

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

SEMESTER FINAL EXAMINATION

Course No. : CEE 4461

Course Title : Civil and Environmental Technology II

Summer Semester :2021-2022

Time : 3 hours

Full Marks : 150

There are 6 (six) questions. Answer **all** of them. Programmable calculators are not allowed. Do not write anything on this question paper. Marks of each question and corresponding CO and PO are written in the right margin. The Symbols have their usual meaning.

- | | CO | PO | Marks |
|---|-----|-----|-------|
| 1. A rural highway project is planned to improve connectivity in a remote area. The project includes construction of a 50 km road, which will pass through several villages and agricultural lands. The construction of the rural highway project may lead to soil erosion, deforestation and loss of biodiversity, negatively impacting the environment. | | | |
| (a) Prepare a mitigation and monitoring plan for a rural highway project (pre-construction, construction and operation phase). | CO4 | PO7 | (20) |
| (b) What are the positive impacts of this project? How can you enhance positive impacts of your project? | CO4 | PO7 | (10) |
| 2. a) To find out the possible environmental impacts a public consultation was performed for a highway project. A total no. of 250 people participated in the survey. Find out the total <i>EIV in a tabular form</i> from the following information and comment about the results whether it should be established or not. | CO3 | PO6 | (15) |
| Ecological Impact: - | | | |
| <u>Fisheries [10]:</u> 150 people answered severe negative impact, 50 people answered higher negative impact, 30 people answered moderate negative impact and 20 people answered very low negative impact. | | | |
| <u>Wildlife [4]:</u> 100 people answered higher negative impact, 120 people answered very low negative impact, and others answered no change of environment. | | | |
| <u>Nuisance Plant [1]:</u> 120 people answered no change, 70 people answered moderate negative impact, and 60 people answered very low positive impact. | | | |
| Physio-chemical: - | | | |
| <u>Flooding [5]:</u> 45 people answered low negative impact, 155 people answered very low negative impact, and the remaining people answered no change. | | | |
| <u>Water Pollution [3]:</u> 110 people answered low negative impact, 20 people answered very low negative impact and remaining answered no change. | | | |
| Human Interest: - | | | |
| <u>Employment opportunities [9]:</u> 85 people answered severe positive impact, 30 people answered higher positive impact and 55 people answered low positive impact and remaining answered no change. | | | |
| <u>Transportation [4]:</u> 130 answered moderate positive impact. | | | |
| <u>Industrial activities [4]:</u> 200 people answered very low positive impact. | | | |

- b) Ministry of Shipping launches 'Riverine Tidal Development' project to enhance the navigability and sustainability of the Brahmaputra River. CO2 PO1

Prepare a table using simple checklist to identify possible environmental impacts caused by this project. (You have to consider the four facets of environment in identifying the impacts)

3. Wolfram Mining Corporation has been a leading producer of both calcination and refractory grade magnesite for over a century. With a new mining project on the horizon, the corporation is taking careful measures to assess the potential environmental impact of the mining activity. An Environmental Impact Assessment (EIA) has been conducted to monitor dust generation, noise levels, and ground vibration resulting from the drilling, blasting, loading of waste, transport of overburden, and crushing of ore. The corporation is committed to minimizing its impact on the environment and ensuring sustainable mining practices.
- (a) What are the choices of an EIA methodology depending on? CO1 PO1 (8)
- (b) Which is to be chosen among checklist, matrix and network? CO1 PO1 (7)
- (c) Prepare a network diagram for the new project to illustrate impact interaction. CO2 PO1 (10)
4. (a) What is the level of public consultation typically involved in Social Impact Assessment (SIA) as compared to Environmental Impact Assessment (EIA)? CO1 PO1 (7)
- (b) Describe the five overlapping categories of social impact. CO1 PO1 (9)
- (c) Describe the major advantages for undertaking a SIA. CO1 PO1 (9)
5. A road linking Mawlynnong to Shillong in the state of Meghalaya in Northeast India is proposed. This road linkage would greatly improve connectivity between the two areas. However, the proposed road would pass through ecologically sensitive areas, including forests and water bodies. In order to assess the potential impacts of the road construction, a comprehensive baseline study of the physical environment, biodiversity, and socio-economic conditions of the area needs to be conducted.
- (a) Write down the difference between SEA and EIA. CO1 PO1 (5)
- (b) What is the purpose of conducting a baseline study in an environmental impact assessment (EIA)? CO1 PO1 (5)
- (c) Prepare a baseline showing environmental components, parameters and sources. CO1 PO1 (10)
6. ABC Energy Ltd. is a company planning to build a 500 MW coal-fired power plant in a rural area of a developing country. The proposed power plant project has raised concerns among community members and civil society organizations regarding potential social and environmental impacts despite securing necessary permits and acquiring land.
- (a) Develop a questionnaire for assessing the demographic situation of a sub-urban society. CO2 PO1 (10)
- (b) How can you improve the response rate of your questionnaire? CO1 PO1 (5)
- (c) Prepare a FGD guide to assess the probable social impact of a power plant project. CO2 PO1 (10)