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| <b>Name:</b>         |  |
| <b>Enrolment No:</b> |  |

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

**Course: Geochemistry**  
**Program: M Sc. Petroleum Geosciences**  
**Course Code: PEGS 8004**

**Semester: II**  
**Time 03 hrs.**  
**Max. Marks: 100**

**Instructions: All questions are compulsory. There is an internal choice in last question.**

**SECTION A**

**Each question carries 5 marks. Attempt all questions. Write brief answers.**

| S. No. | Question   | Marks | CO  |
|--------|--|-------|-----|
| Q 1    | Name the four geochemical super systems present on earth. Which of these super systems hosts living organisms?   | 5     | CO1 |
| Q 2    | Explain in brief the difference between fog and smog?  | 5     | CO2 |
| Q 3    | Name five types of equipment used for geochemical analysis of rock and liquid samples? Write in brief what elemental and mineral analysis each one these equipment performs. | 5     | CO3 |
| Q 4    | List five most abundant elements present in sun? Describe the role of hydrogen in the energy produced by sun.  | 5     | CO3 |
| Q5     | Describe in brief what is global warming? Name four gases which are primarily responsible for global warming?  | 5     | CO2 |
| Q 6    | Describe two hypotheses for origin of ocean water on earth?  | 5     | CO3 |

**SECTION B**

**Attempt all questions. Write short answers of approx. 50-100 words. Each question carries 10 marks.**

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|------|---|----|-----|
| Q 7  | Describe the difference between meteorites and asteroids? Name three sources of origin of meteorites?   | 10 | CO4 |
| Q 8  | Explain what is solid solution? With help of pyroxene quadrilateral, discuss formation of solid solution in pyroxene minerals.  | 10 | CO2 |
| Q9   | Explain what is theory of continental drift? Explain how plate tectonics is related to continental drift?   | 10 | CO5 |
| Q10  | Name the discontinuity which defines the boundary between crust and mantle? Explain what is difference between chemical composition of the rocks of crust and mantle. | 10 | CO3 |
| Q 11 | Explain what are two great oxidation events and how they are manifested in geological records?  | 10 | CO3 |

**SECTION-C**

|    |   |           |            |
|----|---|-----------|------------|
| 12 | <p>Describe in detail what is atmosphere? Draw a diagram to show vertical variation of temperature and pressure in atmosphere. Describe the role of troposphere and stratosphere in sustaining life on earth?</p> <p style="text-align: center;"><b>OR</b></p> <p>Explain in detail what is biogeochemical cycle? What are its components and what are the factors involved in construction of geochemical cycle model? Describe in detail oxygen biogeochemical cycle?</p> | <b>20</b> | <b>CO5</b> |
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