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| Name:         |  |
| Enrolment No: |  |

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, December 2021**

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| <b>Course: Civil Engineering – Societal and Global Impacts</b> | <b>Semester: VII</b>          |
| <b>Programme: B Tech (Civil + ID)</b>                          | <b>Time: 03 hrs.</b>          |
| <b>Max. Marks: 100</b>   | <b>Course Code: CIVL 4026</b> |

**Instructions: Write your assumptions carefully and attempt all the questions. Provide technical labelled illustrations as required with clarity and legible labels.**

**SECTION A**

| S. No. |  | Marks | CO  |
|--------|--|-------|-----|
| Q1.    | List four civil engineering projects which has global level impacts on society at large. Provide one statement per project corroborating your choice.  | 4     | CO1 |
| Q2.    | Explain how an airport impacts the GDP of a region and society at large.   | 4     | CO1 |
| Q3.    | Reproduce the formula used by India for computation of its GDP. Explain each parameter.  | 4     | CO2 |
| Q4.    | Enumerate four different indices used globally for ascertaining the societal growth in various human endeavors.  | 4     | CO2 |
| Q5.    | Considering the growing population and land demand, is land reclamation for a large construction project an innovative and sustainable choice? Support your statement by technical explanation and examples. | 4     | CO3 |

**SECTION B**

|     |  |    |     |
|-----|--|----|-----|
| Q6. | How are the evolution of society and construction sector interrelated over ages? Support your answer with chronological events and milestone impacts for the events, showcasing the correlation between society and construction advancements.   | 10 | CO1 |
| Q7. | Explain how errors on a construction projects have negative impacts on human lives, society and environment at large using real world examples of errors from history to support your perspective.   | 10 | CO1 |
| Q8. | Discuss how innovation for building materials and construction is not necessarily sourced from new research but can also be inspired from ancient technologies. Provide examples of ancient construction technologies which are sustainable and are possible to be adopted today as innovative practices in conjunction with new technological developments. | 10 | CO3 |

**OR**

|     |  |    |     |
|-----|--|----|-----|
| Q8. | Discuss how the technological advancements in robotics, EC, IT and computers translate to innovations for construction sector. Also discuss, if these innovations are a positive influence for the economy of a developing nation considering GDP growth, Employment, Socio-economic demographic considerations, along with environmental impacts of a construction project. | 10 | CO3 |
| Q9. | Discuss how a metro rail project ensures gender quality index rising in the region. And how important is to ensure safety and surveillance is an important system goal for a   | 10 | CO2 |

|                  |   |           |            |
|------------------|---|-----------|------------|
|                  | metro construction project to achieve gender equality, social equity and economic growth.   |           |            |
| <b>SECTION C</b> |   |           |            |
| Q10.             | Analyze the Panama Canal Project and present your observation and perspectives with technical justifications about how one construction project has impacted us all at a global scale in all aspects of human development in the past century. Use technical facts and data to corroborate your answer. (Consider the geopolitical impacts, economic impacts, social impacts, environmental impacts and standard of living as few suggested parameters to discuss.)                             | <b>20</b> | <b>CO2</b> |
| <b>OR</b>        |   |           |            |
| Q10.             | Evaluate the impacts of Geographical Information System, Global Positioning System and Remote Sensing on construction industry and how they in turn have contributed to increasing the standard of life for humans in the past four decades. (Consider the technical contributions in all civil domains, project time and resources optimization, geopolitical impacts, economic impacts, social impacts, environmental impacts and standard of living as few suggested parameters to discuss.) | <b>20</b> | <b>CO2</b> |
| Q11.             | Discuss how we as civil engineers can impact our future generation while ensuring sustainable development utilizing the innovation of the digital revolution and social revolution in civil engineering. Provide examples for your statements and technical justification for the same.   | <b>20</b> | <b>CO3</b> |