is environmental setting? Stepwise explain the methods to conduct scoping. [4+4]
3. a) What are the misconceptions about EIA or IEE? Discuss about the format of TOR. [8]
   b) Explain different types of environmental auditing. What is the role of ministry of forest and environment in environmental auditing in Nepal? [8]
4. a) Write down the methods of impact identification. Describe any method with suitable examples. [8]
   b) The domestic sewage of newly announced rural municipality is to be discharged into a river after treatment. Calculate the permissible effluent BOD_5 and the percentage purification necessary in the treatment plant with following data. Population = 20,000; DWF of sewage = 80 lpcd; BOD_5 contribution per capita = 0.075 kg/day; Minimum flow of river = 0.2 m^3/s, BOD_5 of the river = 1 mg/l; maximum allowable BOD_5 of river at downstream = 5 mg/l. [8]
5. a) State the types of mitigation measures. What are the considerations for implementation of Environmental Protection Measures? [8]
   b) Discuss the procedure and importance of stakeholder's consultation and public participation in the EIA process. [8]
6. Write short notes on: [4×4]
   a) Major section of EPA and EPR (1997) in Nepal
   b) Purpose and Importance of Baseline Data
   c) Terms of Reference
   d) Environmental Monitoring

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06D

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2074 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a. Give brief account on legal procedure for the public participation during EIA procedure. What are the different principles of Environmental Assessment? [8]
   b. EIA is about doing the things right way, not only doing the right things. Explain? [8]
2. a. Explain different methods of impacts identification during EIA study in Nepal? [8]
   b. What are the objectives of EIA? Differentiate between Effects and Impacts. [8]
3. a. Explain about the environmental screening methodology? Give the proper linkage of EIA and project cycle. [8]
   b. Explain different types of EPMs. What is the role of MOEST in environmental auditing process in Nepal? [8]
4. a. A cement factory burns 5 tons of coal per hour and discharges the combustion products through a stack that has effective height of 80 m. The sulfur content of coal is 4.5%. The wind velocity at the top of the stack is 4 m/sec. The atmospheric conditions are moderately to slightly stable. Predict the impact on air environment at 850 m downwind distance. The guideline states that if the concentration of SO_2 (sulfur dioxide) exceeds $300\mu g/m^3$ in the ambient environment it may cause adverse impact on human health. Assume standard deviation of horizontal and vertical plum concentration at downwind distance of 850 m is 85 m and 54 m respectively. [8]
   b. What is alternative analysis of the project? Why baseline information is necessary during EA process? [8]
5. a. Define environmental monitoring? Discuss briefly about the types of the environmental monitoring? [8]
   b. Give an account of the importance of environmental management execution plan . What is the importance of EMAP chapter in an EIA report? [8]
6. Write short notes on: [16]
   a. Features of Environmental Protection Act 1997
   b. TOR for conducting IEE in hydropower project
   c. EIA is multidisciplinary and intersectoral
   d. Environmental scoping is heart of an EIA process

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06D TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2074 Magh

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. The term climate change issues are considered to be due to anthropogenic cause rather than natural. Explain how EIA has come forward as an effective tool to tackle these issues. [8]

OR

Discuss the emergence of EIA. What are impacts and list their types? How does EIA process go with project cycle?

2. What are the main guiding principles of EIA? In which circumstances screening, IEE and EIA is necessary? Describe. [7]
3. What is impact identification? Highlight the purpose of baseline studies. Describe about environmental settling for baseline studies. [7]
4. What is scoping and TOR? Describe the process and importance of scoping in EIA. [8]
5. What is prediction of impact? Predict the impact on the downwind settlement 2000 m and 400 m cross wind distance from the industry during a day when atmospheric stability is moderately to slightly stable. The industry consumes 9 tons of coal per hour. The sulfur content of the coal is 4.5%. The effective height of chimney is 90 m. The mean wind velocity at the top of the chimney is 7.5 m/s. The horizontal coefficient (σy) and vertical dispersion coefficient (σz) of plume standard deviation are 210 m and 130 m. If the concentration SO_2 is greater than 150 $\mu g/m^3$ significant health hazard comment it. [11]
6. What is water pollution? Discuss the step and method follow for surface water impact prediction. A wastewater treatment plant dispose of its effluent into a stream at a point A, characteristics of the stream at a location fairly upstream of A and of the effluent is a below: [11]

Item	Units	Effluent	Stream
Flow	M3/s	0.20	0.50
Dissolved oxygen (DO)	Mg/l	2.0	8.0
Temperature	°C	26	22
BOD_5 at 20°C	Mg/l	40	3

Assume De-oxygenation constant (K_1) at 20°C = 0.20/d and re-aeration constant (K_2) at 20°C = 0.40/d for the mixture (base e). Equilibrium concentration of dissolve oxygen for the fresh water is as

Temp.°C	18	20	22	23	24	25	26
C(mg/l)	9.54	9.17	8.83	8.68	8.53	8.38	8.22

The velocity of the stream D/S of the point A is 0.20 m/s. Determine critical oxygen deficit and its location, use temperature coefficient of 1.04 for K_1 and 1.02 for K_2.

7. What is mitigation measure and why it is necessary? What are the types of mitigation? What are the factors we should consider while prescribing mitigation? [7]
8. Define environmental monitoring and explain the objective of it. What are the different types of monitoring carried out in EIA? [7]
9. What is the legislative commitment of Nepal regarding environment and discuss its importance? Explain main feature of EPA and EPR and the environment state of Nepal. [7]
10. Who are the stake holders? Discuss importance of stakeholder's consultation and public participation in EIA procedure. [7]

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6 D TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2073 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Define Environmental Impact Assessment and discuss on types, time frame and budget of EIA with reference to Nepal. Why do you carry out EIA before the detailed design work? [8]
2. a) What are the objectives of EIA? Differentiate between EIA and IEE. [8]
   b) What is scoping and why it is important part of EIA process? Develop Term of Reference (TOR) for EIA of water supply project which is proposed at Western Nepal. [8]
3. a) Describe purpose and importance of baseline data collection. Discuss method of baseline data collection for a new building project. [8]
   b) A diary industry discharge 3.17m^3/s of waste water into stream whose flow rate is 21 m^3/s. The BOD_5 at 20°C of waste water is 30 mg/l and the stream is 2.1 mg/*l*. Stream contains 9.17 mg/*l* DO and waste water is purify. At 20°C $k_d = 0.1d^{-1}$ and $k_r = 0.15\ d^{-1}$. Take DO as 9.17 mg/*l* at saturation level. Find out DO at the end of 1st and 2nd day and also explain why treatment plant is advisable to keep or not? If yes, what should be the percentage of treatment with respect to temp, DO and BOD? [8]
4. A solid waste transfer station is proposed to be established at your city. Explain why environmental protection measure is required for this project. As an EIA team leader what type of mitigation measures you will adopt? [8]
5. a) A brick factory is located near residential area. The physical stack height of the factory is 150m and the inside diameter of stack at exit is 1.5m. The wind velocity is 5m/s and stack gas exit velocity is three times the wind velocity. The barometric pressure is 1100 millibars and the temperature of stack gas at exit is 200°C and air is 35°C. Determine effective height of the stack and describe the effects of brick factory to the surrounding environment. [8]
   b) List out the objectives of environmental monitoring. What are the types of monitoring carried out in EIA? Discuss with an example. [8]
6. Write short notes on: [4×4]
   a) Environmental scoping is heart of an EIA process
   b) Impact evaluation technique
   c) EIA Review
   d) Public hearing in EIA

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6 D TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2073 Magh

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What are the different roles of public participation in EIA process? Who are the different methods for involving the public in environment assessment process? [8]
   b) EIA is about doing the things right way, not only doing the right things. Explain. [8]
2. What are different types of impacts considered in EIA? What are the weaknesses of EIA study particularly in the contest of Nepal? [8]
3. a) What are the misconceptions about EIA or IEE? Give the proper linkage of EIA and project cycle. [8]
   b) How do you prepare TOR and scoping for EIA process? Briefly describe with an example related to irrigation Chanel in Nepal. [8]
4. What is EPM? What are the types of mitigation measures? Briefly discuss with an example for implementation. [8]
5. a) A waste water treatment plant at Bhaktapur discharge 2.75 m^3/s of water into stream whose flow rate is 18 m^3/s. The BOD_5 at 20°C of waste water is 30 mg/l and that stream is 3 mg/l. The waste water contains no DO but the stream contains 9.10 mg/l of DO. At 20°C de-oxygenation constant is 0.1/d and re-aeration constant is 0.3/d. Take saturation DO as 9.10 mg/l. Find out DO at the end of 1st and 2nd day and also explain why treatment plant is necessary. [8]
   b) Estimate the ground level concentration of SO_2 from a source of poorly controlled cement factory having stack ht 85m high at a distance of 10 km directly downward wind. When the wind speed is 5.5 m/s at tap of stock. The stability class is C. Current emitting 230 g/s of SO2. Take horizontal dispersion and vertical dispersion coefficient is 480m and 130m respectively. Discuss the impact evaluation technique on that cement factory. [8]
6. Write short notes on: [4×4]
   a) Project Cycle of EIA
   b) Environmental Auditing
   c) Impact identification
   d) IEE and its scope

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06D TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2072 Ashwin

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ ***All** questions carry equal marks.*
- ✓ *Assume suitable data if necessary.*

1. List out the different objectives of EIA and highlight the major sections of Environment Protection Regulations 1997.
2. Explain the statement "scoping is the heart of the EIA process". Explain the different steps that are used in Environmental Scoping.
3. Draw EIA cycle. Write about the brief history of development of EIA in Nepal.
4. Discuss the different criteria that are used during the environment screening in Nepal.
5. Why baseline study is an important step in environmental assessment process? Discuss on the data collection methods and data processing.
6. Explain the different methods of Environmental Monitoring. Give an example of impact monitoring of a road project.
7. A cement factor burns 5 tons of coal per hour and discharges the combustion products through a stack that has physical height of 60 m. The sulfur content of coal is 4%. The gas exist velocity is 10 m/sec when the wind speed is 2 m/sec. What is the concentration of SO_2 at 1 Km downward? The value of σ_y and σ_z are 30 and 20 respectively at 1 Km. Assume T_{atm} = 15°C, T_{stack} = 100°C and atm pressure is 1 atm.
8. Discuss on the importance and principles of EPMs. Explain the different types of EPMs.
9. Discuss about the EIA review procedure in Nepal? Write about the legal provisions for public participation in EIA process in Nepal?
10. Define noise pollution. You are working as a site supervisor in a housing construction project. The sound pressure level (SPL) that is produced within the range of 50 m in the construction site is 80 dB. The residential area lies 250 m away from the project area. Calculate the SPL that reaches to the residential area due to the construction activities if 20% of the SPL is reduced by trees that are around the construction area.

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06E TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2072 Magh

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ ***All** questions carry equal marks.*
- ✓ *Assume suitable data if necessary.*

1. Explain the various steps involved in EIA process. Explain how it is linked with the project life cycle in case of Nijgadh Katmandu fast track.

2. Explain the various steps involved in Initial Environmental Examination of a water supply project to supply of drinking water to a population of 4500.

3. What is TOR? Why it is necessary? Describe main components of TOR.

4. What do you understand by base line information? Explain how you collect base line data for noise quality. Explain the various sources of noise pollution in a new cement industry project.

5. What type of environmental assessment is needed for a hydropower project of installed capacity 6 Mega watts? Differentiate between IEE and EIA.

6. The treated domestic sewage from Everest Paper Mills is to be discharged in Narayani river. Determine the maximum permissible effluent BOD and the percentage purification required in the treatment plant of Everest Paper Mills with the following particulars.
   Waste water from Mill=0.25m^3/s Minimum flow of Narayani river=20m^3/s
   Temperature of waste-water and river=20°C
   5day BOD at 20°C of Narayani river= 0.5mg/l
   5day BOD at 20°C of waste water=200mg/l
   Maximum permissible BOD of Narayani river on downstream=4mg/l
   DO content of waste water=0 mg/l DO Content of river= 90% of saturation level
   Saturation DO at 20 °C=9.17mg/l
   De-oxygenation Coefficient=0.1 Re-oxygenation Coefficient=0.3

7. A thermal power plant burns coal at the rate 8 tones per hour and discharges the flue gases through a chimney having effective height of 80m. The coal have sulfer content of 6.5%. The wind velocity at the top of the stack is 8.5m/s. The atmospheric conditions are slightly unstable. Determine the ground level concentration at a distance 4 km downwind at

   a) Center line of the plume

   b) At a crosswind distance of 400m on either side of the centerline.

   For slightly unstable conditions take plumes standard deviation σ_y =210, σ_z =130 for x=2000

8. Define different type of mitigation measures that may be adopted with one suitable example for each category for Pancheshwar Hydropower project.

9. Discuss on the importance and principles of EPMs. Explain the different types of EPMs.

10. Why public participation is important in EIA process? Describe briefly various approaches of public involvement.

06D TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2071 Bhadra

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Environmental Impact Assessment *(Elective III) (CE78504)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What are the objectives of EIA? Give its history of development in context of Nepal. [4+4]
   b) Discuss the political awaking about EIA. What are the guiding principles of EIA process and procedural framework to carry out EIA? [8]
2. a) Describe the screening. What is the difference between EIA and IEE? Why IEE is necessary? [8]
   b) What is scoping and TOR and describe the importance of scoping in EIA. [8]
3. a) List the content of public notice during scoping in Environmental Impact Assessment process. Briefly describe main components of TOR. [8]
   b) Describe the necessity of baseline information collection during EIA process. Explain different methods of data collection process and its importance. [4+4]
4. a) What is pollution? The domestic sewage of a town is to be discharged into a stream after treatment. Determine the permissible effluent BOD_5 and the percentage purification required in the treatment plant with the following information. Population of town = 40000; DWF of sewage = 150 lpcd; BOD_5 contribution per-capita = 0.075 kg/d; minimum flow of stream = 0.15 m/s; BOD_5 of stream = 2 mg/l; maximum allowable BOD_5 of stream on downstream = 6 mg/l. At what level you can add BOD_5 in stream from domestic sewage. [8]
   b) Why do you need impact prediction? What are the methods of impact prediction, briefly describe with respect to EIA process. [8]
5. a) Discuss the procedure and importance of stakeholder's consultation and public participation in EIA procedure. [8]
   b) Explain the existing environmental state of Nepal and legislative commitment. Explain main features of EPA and EPR. [8]
6. Write short notes on: [4×4]
   a) Environment Monitoring
   b) Alternative analysis of EIA
   c) Decision making of EIA report with review
   d) EMAP

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